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EDITOR

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BISMUTH PASTE IN THE TREATMENT OF PYORRHEA ALVEOLARIS AND SINUSES OF THE JAWS.

BY RUDOLPH BECK, D. D. S., CHICAGO, ILLINOIS.

Notwithstanding the fact that here and abroad investigators have devoted so much attention and study to the subject of pyorrhea alveolaris, very little progress has been made in determining the true cause of this widespread affection, consequently no material or successful treatment has been achieved.

It is not necessary for me to review the literature on this subject, since the purpose of this paper is to present to the dental profession a new method of treatment for this affection.

The consensus of opinion among dental practitioners and teachers is that pyorrhea alveolaris is an inflammatory suppurative disease affecting the pericementum, which may be acute, but more often is chronic. The inflammation may extend to the alveolar walls and gums, causing a loosening of the teeth, discharge of pus from the sockets, or breaking down of the alveolar sockets, and consequently a recession of the gums. When the teeth have lost their alveolar and gingival attachments, they fall out, and a spontaneous cure is the result.

The causes of pyorrhea alveolaris have been ascribed to constitutional as well as local conditions. Among the predisposing consti-

tutional causes, the principal ones are (1) hereditary influences; (2) arthritic diseases; (3) disease of suboxidation; (4) faulty elimination.

Of the local causes, the chief ones are: (1) Irritation due to deposits of foreign matter; (2) faulty use of the teeth and gums; (3) lack of cleanliness; (4) microbic invasion.

Professor Miller (1890) found 22 varieties of organisms in 26 cases examined, and could not ascribe a specific factor to any one of them.

When we attempt to cure a severe case of pyorrhea alveolaris we know how difficult it is. The failures are probably due to the fact that the seat of the disease is never reached by the methods now in vogue. At present our efforts are directed toward checking the pus discharge by removing all irritating material, either by scaling the deposits, brushing and polishing the teeth, as well as by injecting along the roots of the teeth such agents as lactic acid, trichloracetic acid, aromatic sulphuric acid, saturated solution of iodin crystals in beechwood creosote, and various other antiseptic and astringent agents. Electricity in various forms, radium and X-rays, as well as the use of high frequency currents, with the view of stimulating sluggish circulation of the pericemental membrane, have likewise been employed with some degree of success. The use of bands and ligatures for the purpose of keeping the loose teeth in place serves only as an adjunct to the above method of treatment. The removal of useless teeth and their substitution by bridges has been very beneficial, since it removes at least certain sources of infection. With these aids, this affection could in most instances be kept in check and frequently a permanent cure effected, but in a proportion of cases recurrences will soon take place, and in very bad cases only temporary improvement can be expected.

My new method consists in the injection into the sockets of the affected gums of a warm liquefied paste, consisting of bismuth subnitrate and vaseline. The use of this paste suggested itself to me on observing the excellent results obtained by the employment of the same by Drs. Emil and Joseph Beck, in cases of old sinuses of joints and abscess cavities, as well as in the accessory sinuses of the head. I first employed this method in a case of chronic aveolar abscess with a fistulous opening where the roots had previously been filled and discharged pus for many years. Without any preparation the fistu-

lous tract was injected with bismuth paste, and after one injection the fistula closed and remained so, causing no further trouble. This encouraged me to extend the experiment into another and perhaps more important field, namely: pyorrhea alveolaris. I selected a typical case of hematogenic pericementitis which had been under my observation for nearly two years, and in which I had used the accepted methods of treatment with only temporary improvement.

In this case I proceeded as follows:

Without removing any of the deposits, I injected the bismuth paste into the pus pockets around every tooth involved. The next day patient returned, and I sealed the deposits and reinjected the pockets with paste. When the patient returned five days later I found the gum tissue in a slightly inflamed condition; was unable, however, to force any pus from the sockets, and the patient felt more comfortable. I then reinjected for two days in succession, after which I did not see him for one month, when I made a careful examination and found the tissue in a healthy condition, although some of the teeth were still slightly loose, but most of them firmer in their sockets. Since then I have continued the use of this treatment in many cases, some more or less pronounced in character, and the results have been beyond my expectations. In some cases only three or four injections were necessary in order to prevent further pus formation. The majority of cases which I have treated up to date by the bismuth paste have either been cured or have shown signs of improvement, and in but a few cases has a recurrence taken place. I ascribed the failures to faulty technic, namely, that the paste did not reach every part of the infected area. When this fault was corrected satisfactory results were obtained.

FORMULA FOR BISMUTH PASTE.

Bismuth subnitrate	30%
White wax	5%
Paraffin (melting point)	5%
Vaseline	60%

Mix while boiling.

INSTRUMENTS.

The most convenient for dental purposes is an all-metal syringe. The needle is flexible, with a fine tapering point, and should be of pure silver. The syringe should hold about half an ounce of the paste.

TECHNIC.

The point of the syringe charged with the liquid paste is introduced between the affected tooth and gum, and by gentle, steady pressure the paste is injected so as to reach the very bottom of the pus pocket. In this lies the great secret of success. The paste must fill out all recesses or else the improvement will be only temporary. It is not necessary to attempt to remove any pus before the injection (but a smear should be made before the bismuth injection, in order to prove bacteriologic changes after a few treatments). At the second sitting deposits should be removed, and then the pockets reinjected. Fixation of the loose teeth in connection with this treatment should not be omitted.

HOW OFTEN TO INJECT.

This is to be determined by pathological conditions and symptoms present. I would suggest that in the beginning, in the treatment of pyorrhea, the injections be made at least every other day, until signs of improvement are noticed. Thereafter, less frequently.

THEORY AS TO THE ACTION OF BISMUTH PASTE AFTER THE INJECTION INTO PUS POCKETS AND SINUSES.

According to the literature on this subject, either the bismuth or the nitrites coming in contact with the diseased tissues produce the invasion of leucocytes and changes in the connective tissue cells, which destroy the vegetable organisms, when the bacteria are destroyed and the process undergoes resolution, provided no foreign body—sequestrum—or necrosis be present. In more extensive cavities the bismuth paste may remain for several weeks, gradually disappearing by absorption.

DEFINITION OF CURE.

Whenever the sinuses or pus pockets in pyorrhea stop discharging pus, and the mucous membrane appears healthy, we would call that a cure. A return to normal condition is not looked for, owing to the destructive process, like necrosis, adhesions and atrophy.

LIMITATIONS.

Surgeons and rhinologists point out certain dangers in the use of this paste. These dangers are:

1. Bismuth or nitrite poisoning, due to the absorption of large doses of bismuth and its nitrite.

2. Undue pressure on vital organs—brain, liver, pancreas.

3. Injection of paste into the circulation.

The practitioner of dentistry is fortunate in not being liable to encounter any of these, since his field of operation is confined principally to the oral cavity.

SINUSES AND FISTULAE.

I will omit the description of the etiology and pathology of the sinuses and refer the reader to the appended references to the application of the paste in these conditions in various parts of the body, including old sinuses of the head, which give in detail all phases of the subject.

I wish to briefly outline the technic employed in treating suppuration. In sinuses and fistulous openings of the chronic variety in the mouth, the roots of the teeth should be filled in the usual way, and through the external opening the sinus is injected with the liquid paste until it reaches all parts of the sinus. This is indicated by the external overflow. A finger is placed over the opening of the sinus until the paste becomes hard.

CONCLUSIONS.

1. The injection of a 33% bismuth-vaseline paste into the pockets of pyorrhea alveolaris is a remedy far superior to any heretofore employed.

2. The same paste injected into fistulæ of chronic alveolar abscesses, or sinuses of the jaws, produces a rapid closure of the same, provided every recess of the sinus has been reached and no sequestra are present. Tubecular sinuses are not excepted.

3. The secretions of the sinuses change their character after injection; they become serous and micro-organisms, gradually diminish and finally disappear.

4. Bismuth subnitrate is a bactericidal and chemotactic substance, which is slowly absorbed and slowly eliminated.

5. By its retention in pus pockets and not being acted upon by the saliva, it prevents further infection and decomposition.

6. No serious complications due to bismuth absorption are to be anticipated, since 100 grams of the paste are rarely used. In larger doses it may produce symptoms of ulcerative stomatitis, with black borders around the gums.

7. As a dressing in cavities, it is preferable to any other, inas-

much as it promotes healing of chronic suppurations and rapid formation of granulations.

8. Other treatment (prophylaxis) in connection with the bismuth paste is necessary.

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OUR LITTLE PATIENTS.*

BY CHARLES B. ROHLAND, A. M., D. D. S., ALTON, ILLINOIS.

Mr. President, Ladies and Gentlemen:

In coming before you this evening I do so with considerable embarrassment. When anyone is honored with an invitation to appear before such an important body as this, it is naturally to be inferred that he is expected to have something to say that will be interesting or important or novel enough to justify him in taking up its time, or that he is so charged with information that if a kind program committee had not generously come to his relief and given him a vent for it the results might have been unpleasant, to say the least.

Let me hasten to assure you that neither supposition would in this case be quite correct.

I am not burdened with a mass of information that is clamoring to get out, and that I feel impelled to unload on you, neither do I hope to be able to tell you anything on this subject that you do not already know, or to say anything that most of you perhaps have not already heard or experienced yourselves.

My mission here is simply to jog your memories in the interest of our little patients.

The great importance of the subject that has been selected for your consideration tonight is, therefore, my only excuse for appear-

*Read before the Chicago Odontographic Society, October 20, 1908.

ing before you and taking up your time on this occasion, an importance that does not seem to be appreciated as fully as it should be by too many among us.

Our relations to these little ones are of such grave significance, and are fraught with such momentous consequences, that perhaps in the whole range of our professional duties there are no others that call for such careful and conscientious consideration, and so tax to the limit every ounce of good judgment there may be in us. The problems they so often bring to us mean so much to them, and our response to them may have such influences on their future weal or woe, as well as on our own interests, that he who meets them only in a flippant, careless spirit is truly blind to the responsibilities of his position, as well as to his opportunities.

So, if you please, I will concern myself only incidentally with questions of oral practice, because the principles underlying these, as applied to children, are essentially the same as in adults, except mainly in degree, and because, too, before we can apply these principles successfully and comfortably, it is absolutely necessary that we first know how to approach these little ones and learn to handle them, that we may serve them best.

Skill and knowledge are essential in our calling, but of equal importance is the tact to apply them, and especially is this true with respect to children.

Therefore I propose tonight to consider chiefly the claims that our little patients may have upon our consideration, and the principles and some of the methods that should govern us in our attitude towards them, and the reasons therefore.

These little ones are especially entitled to our most serious consideration, and to all the patience of which we are capable—because of their helplessness, a feature of childhood that always appeals most strongly to the protective instincts of their elders, and because they suffer so often, through no fault of their own, from the neglect, the ignorance and inattention of those to whom they are taught to look for guidance; and, because the problems they bring to us are often so far-reaching in their consequences that sins of omission as well as commission at this time are liable to leave marks that may be carried through life with disastrous and cumulative effects, and therefore should challenge every spark of professional manhood in us; and because, if our mission is to relieve suffering, it is a still nobler mis-

sion to prevent it; and because, also, the very strongest motives of self-interest bid us cultivate them most assiduously.

Not long ago I read what purported to be an interview with some dentist which appeared in one of the leading dailies, and was afterward copied in some of our journals, in which the dentist expressed his aversion to children in the office. As the interview put it, he had no use for them, they were restless and noisy, they squirmed in the chair, disarranged his instruments, made trouble, wasted his time, taxed his patience to the limit, and were an unmitigated nuisance, and if he had his way he would never permit them inside his office.

Now, I suppose in the main this arraignment was not without foundation. They are very often noisy and restless, and troublesome, and they do take a lot of time sometimes, though I have wondered whether it was quite correct to say "they taxed his patience to the limit," because from the tone of the interview I should infer he had no patience to tax. He simply did not like children, and shirked that part of his duty which, as I shall aim to show, was not only grievously short-sighted but also unethical.

I seriously question whether such a dentist as the one alluded to would seem to be, does not in his professional career do quite as much harm as good to his profession, and the public, and for this reason:

The first few visits of the child to the office are perhaps the most important in their consequences of any ever subsequently made. Upon the impressions then gathered depends largely its future attitude towards the dental chair.

It is often in the power of the dentist by judicious management to make a willing, tractable patient, who as he grows up will appreciate the beneficent side of dentistry, and will to the best of his ability try to do his duty to himself and his own.

It is also in the power of the dentist, on the other hand, by unsympathetic, severe and brutal methods to utterly ruin that child as a future patient.

He may by his skillful work impress part of his clientele with a high respect for dentistry, but who shall say how many more he may have so filled with fear and loathing and hatred of the profession that the inconveniences and torments of not only their own, but their children's impaired dentitions, may justly be ascribed to him.

Of course, when I say that the dentist can by judicious management make out of children willing, tractable patients, I do not by any means mean all children or always. There are children and children, also occasionally, I will admit, little incarnations of satan—not often naturally so, however, but made so by their environment; and not often, either, irreparably so, for even with this class it is astonishing sometimes what a little tact and patience and persistent faith in them will accomplish.

Right here, in order that my position may not be misunderstood, I want to say that on the very rare occasions when I do come across any that seem to be absolutely impossible, after I have done all I think can be reasonably asked of me, and a little more thrown in for good measure, I put the discipline of that child squarely up to the proper authorities.

I do not believe that it is any part of our professional duty to usurp parental functions, or use force, or even permit it to be used in the office, except under the very rarest conditions. I feel it to be beneath the dignity of my calling to be expected to flourish the club of a policeman, to subdue the refractory offspring of incompetent or worse parents, and I will not do it. I will not do it because, if I do, my usefulness and perhaps that of any other dentist may be gone from that time on, or at least seriously imperiled.

However, to know in the handling of these apparently intractable cases just when patience ceases to be a virtue, just when one has done all that can reasonably be expected, is a nice point, and must necessarily always be largely a matter of individual temperament.

The one fact, however, that should always be given due weight before admitting that that point may have been reached, is that the child that is utterly beyond the influence of tact and patience is a *rara avis* indeed. When there is such a one, it is abnormal and undoubtedly a fit candidate for the services of an alienist.

The other day I saw among a number of "Pointed Paragraphs," in which the writer aimed to furnish chunks of wisdom in condensed form, the following:

"A mother makes a fatal mistake when she leads her children to believe that they are wingless angels!"

Now, while this paragraph undoubtedly has the merit of brevity, it needs in my judgment the addition of just two words more to entitle it to be considered wisdom. It should read:

"A mother makes a fatal mistake when she *does not* lead her children to believe they are wingless angels!"

Therein lies the very key to the art of handling children, whether in the home, the schoolroom or the office. When they come to us they should be treated with the consideration due to little men and women. They should not be teased, or made fun of, or thoughtlessly humiliated, but on the contrary their self-respect should be most carefully and unceasingly fostered by making them feel that you believe in them, that you think they are just about all right, and about the best patients you ever had, and that you thoroughly like them. And you need not be backward about telling them so. A child's capacity for judicious flattery is exceeding large and he appreciates it just about as much as his father does! Be sure to notice and comment on the least merit about them as patients. Praise them—and the praise should be tactfully administered—often enough to keep them from forgetting how high they stand in your estimation, until they will be actually ashamed to let you see that you have been deceived in them, and as far as in them lies they are going to try to live up to your opinion of them.

And here is where, when they do fall down, as of course they sometimes will, they must still be helped to keep their grip on the faith in themselves that you have fostered, by ignoring and excusing and making light of their shortcomings.

I once heard a prominent divine of this city, on the lecture platform, make this assertion: "I have the best children in Chicago. They are so, however, not because they were born saints, because they were not, but simply because I made them believe they actually were so, and they tried to live up to that belief."

That nugget will assay 99 per cent of the pure gold of wisdom.

What can be expected of a child that continually hears the complaint from its elders, that they "can't do a thing with Johnnie," and that he is absolutely the worst boy in the neighborhood! The parent or the teacher that admits to a child that he cannot control him gives up the fight before it is fought, and not only that, but also thereby gives him a shove downward on the broad road.

Under such circumstances certainly "Johnnie" is going to be bad to the best of his ability. He can't help it. Both his father and mother, and his aunts and the neighbors all tell him so every day, and show by their treatment of him that they think so, and do not

expect anything else from him. Every good impulse is thus throttled at its birth; it has no chance to grow. So he is compelled to live up to his reputation, whether he will or not.

Therefore when "Johnnie" falls into your hands do not be too impatient with him. Do not turn him down at once, but give him a chance, and, in line with what I have just said, try the other tack for awhile. Take it for granted that he is all right and treat him so, and try to make him think so. Do not push him too hard at first. Above all, avoid even the suggestion of a conflict with him. Do not dispute or argue with him; on the contrary, appear to agree with him and to take his wishes into consideration. Magnify his virtues, if he has any, and if he hasn't, manufacture them. Minimize his faults, and when you've gone about as far as you can without a contest, dismiss him with a few words of encouragement, to the effect that he will be all right next time because he knows now that it isn't near as bad as he thought it would be.

Try this faithfully, my young friend, and see what comes of it. My word for it, you will in the majority of cases be most agreeably surprised to find how much you can get out of them, and how much they will stand from you, once you have their confidence; and the glowing satisfaction will be yours of not only having conquered a difficult subject, but of having implanted in that young nature influences for good, and made what may prove a very valuable friend and partisan.

Will it work every time? Well, no, not every time, but often enough to make it worth while. Mental suggestion in the control of children beats a club, and is as powerful and effective as it is in therapeutics.

It takes entirely too much time, you say? Well, that is just as you look at it. It does take time, sometimes more than it is quite convenient to give, and it sometimes makes serious drafts on one's patience. Nevertheless, whether you succeed or not, even the effort always pays, and pays well, in every sense of the term. Make no mistake about that.

To the young man just at the beginning of his professional career I say, in all sincerity, there is nothing he can do in laying the foundations of his future practice, broad and deep and sure, that will be more effective than the judicious cultivation of these little ones.

The little men and women of today become the grown men and

women of tomorrow, even before one realizes it. The little friends of today, to say nothing of the grip they give one on their elders, become the stanch and profitable adherents of tomorrow.

Always remember that in the conduct of your practice you are building for the future, and not only for the present. You may think your present location is only temporary, and that therefore what you may do or not do is of no consequence. Don't you believe it.

I accepted my present location merely as a makeshift until I could look around for something better! That was nearly forty years ago! And I am still looking—still looking, though I think I know now where my next move will be. I strongly suspect that in my next location, if I have luck, I may be wearing a golden crown, instead of making them. I only hope it may fit better and feel more comfortable than some that have been perpetrated in my time.

However, even if you do make a move, the world is small and your reputation will surely follow you. So see to it that it be a good one.

Wherefore I say, that even aside from the call of duty, every instinct of self interest prompts the careful cultivation of and the most faithful services to these little patients. Unlike the crabbed victim of the interviewer above quoted, to me these little ones are anything but a nuisance. Instead I find in them often a tonic and a recreation. Frequently after particularly hard and trying experiences, when both physically and mentally depressed, the sight of their fresh young faces and contact with their fun-loving, innocent and ingenuous natures, acts like old wine to jaded nerves and enables me to throw off the worries of the day and for the time forget them.

Why, the man who has no pleasure in his little patients, who cannot enter into their joys and sorrows, who finds no satisfaction in ministering to their little ills and aches, misses half the joy in life, and, like him who hath no music in his soul, is only fit for treasons, stratagems and spoils.

Now I know that, like the interviewed dentist before alluded to, your patience has already been taxed to the limit, but if you will kindly bear with me a few minutes more there is a case or two that I would like to submit before closing.

I have said that some of the problems presented to us by these little ones are so far-reaching in their consequences and involve so much that sometimes their solution will challenge the utmost resources of our judgment.

A chubby, round-faced, shy little four-year-old was brought me a little while ago with both lower molars on each side badly decayed and all the pulps exposed, or nearly so. The child, a little girl, had been suffering intensely for weeks. Mastication of course impaired, and usually followed by paroxysms of pain. Rest often interfered with and evidences of nervous strain already manifest in the changed disposition of the child.

Now, what would you do?

Through no fault of its own it is suffering from the neglect and inattention of those charged with its care, who brought it for treatment only when their own comfort was interfered with. The present as well as the future comfort of that four-year-old is in your hands. It has been told you are going to help it, and with pathetic, tearful eyes it looks to you for relief. Every instinct of humanity about you impels you to respond with your very best to its appeal—not for the sake of its parents, because if they alone suffered you would be only too delighted to give these exposed pulps several extra twists, as a token of your opinion of their fitness as parents, but your heart goes out to the poor suffering little tot.

But what is your very best?

There are a good many considerations that tend to make this a knotty problem.

Am I acting the part of a coward to temporize, or should the gordian knot be cut by extracting at once and thus give the child much needed instant relief, rid you of further trouble, but also incidentally give a severe shock to its confidence in the dental chair as a place to come for relief from pain?

Then having extracted, how about its crippled mastication? Can anything be done for that? If not, may I not have done more harm than good? Also, how about the effect of these vacant spaces on the permanent set? Can anything be done about that? If not, may I not then have started a train of evils that may in the future largely overbalance all the immediate good accomplished?

My own course in the treatment of this case was largely a course of masterly inactivity.

I simply washed out and wiped out all the cavities as thoroughly as I dared, applied soothing dressings and covered them with a paste of eugenol and oxide of zinc incorporated in cotton. This relieved the pain, and after a few days the same procedure followed, a little

more thoroughly, and some instrumentation was then possible, the cotton and eugenie zinc oxide paste being now mixed thicker and applied with more pressure.

The child is now just fairly comfortable. The teeth will again be heard from in time. The child of its own accord will want to come back, when the same treatment will again follow, and so on ad infinitum, until the pulps will go the way of all flesh, when they will receive the usual treatment—the pulp cavities filled and covered with something more durable.

I am trying to keep the child comfortable as long as possible until in course of time the successors of these ruined teeth will be about ready to take their places.

Will I succeed? I do not know. I may be only putting off the evil day.

In the meantime, however, I am teaching the child to look to the dental chair as a place of relief, not torture, and I hope making a willing patient for the future, which will be something gained at all events.

Now, then, was my course the course of cowardice or wisdom?

I have spoken of my use of a paste of eugenol and zinc oxide. This is one of my main reliances, not only in the treatment of children's teeth, but also frequently those of adults. It is antiseptic, obtundent, soothing, and when incorporated with cotton and pressed into a cavity it will become quite hard and remain impervious to moisture and afford protection for weeks and months. A patient comes in, says a filling has dropped out (not yours, of course; some other fellow's), the cavity is annoying him; you cannot give him an appointment for a week or two, and you are busy at the chair. A little eugenic zinc oxide putty rolled up with a ball of cotton, which can be done in a few minutes, and stuffed into the cavity will relieve the situation until you can give him enough time to replace that other fellow's filling—properly!

Now, just a few minutes more—this, too, is a problem involving the fortunes of a four-year-old little girl.

Through an accident all the upper incisors were knocked out, or so badly fractured that they had to be removed. The tissues were considerably lacerated, only fragments of teeth and roots left in the gums, and the crowns of the cuspids also somewhat damaged, but the roots only slightly loosened. The fragments of course are supposed

to have been carefully removed, and palliative measures resorted to until the mouth healed up.

Now what would you do, you being given carte blanche to do whatever you thought best? Would you consider your work done after the tissues were restored to health and the crowns of the damaged cuspids repaired, and dismiss the patient?

Must that little four-year-old go with a yawning space in the front of her mouth and impaired speech for two or three years, until the permanent teeth fill up the chasm? And what will be the effect of the absence of the temporary on the fortunes of the permanent incisors, as well as on her features and her speech. Can anything be done? Should anything be done? If so, what?

Some years ago a dentist sent a paper to be read before the Southern Illinois Dental Society, in which he described a case practically similar to the above, the little girl being his own. In this paper he gave what purported to be his treatment of the case, as an answer to the above query, which was merely the construction and insertion of a fixed, rigid bridge from cuspid to cuspid. If my memory serves me correctly, the bridge at the time it was reported had been in use but a short time, but he claimed the results would amply justify his judgment. He also claimed to have resorted to the same process in a number of other cases in his town, with satisfactory results. The paper at the time elicited considerable discussion. The disadvantage of an open space from cuspid to cuspid for years, before the eruption of the permanent teeth, was recognized, but the point at issue was mainly the probable effect of a rigid appliance permanently fastened to the two cuspids on the subsequent development of the jaw.

I tried to keep in touch with the case by writing to the dentist, urging him to report and illustrate its progress with models and photographs.

Only recently I wrote him again, thinking it might be most interesting to hear from him just how the case turned out, for by this time the bridge must have served its purpose and the permanent incisors be now in place. For some reason or other I have been unable to get any reply from him, although I know that my request reached him. Hence I am unable to throw any further light on this particular case, as I hoped to do, and it still, so far as my own experience or observation goes, presents a problem that, like Mercutio's wound,

may not be so deep perhaps as a well, nor so wide as a church door, but 'tis enough. 'T'will serve—t'will serve to make one put on his thinking cap and think, and think hard, to decide which horn of the dilemma to take.

Gentlemen, I have made my plea for our little patients. While I have indicated in a general way the principles that should govern our attitude toward them, nevertheless the methods by which these principles should be applied, and the manner in which these children must be approached, must necessarily be as varied as human nature itself. The bluff "joshing" that will capture one child, would utterly overwhelm and put to rout another. The firm, dignified, no-nonsense-will-go-here attitude that will be successful with one, would only arouse hostility and repel another. Therefore it is for us to study their infinitely varied characteristics, their changing moods and tenses, a study as interesting and complex as a game of chess, but he who would play the game successfully will find the key only in patience, gentleness and love.

ANATOMICAL ARRANGEMENT OF ARTIFICIAL TEETH.

BY ARTHUR N. DAVIS, D. D. S., BERLIN, GERMANY.

Mr. President, Officers of the Society and Gentlemen: At the present time, when the interest of dentists, particularly in Europe, is centered more on operative than on prosthetic dentistry, I am afraid the subject of artificial teeth is not so popular as I would like to have it, so I will make my paper as short as possible and endeavor to come immediately to the point.

About six years ago I wrote an article on the "Anatomical Arrangement of Artificial Teeth," which was published in the February *Items of Interest*, 1903. For those who wish to look more thoroughly into this subject I have brought with me some reprints of that article which I will gladly distribute afterward to those wishing them. The illustrations therein will probably be of some help.

A short time before the death of Dr. Bonwill it was my good fortune to spend some time in his office in Philadelphia and to receive instruction along the line of work which I will try to present

*Read before the American Dental Society of Europe at London, August, 1908.

to you today. Dr. Bonwill labored his entire life, with little success, in having his methods unversally accepted in the dental profession.

It has undoubtedly occurred to you that a person wearing artificial dentures cannot bite nearly so hard as a person with his own natural teeth. The stress in biting with artificial teeth comes entirely upon the gums and palate, and while one is able to exert as much muscular strength as formerly, it cannot be done because of the tenderness of the mucous membrane. Tests have frequently been made to ascertain the amount of stress one can exert with his natural teeth, and it may be surprising to some to know that enormous pressures have been recorded by several dentists. Dr. Wedelstaedt of St. Paul, who has made many experiments in testing the power of the human jaw, wrote to me some time ago that he had a patient who was able to exert a pressure of 350 pounds upon the molars. Now we all know that such results can never be obtained with artificial dentures. With full upper and lower plates a pressure between 20 and 30 pounds is the average. With full upper plates and natural teeth below the average is between 30 and 40 pounds, while I believe one dentist was able to record a pressure of 80 pounds.

What I wish to impress upon you is the deficiency in the amount of power exerted upon artificial dentures. We have the old records of Dr. Black showing the power necessary to masticate our principal foods. It may be well to mention several of these tests:

	POUNDS.
Boiled corned beef, nice and tender	30 to 35
Beefstake, medium	40 to 60
Beefsteak, well done	45 to 65
Beefsteak, rare, very tender	35 to 40
Beefsteak, tough	60 to 80
Mutton chops	30 to 40
Roast veal, tender and nice	35 to 40
Pork chops, loin	20 to 25
Boiled ham, tender	40 to 60
Cold boiled tongue, central part	3 to 5

Therefore it is an impossibility for one thoroughly to masticate food with the artificial teeth now sold to us by the dental depots. The bicuspids and molars are usually much smaller than natural ones, but worse than that, they are practically flat on their occlusal surfaces and entirely too smooth. The manufacturers will probably

never remedy this to satisfy all practitioners, still they can make wonderful improvements.

We will see now how we can use the present form of teeth and supply a patient with artificial dentures with which he can masticate his food with a degree of satisfaction.

Take your impressions of the patient's mouth any way you prefer and from the models prepare the bite plates. The old "mush bite" is absolutely out of the question. Make over the model a base plate of warm, sheet, pink paraffin wax or ideal base plate material, trimming it to the desired form. After this several sheets of wax are warmed until quite soft and with the fingers are quickly pressed and drawn out into a square rope of about five inches in length and half an inch in thickness. This is curved upon the base plate upon the model following the ridge, and sealed to the base plate at all points. It is then properly trimmed to be tried in the mouth to ascertain the fullness of the lips and face and the length of the teeth. The wax should be just about the length of the lips when they are in a state of rest. The length of the wax will represent the length of the teeth. Prepare and fit the upper bite plate first in the mouth, and then the lower. When both are of the correct size and strike uniformly over their entire occlusal surfaces allow the patient to bite, not too hard, but be sure the lower jaw is resting properly in the glenoid fossae, not being thrown forward or to the side. When certain the relationship of the jaws is correct, seal the upper and lower wax plates together, make a mark on the wax indicating the median line of the face and withdraw them from the mouth, place them immediately back upon the models and prepare to mount same upon the articulator. I prefer the Bonwill anatomical articulator, and will describe the method of mounting the models upon this articulator.

Place the articulator on a flat surface, the bows pointing toward you, throw back the upper bow and place the models on the lower bow. Now take a pair of dividers and measure the width of the condyles of the articulator by placing the points of the dividers in the little hole found at each side of the articulator just in front of the springs. Remove one end of the dividers from the hole and swing it around until it reaches the median line marked in the wax at the union of the upper and lower bite plates. Do the same on the opposite side. This is to be sure to get the models in the center

and forms an equilateral triangle on the articulator. I would like to say here that Dr. Bonwill received the "Divine Inspiration," as he called it, which caused him to construct the anatomical articulator from the Cathedral of Cologne, Germany. When he visited this cathedral his attention was attracted by the image of Christ on the cross, and while studying this he suddenly noticed that from the tip of the finger of one hand to the tip of the finger of the other, and from the fingers to the toes formed an equilateral triangle. As soon as he realized this he thought perhaps the human jaw was also constructed in the same way, and with a determination to find if this were correct he measured hundreds of skulls and found that the distance from condyle to condyle and from the condyle to the median line of the lower incisors at their incisive edges was practically the same, forming an equilateral triangle. From this discovery he invented the anatomical articulator.

After the models are in the proper position on the articulator the upper bow is allowed to drop down again in a horizontal position, being careful not to disturb the models. Plaster is then added to the upper model and bow, first allowing this to harden, when the articulator is turned over and the lower model is made secure. If one places plaster immediately on the lower bow and the models set down in it, it may become hard before the models are placed in their exact position by measuring. Meanwhile we have selected the teeth to be used for the case, and I may say it is always better to use single teeth wherever possible, but block sections can be used when they are indicated. The incisors should have a fairly long overbite; the bicuspids and molars should be quite thick occluso-gingivally.

Thick bicuspids and molars will not become weakened by the necessary grinding, but if the teeth are selected without any attention being paid to this part, they may be useless for our purpose.

Now we are ready for really hard work, that of grinding the teeth to proper form. The upper centrals, laterals and cuspids are ground from the lingual surface to sharp incisive edges.

The lower incisors and cuspids are ground upon the labial surface to sharp incisive edges. This being accomplished, a portion of the wax to one side of the median line is removed from the bite plates and the teeth placed in position, the uppers being just the length of the upper bite plate and the lowers just the length of the lower bite plate, the lowers a little to the inside of the uppers, so that in obtaining the overbite the uppers will overlap the lowers.

Now with a sharp knife remove a thin partion of the wax from the entire occluding surface of one of the bite plates; this will allow the bows of the articulator to come closer together and by cutting little by little from the wax you can obtain the exact overbite which you wish.

Now is the time when the movements of the anatomical articulator come into use. Grasp the upper model in the left hand and the lower in the right and move the lower first forward and then to the side to see if the upper incisors and cuspids strike the lower incisors and cuspids evenly on their incisive edges. If not, arrange them immediately so that they do. One tooth must not strike harder than another. The process of grinding the bicuspids and molars is a little more difficult. The overbite given to the incisors will determine the depth of the sulcate grooves in the bicuspids and molars; if the overbite is too great it will require the sulcate grooves to be made too deep, thereby weakening the teeth. The groove in the lowers is made in the occlusal surface toward the lingual portion of the tooth, then the buccal surface of the tooth is ground considerably away, making the buccal cusps sharp.

The upper bicuspids and molars are ground somewhat similarly except that the sulcate groove is made in the occlusal surface, but toward the buccal portion of the tooth, and the lingual surface is ground to make the lingual cusps sharp.

In arranging the bicuspids and molars upon the wax we must start with the lower first bicuspid. The incisors and cuspids form the segment of a circle, but at the distal surface of the cuspid the circle is broken and the sulcate groove of the lower bicuspid is pointed toward the inner border of the ramus of the jaw. Another very important step is to place the bicuspid a little lower than the cuspid.

Instead of placing all the lower teeth in position immediately, the first bicuspid above follows the first bicuspid below. It is placed to occlude properly with the lower bicuspid; if the latter is placed correctly the upper bicuspid can be pressed easily to place without following any general rule.

Now move the lower bow again to the side to see if these teeth articulate correctly. If the incisors come in contact before the bicuspids, then you will know that the sulcate grooves in the bicuspids were not made deep enough. They should be removed and the grooves deepened. If the bicuspids come in contact first by the side movement of the articulator, preventing the incisors and cuspids

from articulating, then we know we have ground the grooves too deeply, in which case the cusps would have to be shortened.

Next comes the lower second bicuspid, it being set a little lower than the first bicuspid; following this with the upper second bicuspid. After each tooth is placed in position the lower model should be moved to the side to see if the articulation is correct.

The lower first molar is the next tooth to follow; its mesial cusps are the same height as those of the second bicuspids, but the distal portion of the tooth is inclined upward. The second lower molar is placed the same way, but inclined still more upward.

After the upper molars are placed in position one side of the case is completed. Then begin with the opposite side, starting with the incisors first and following exactly the same rules.

When all the teeth are in position we must determine if the vertical curvature is correct. Bring the lower model directly forward until the incisors touch on their incisive edges. In this position the bicuspids and first molars must swing free, not articulating at all, but the distal cusps of the lower second molars must strike the buccal cusps of the upper second molars. This prevents the plates from tipping in the back when biting on the incisors. We are not yet finished with the case. Move the lower model to the right. Now all the teeth on that side must come in contact from the incisors to the second molars, but on the opposite side the only teeth which come in contact are the upper and lower second molars. The buccal cusps of the lower molar strike the lingual cusps of upper molar. This prevents the plates from tipping on one side while biting on the other.

When that is in order move the lower model to the left and see if all the teeth on that side come in contact, while on the right only the second molars strike. The wax plates are now ready to be tried in the mouth before finishing.

In describing the movements of the articulator and the articulation of the teeth I have given you nothing new whatever; every perfect set of natural teeth articulate exactly in this way. The only difference between artificial teeth made in this way and perfect natural teeth is the method of grinding the former.

I have never been able to find a laboratory man who would make plates to suit me, so I grind and arrange the teeth myself. I have been amply repaid for all the extra night work I have done, because the patients at times are very grateful.

COMPRESSED AIR IN DENTAL THERAPEUTICS.*

BY A. W. HARLAN, M. D., D. D. S., NEW YORK CITY.

In presenting a few thoughts on the use of compressed air in Dental Surgery my only aim is to interest those who have not used it. Before specifying the known uses of air, I may say that I use a Cleveland beer pump, which is located in the basement of a building nine stories high. There is a tank holding 60 gallons, and as there is a constant flow of water we are not lacking for a supply of compressed air up to 60 pounds to the square inch. The pipe, coming through the elevator shaft, is ½-inch in diameter, and the block tin pipes leading to the laboratory and operating rooms are ¼-inch. We have two gauges, 1 to 25 lbs. and 25 to 50 lbs. So we can use air at any degree of force required. The soldering outfits are attached to the 25-50 pressure, and the T outlets are for dry air and use at the chairs. The air is sterilized with aseptic cotton wool in a metal or glass bulb just before the exit, at the T. With suitable glass bottles and hard rubber or metal attachments we are able to use H_2 O_2 or any antiseptic solution on the mucous membrane around crowns, under bridges, over and under the tongue, in the pharynx, the nose, or in the socket whence a tooth has been extracted. You can attach needles of hypodermic size to irrigate the sockets around teeth, and at low pressure to irrigate the antrum, when advisable. The easiest and simplest manner of spraying a putrid root canal before and after adjusting the rubber dam is to use a spray loaded with a favorite antiseptic or disinfectant. In a few minutes more can be done with compressed air than with the labor entailed in sealing the root canal with a drop or less of the drug you are using for days. You can use a local anesthetic—very dilute—on the gums before removing pulps from the roots of teeth. With a fine needle a small quantity, ½ per cent solution of cocain, may be driven into the socket at intervals by your assistant. Compressed air will keep the field of vision clear in removing serumal deposits from the roots, and will keep blood and saliva away so that an operation can be done in half the time with its use.

In the disinfecting of roots it can be used hot or cold until all

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moisture is practically removed. You can force oils or other substances into the putrid roots, and sensitive tissue becomes insensitive if you apply the drug to the cavity before sending the stream of compressed air into the cavity. In cases of erosion and abrasion of walls of teeth I direct my assistant to send a stream of air before I paint them with silver nitrate or carbonate of potassium. After the removal of a third molar, this is my favorite method of irrigating the sockets. Six or eight bottles are sufficient for all ordinary uses at one operation, although there might be sometimes occasion for using some special anesthetic in an extra bottle or two. A favorite formula for cleaning the mucous membrane is:

℞ Resorcin .....Gr. LX
Boro-Glycerin .....Gr. L
Betanaphthol .....Gr. XL
Oil of Sweet Birch.....Min. XV
Alcohol .....℥ IV

M. S.—Dilute with water to suit. Instead of using alcohol you may use Eau de Botot or any agreeable tasting or smelling disinfectant.

THE USE OF HIGH FREQUENCY CURRENTS IN DENTISTRY.*

BY DR. WILLIAM DUNN, FLORENCE, ITALY.

To many of those who are here assembled, the subject I am about to speak of is quite familiar. To others, however, it may be as it was to me some years ago, a perfectly new field for investigation and research.

I have found the work and the subject so interesting, so open to future possibilities, that I venture to report some of the results obtained, hoping that others will give me the benefit of their advice and experience.

I owe much of my practical knowledge on high frequency currents to my dear friend and colleague, Doctor Luigi Arnone of

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Florence, who has helped me in every way and taught me many useful points.

His many attainments, covering the whole field of dental electricity in all its manifestations, entitle him in my eyes to be considered a specialist and pioneer in this line of work.

The discovery of high frequency currents, following closely on Tesla's experiments on high tensions, now dates back some fifteen years or so. The Tesla coil is still one of the essential parts of our apparatus.

I believe it was Professor D'Arsonval who first studied the therapeutic action of these currents; and to Dr. Didsbury of Paris, in conjunction with Dr. Regnier, must be credited the merit of having first applied them in dentistry in 1901.

As we know, high frequency currents are essentially a form of alternating electric energy, endowed with from 100,000 to a million oscillations a second at a potentiality ranging from 50,000 to 300,000 volts, but of extremely low intensity, only about 150 milli-amperes. Compare this with the ordinary street lighting alternating currents: 50 oscillations a second, 150 to 300 volts. Strangely enough these low frequency currents are dangerous, often fatal, whereas the high frequency currents are not perceived by human beings.

The currents are endowed with peculiar and valuable therapeutic properties. They stimulate and excite vital functions to a prodigious extent, deluging with ozone the part under treatment.

Local anemia is produced, of a transitory nature, with marked diminution of blood-pressure. By a longer application numbness is induced after 8 to 10 minutes, in many cases amounting to marked local anesthesia, so that the finger-nail can be driven into the tissues without giving pain.

The third stage, which we never reach in dentistry, is that of over-stimulation, followed by mortification and actual cauterization of the superficial layers of cells.

The currents have marked antiseptic action and a notable power of attenuation over toxins.

Perhaps the most surprising action is that over cobra poison, which is greatly attenuated by a 10-minute exposure to high frequency currents, yet is not similarly affected by three hours' continuous boiling.

Having at our disposal this means of powerfully stimulating

vital functions, without inducing any corresponding depression; with an agent also possessed of antiseptic and antitoxic properties the special indication for use of high frequency currents seems to be in all pathological conditions resulting from depressed or lost vitality, or from a disturbance of metabolic functions; I refer especially to pyorrhea alveolaris.

The results which Dr. Arnone and I have obtained in the treatment of pyorrhea alveolaris and of kindred diseases of the soft tissues have been uniformly and eminently satisfactory. We have used them as auxiliaries after surgical treatment of pyorrhea, in every case with markedly beneficial effects, the gums toning up and looking healthy and hard in a short time, pus ceasing more readily than before, and the teeth bracing up readily.

A still wider scope for high frequency currents, which we already have referred to, is that of allaying pain.

I take it for granted that most of us here have had in their experience some of those painful cases of obstinate toothache, when every possible remedy seems to have been tried without avail, to the despair of the patient and dentist.

I can recall more than one such case where a ten minutes' application has been the means of affording sufficient relief to enable the patient to go home and get a good sleep, a luxury only they can appreciate who have passed days and nights in continuous pain.

As a local anesthetic in cases where cocain has been contraindicated, sufficient anesthesia has been obtained locally to perform painlessly some of the minor operations; such as lancing gums, removing roots, etc.

I must confess that in cases of deep extractions, my experience has not been so uniformly successful as Dr. Didsbury's, who reports some twenty-four cases; but I am firmly convinced, however, that this depends more upon my inability to get the best results out of my apparatus than upon the system itself. In every case there has been a decided diminution of the sensitiveness of the part; and in every case the healing process has been expeditious and clean after the use of these currents, whether the part had been infected or not.

Muscular and rheumatic pains about the face have invariably diminished and given way before these applications.

One drawback of high frequency currents is that they entail the use of a somewhat complicated apparatus. The current from the

main, which must be continuous, passes into a large Rumkoff coil, which should give a twelve-inch spark, that is to say, must have some fifteen miles of wire winding.

An especially rapid interruptor is required, the best being that known as Wehnelt's.

From the induction-coil the current is passed into the Tesla coil, connected with a condenser, such as a system of Leyden jars; or with a "resonator" (whose function it is to intensify the action of the Tesla coil) and carried by means of perfectly insulated wires to the part under treatment.

The patient, who must be carefully insulated, is seated on a chair with little or no metal about it. Grasping one of the terminals of the conductors in one hand, he himself applies the other terminal to the part under treatment.

To a bystander the current is revealed as a rain of vivid purple light pouring into the part, with occasional little flashes of what can only be described as lightning on a small scale.

If the patient has been well insulated, there is no pain, no discomfort, no sensation even, save a slight tingling, notwithstanding the 250,000 volts being poured into him with a frequency of about 300,000 oscillations a second.

The presence of ozone is very manifest in the part treated, and in the hand which has held the terminal, a proof of the electric storm that has waged thereon.

Interesting as these results certainly are from our special point of view, the Healing Art is obtaining still more encouraging results in the treatment of systemic forms.

D'Arsonval with his peculiarly constructed cage, by which the currents are made to pass round and round the body of the patient, claims to permanently cure arteriosclerotics of their troubles.

Those suffering from rheumatism, ureamia and kindred complaints find great relief in these applications.

Cutaneous tuberculosis (lupus), some forms of epithelioma, baldness, receive a decided check by the use of the high frequency current.

In Heidelberg, Professor Czerny is now treating several forms of cancer, with some success, by means of high frequency fulgurations.

Of the careful and patient work of my friend, Doctor Arnone, I shall not speak, as I trust he will soon himself give us a report of his

successes; but I may say that, so far, his results seem to coincide with mine in every way.

There is much more to be studied with regard to high frequency currents in their relation to dentistry than this brief outline of our modest endeavors can give any idea of; but it is necessary for others to join in and contribute earnest and conscientious work. If I have succeeded in interesting some of my hearers in this comparatively new field of research, I shall feel that your time in listening to me has not been wholly wasted and that the object of this paper has been obtained.

SOME VIEWS ON INFANT DENTITION.*

BY EDWIN A. GEILFUSS, D. D. S., MILWAUKEE, WIS.

The subject of Infant Dentition has engaged the attention of the medical and dental profession from their incipiency, and even up to the present day there is considerable controversy as to whether it is a physiological or a pathological process.

While up to about the middle of the last century most of the diseases to which the infant was heir were ascribed to teething, we now find among most medical writers the view that dentition has no pathological sequelæ.

The majority of dental teachers and writers, however, while recognizing that under ordinary circumstances dentition is a perfectly normal physiological process, and that the average influence of teething as a disturbing element has at times been over-estimated, nevertheless believe that it is a factor which should receive more consideration than is at the present time bestowed upon it by the medical practitioner who is usually charged with the care of the infant.

The process of teething, eruption or dentition is a complicated one and is comprised of that series of vital operations which cause the teeth to leave their crypts in the maxillæ, to pierce the gum and take their place in the dental arches.

It is as much a physiological process as the development of the cerebrum, the liver or any other organ or appendage, and has been likened to the process of the growth of the nails and hair. Ottofy

*Read before the Wisconsin State Dental Society, July, 1908.

has, however, called attention to the fact that while the teeth spring from the same embryonic tissue as the hair and nails, being of epidermal origin, they differ in the following essential points from any other developmental function.

(1) That all other organs of the body are and remain inclosed within a dermal or mucous covering from the time of birth until dissolution; the only protrusion through the integument being made prenatally by the hair and nails, and the only tissues which protrude subsequent to birth are the dental organs.

(2) The hairs and nails are devoid of nerve filaments and may be cut or mutilated without causing pain, while the teeth are sensitive organs, filaments of nerve fibres, if not extending within the prisms of the enamel cells, nevertheless conveying pain to the nerve centers if the teeth are cut or mutilated. Hence dentition is in the entire development and growth of the body a singular function, admittedly physiological and normal, and yet by reason of the exceptional difference pointed out, more liable to be pathological or abnormal than any other physiological function of the body.

The literature of the subject of teething is extremely voluminous. According to Ottofy, the index-catalogue of the library of the Surgeon-General's office contains no less than four hundred and twenty references to pamphlets, articles and papers relating to dentition—in the main to its pathology.

Hippocrates (460-361 B. C.) states that children teeth more easily when they have loose bowels, and better in winter than in summer; that they suffer with itching of the gums, fever, convulsions and diarrhœa. He knew that teeth are formed during foetal life.

Aristotle (324-322 B. C.) believed that the teeth continued to grow during the whole lifetime of the individual, and that repeated teething occurred in strong people.

Galen (131-203 B. C.) informs us that the teeth act as foreign bodies during eruption and some of his pupils advocated rubbing the gums with dogs' milk or with the brain of a rabbit in order to cause the teeth to come through more rapidly.

Aetius wrote that irritation from the teeth produced inflammation, which might extend to the ear, nose, eyes or stomach and might produce fever.

Paul of Aegina (625-690) notes the possibility of convulsions during teething; to counteract them he washes the child with a de-

coction of heliotrope and cures diarrhœa by placing a spice bag on the bowels.

According to Rhazes (860-932) proruption is easy and is accompanied by little pain when the teeth come through rapidly, but in that case they are not strong. When they grow slowly the pain is greater but the teeth are stronger.

Avicenna had similar views.

Vesalius (1514-1564) was the first to practice incision of the gum in case of a wisdom-tooth.

Eustachius verified the statement of Hippocrates that the teeth are formed in the foetus.

Ambroise Pare (1510-1599) first advised lancing of the gums in difficult teething.

Throughout the seventeenth and eighteenth century scarification was generally recommended.

John Hunter was one of its strongest advocates. He ascribed the following diseases to teething. Diarrhœa, costiveness, loss of appetite, eruption of the skin, especially on the face and scalp; cough, shortness of breath, with a kind of convulsed respiration and similar to that observed in whooping cough; spasms of particular parts, either by intervals or continued; and increased and sometimes decreased secretion of urine; a discharge of matter from the penis, with difficulty in micturition resembling symptoms of gonorrhœa in its violent form; swelling of the lymphatic glands.

Jacob Plenk (1779) adds to these: Gutta rosacea, deafness, amaurosis, swelling of the knees, paralysis, suppuration and dry gangrene.

Rosen von Rosenstein believed that any ill could result from teething and advised the preparation of the child for teething as soon as it reached the age of three months.

Girtanner (1786) adds nausea, stomach cramps, fainting and epilepsy.

Armstrong (1786) opposes these views. He did not believe teething to be the cause in all cases dying about the time of dentition.

Wichmann in 1797 ascribed the tendency to assume that dentition was so frequently the cause of disease in infancy to poor diagnosis. Beginning with Wichmann two extreme views became extant among medical writers. Barthez and Rilliet, West, Bednar, Steiner, Vogel, arrayed themselves for the diseases produced by dentition, while

Polotzer, Bouchut, Fleischmann and Jacobi opposed these views.

Jacobi in a series of lectures on "Dentition and its Derangements," appearing in the *American Medical Times* in 1860 and reprinted in the *Dental Cosmos* in Vols. 2, 3, and 4, calls attention to the fact that in the year 1857 there were reported in the United Kingdom 3,992 deaths as due to teething, of this number 3,791 children were under two years of age. Between 1845 and 1850 there were reported as having died from teething 3,466; total number of deaths from all causes 258.371, being one from teething to 74 deaths reported from all other causes.

In a careful analysis of the subject Jacobi, by showing the etiology of the various diseases ascribed to dentition, came to the conclusion that dentition per se was not a causative factor. He strongly opposed lancing.

Billard (1840) does not think dentition a direct cause of trouble. He recognizes a predisposing tendency during this time and advocates lancing.

Marshall Hall (1844) strongly advocates lancing.

Condie (1853) considered dentition an indirect factor in convulsions, ophthalmia, inflammation of the glands of the neck, etc., by drawing the blood to the head.

J. H. James (1868) speaks of the fact that Dr. Copeland and Dr. West advocate very modified lancing (to bleed), while Underwood, Sir J. Clark and Dr. Joy insist upon the necessity of relieving the tension of the gums.

Thomson (1868) believes that irritation in teething is caused by the engorgement of the blood vessels supplying the circulation to the teeth and advises cutting low down at the junction of the gum and lip.

Ellis (1869) favors lancing, taking a stand opposed to Jacobi, but ascribes benefits largely to depletion and secondarily to the removal of tension of the gums.

G. Stevenson Smith (1870) reports a case of convulsions arrested by scarification.

In the *Medical Investigator* of 1871 a correspondent speaks of the fact that, though taught otherwise in his medical school, he had lanced in cases of convulsions with immediate relief. He had been led to do so by his experience as a boy on a farm, where they had lanced the gums of colts and lambs.

J. W. White (1873) first called attention to the probability that trouble in dentition was caused by the pressure back upon the dental pulp.

J. L. Smith (1874) advocates lancing only when other measures have failed and on appearance of convulsions, etc. He calls attention to the fact that French authors are opposed to considering teething as a cause of diseases, while the English are in favor of this view.

Buckingham (1875) strongly advocates lancing.

Steiner (1875) concedes that dentition gives rise to local and reflex conditions, but opposes lancing.

The *British Medical Journal* (1877) reports a discussion of the address of the president of the Association of Surgeons practicing Dental Surgery, in which lancing was strongly favored.

Thomson in the same year expresses the belief that diarrhœa may be caused reflexly by teething and advocates lancing to produce depletion only where redness, swelling etc., is present; otherwise bowel medication and sedatives.

Yale (1879) cites a case where instant relief was given a child two and a half years old, which had been in convulsions two days, by lancing the second molars.

Penrose (1880) takes a stand in favor of lancing, but only to relieve pressure on the gums and when indicated by their appearance.

Blauchez (1882) believes primary dentition responsible for many disorders.

Meiggs and Pepper (1882) say: The evolution of the teeth, though a physiological process, is a powerful predisposing cause of diarrhœa, enteritis, cholera, inflammation and eclampsia. Laryngismus stridulus is most frequent during this period. Atropic infantile paralysis, while formerly attributed solely to dentition, is shown by more careful observation to be due to no such direct connection.

It is probable that early age and dentition only act indirectly by inducing a remarkably susceptible condition of entire spinal system.

Kassowitz (1892) strongly opposes the idea that dentition is a factor to any extent in the causation of disease.

Henoch (1893), in speaking of dentition, contends that the tendency among the laity, due to superstition and indolence, to ascribe every pathological symptom manifesting itself in a child to dentition, is the cause of much harm. He questions the position, however, of those of whom Kassowitz is the foremost exponent, who have assumed

that dentition can produce any pathogenic results, and cites cases where it was the direct cause of reflex conditions. He opposes lancing as being useless.

Thrasher (1894) states that among the barbarous and wild animals dentition is usually normal, while the young beasts confined in cages rarely survive the period of dentition. He believes that in this age of civilized refinement, abnormal dentition is the rule, and further points out the various complications which arise in connection with abnormal dentition. He favors lancing to reduce tension.

Forchheimer (1892) in a very complete study of the subject proves conclusively to his own mind that dentition has no relation to infant diseases. He strongly opposes lancing, claiming it is useless in effect and harmful in result.

Professor Horatio C. Wood strongly opposed these conclusions and defended and advocated gum lancing.

Ashby and Wright (1893) favor lancing at times; think it useless when teeth are not about to erupt, and believe relief to be due to bleeding.

Holt speaks of the fact that while the list of diseases due to difficult dentition had from year to year been shortened, and though he had formerly held the opinion that simple dentition could not and did not produce symptoms, still he had been forced to alter his views and that he was now willing to admit that dentition might produce many reflex symptoms. In his experience he had found that only one-half of the healthy children cut their teeth without any visible symptoms. He goes on to say, however, that he does not believe that lancing the gums is often required, although he had seen cases where it had given marked relief, especially where the gums were tense and swollen and very red with the teeth just beneath the mucous membrane.

Griffith makes the statement that the cutting of teeth is not as a rule responsible for any of the ailments so commonly attributed to the process.

"Slight diarrhœa, loss of appetite, feverishness, bronchitis, some eruption of the skin and especially great restlessness, irritability and other nervous symptoms may appear before a tooth is cut and disappear with astonishing rapidity as soon as it is through the gum. Remarkable improvement will sometimes follow within a few hours the lancing of the gum over an approaching tooth, nevertheless it is

plied for crown work were at all satisfactory. When ground they left a gritty surface, disagreeable to the patient, and very difficult to polish. To try and glaze them was running the risk of cracking.

Dr. I. Davenport, of Paris,

Fully concurred with everything Dr. Davis had said and emphasized the importance of the final trying in the mouth after having used the Bonwill articulator.

Mr. George Northcroft, of London,

Was very glad to hear Dr. Davis support the anatomical articulation of artificial teeth, but thought he hardly went quite far enough. Bonwill's work was done several years ago, and other investigators had followed in his footsteps and had suggested more perfect apparatus and had obtained better results. There was very little doubt that with the Grittman articulator combined with the use of a Snow bow better results could be obtained than with the Bonwill articulator. The use of the Snow bow enabled one more nearly to reproduce the individual curves of the condyle and glenoid fossæ, which was considered by modern writers a very necessary matter in articulating artificial dentures in individual cases. Probably Dr. Davis was not aware that there were anatomical teeth now on the market made on the lines suggested. Mr. Hubert Visick induced a firm of English manufacturers to get out patterns to avoid the necessity of so much grinding of the surfaces of teeth, and those teeth, although not quite ideal, were the most satisfactory at present on the market, and saved an enormous amount of time. Mr. Booth Pearsall had suggested that it was a good thing to apply the principle of anatomical articulation of artificial teeth to crown and bridge work. He himself had found it extremely useful in setting up cases to reproduce the motions of the jaw in crown work as well as for artificial dentures.

Dr. W. Mitchell

Said the subject was one in which he had been interested for a great many years, and he was delighted that Dr. Davis had brought the matter before the society. He concurred with what Mr. Booth Pearsall had said in regard to not understanding the ideals of the late Dr. Bonwill, but it was quite possible to at least partially grasp his meaning. The triangulation and mathematical arrangement of teeth must necessarily be arbitrary. Nature as a rule did not duplicate. In arranging a set of teeth there were controlling conditions, especially when the patient required a full upper and lower denture. Changes

had been going on and in all probability teeth had been lost that made a different action of the muscles necessary in mastication. He quite agreed with what Dr. Northcroft had said with regard to the advancement made in connection with the Grittman articulator, and Dr. Snow's articulating bow, the latter of which he had never found occasion to use. He was, however, one of the first to see his articulator and to see him use it, but he could not discover that it was other than an arbitrary arrangement. He gave his fancies scope and combined the articulator with the old methods, and the outcome was that he was able to do much better work. He agreed with Mr. Pearsall as to the necessity of judicious and intelligent arrangement of artificial teeth by the dentist himself. The average workman at the bench could not understand the requirements of the patient, and consequently the dentist who shirked the difficulty of antagonizing a set of teeth was doing his patient out of some of his intelligence and best efforts. The dentist was just as much under obligation to do that as to put in the best filling. In considering the curves in the arrangement of artificial teeth the necessity was for the plates to antagonize at at least three points. It could be so arranged that it was practically impossible to tip either an upper or a lower denture. He quite agreed with what had been said with regard to the distorted teeth that had been forced upon dentists for so many years. Some years ago he read a paper before this society on the subject with regard to anatomical relation and coloring, and advocated the condition of affairs presented that morning. He utilized to a considerable extent the principles laid down by Dr. Davis. He quite agreed that if dentists were shoulder to shoulder in demanding the things they desired they would get them, but the demand must come from men who were not afraid or ashamed to do their own work. There were many people who looked upon prosthetic dentistry as a thing with which they would not soil their fingers, but such men he did not consider to be dentists.

Dr. William Hirschfeld, of Paris,

Asked Dr. Davis whether his patients objected to the noise of artificial sets, and whether in that case he was compelled to replace the back teeth by rubber. Also whether he thought it was professional to do such work.

Dr. L. C. Bryan, of Basle,

Said the difficulty of getting an ideal set of teeth was very great, and

some charity had to be extended to the manufacturers in considering their efforts. The trouble was that every man who made artificial teeth had his ideal, but it was not the ideal of other men. The manufacturer, therefore, had to make a general average and furnish something that had to be modified by the grinding wheel. It was, so to speak, getting out of a block of marble what each man considered the ideal for helping his patients in the best way. Nature did not often make an ideal set of teeth. A studious dentist in Zurich was desirous of getting an impression of a certain set of teeth in which certain points articulated perfectly, and in which certain conditions existed. He advertised for young women between certain ages to appear at his office to have impressions taken. Although he had three or four thousand patients in his practice and was anxious for such an impression, he had never been able to obtain one. Nature so seldom gave an ideal set of teeth that he thought dentists must be satisfied to do the best they could with what the manufacturer gave them. ("No, no.") What the manufacturers said was that there was no market for ideal teeth and that not one dentist in a thousand would take them. Manufacturers would not make an article of which they could not sell at least 10,000 of the one pattern; in fact, the whole question was a commercial one. If the society would adopt a number of ideal forms and agree to support the manufacturers in purchasing them, or if the society would agree on an ideal and undertake the expense of manufacture, something perhaps might be done. For twenty years he had seen the question agitated, but nothing had resulted.

Dr. J. W. Gale, of Cologne,

Said that for years, instead of trying to caliper the distance, he simply used very rigid steel wire of different lengths. With an instrument he made a round hole in one of the casts and set in a little double right angle caliper and made a little scratch on the upper, and at very short periods, while articulating, took a little staple and proved the bite to see whether it had lengthened or shortened.

The President

Had been very much interested in the paper, but there was one point he thought he must have misunderstood. Dr. Davis mentioned that in making his base plate he used paraffin wax, but he himself had found that the use of paraffin wax caused difficulties because it softened so readily in the mouth.

Dr. Davis,

In reply, said a wire could be put in the paraffin wax to prevent it from setting and the patient was not required to bite too hard; it was not a question of bite at all. It was simply to be sure of getting the jaw in the natural position and taking a hot instrument and sealing the two plates together. One could use ideal base plate material, but he did not like it because it was too thick. He thought Dr. Gale's idea was very good. Dr. Bryan's remark about the manufacturer not making the teeth unless it paid him to do so commercially was perfectly true. Nearly all the manufacturers had taken off the market the old celluloid teeth, which were very beautiful, and a great many others were taken off, continuous gum teeth, because they were not used sufficiently to pay for manufacture; in fact, they had gone backwards instead of forwards in teeth making. The question was: Could the manufacturer make the teeth as sharp as required? Some men would not want them sharp, but others would. Dr. Grittman of Philadelphia, who was Dr. Bonwill's assistant for years, and a great many other men who were followers of Dr. Bonwill, used the method described and required sharp teeth. When he first started to set up teeth in the manner described it took him eight hours to set up a full upper and lower, and he had never been able to do it in less than two hours. There were, no doubt, a number of very good articulators, but he had something that satisfied him and it was no use his trying other things. He had no desire to say anything against any other articulator. Eight or nine years ago he was one of the demonstrators in the Chicago College of Dental Surgery, Chicago, when Dr. Grittman came with his articulator. No one moved the articulator properly, simply moving the hinged motion up and down without understanding the side motion. He himself moved the jaw to the side and the only teeth that came in contact were the two cuspids. There could be no bite in such a case. With regard to the bow, one side of a patient's jaw might be developed more than another, and it was not a definite way of arriving at a proper measurement. With regard to Mr. Pearsall's remarks, it did not matter how one began as long as the work was accomplished afterwards. There was not a tooth but what he had to grind. Usually the molar and bicuspid had a very thin, lingual cusp with the buccal cusp very long, and the first thing he had to do was to make the buccal cusp the same length as the lingual before he began to cut the grooves. With

regard to the gritty surface of ground teeth, the teeth could be polished sufficiently to satisfy the patient. He had asked Dr. Bonwill whether the patients did not object to the sharp edge, and he said he had had patients who chewed holes in their cheeks, but they got over that in a couple of days. In such cases the outer edge could be smoothed off a little, but he did not do it unless it was absolutely necessary. Dr. Grant Molyneux of Cincinnati had published an article in the American Prosthetic Text-Book in which he gave a very good idea of alignment of teeth. Many patients ordered two, three and four sets of teeth, and not long ago a man came to him who said that, although he had four different sets of teeth made by four different dentists, he could not eat. The man was over sixty, and asked for a set of teeth with which he could chew. He said: "If you will agree to make me a set of teeth with which I can eat, I will allow you to make them under the condition that if they are not perfectly satisfactory and better than anything I have now, I shall not pay you one cent." He accepted the terms, and that man had had two different sets made and was able to use them comfortably.

DISCUSSION OF DR. HARLAN'S PAPER, "COMPRESSED AIR IN DENTAL THERAPEUTICS."

Dr. Northcroft, of London,

Wished to know what methods Dr. Harlan adopted for warming compressed air. He had had great difficulty himself in getting the stream of air sufficiently warm, and found that it got cold very rapidly, even when passing over white hot electric coils.

Dr. Schaffner, of Florence,

Had used compressed air for a great many years and believed that Dr. Bing of Paris was one of the first to advise its use. He did not know whether he was the inventor of the system of the tank in the operating room, but he knew that Dr. Bing used compressed air in his laboratory. The idea was suggested by one of his pupils. With regard to heating the air he did not know any apparatus but that which he had used for a great many years. It was simply a little aluminum tank, through which the current of air was allowed to pass through a passage heated by a gas frame. There was a handle which could be held in the hand and from which the jet could be controlled. Beneath was a tiny little gas jet which gave an equable temperature to the apparatus. When he had finished using it he simply let the apparatus fall into a guide, which brought it into position over the

frame. In that way moderate heat was obtained; great heat was unnecessary, and if used there was danger of dessicating the dentine. The moisture was got rid of not so much by heat as by the force of the jet.

DR. HARLAN

Quite agreed with Dr. Schaffner that a great degree of heat was not required. He himself had a gas heating apparatus that kept the coil constantly heated, the jet being about twenty inches from the field of operation. That was quite sufficient, because beyond 160 degrees the patient objected. He did not think the ordinary patient knew the difference between air at 65 deg. F. and 110 deg. F., especially if it was driven against a tooth containing a live pulp. It was only when operating on a pulpless tooth that a temperature was required above 110 or 120. It was almost fatal to extract all the moisture. It was only, as Dr. Schaffner had said, the force of the current that caused the evaporation of the moisture to the extent necessary for the treatment of the case.

DISCUSSION OF DR. DUNN'S PAPER, "THE USE OF HIGH FREQUENCY CURRENTS IN DENTISTRY."

DR. JENKINS, of Paris,

Asked if the high frequency current had ever been noticed to have any pathological action on the tissues of such cases as Dr. Dunn had had under his care.

THE PRESIDENT

Was afraid Dr. Dunn had brought something before the society which very few of the members were capable of discussing. The paper was so interesting that he did not wish it to pass without extending to Dr. Dunn his sincere thanks for it. Electricity seemed to be one of the forces which were very little known even now, but he could not help feeling that in the hands of the dentist it would prove of great benefit and be largely used in the future.

DR. WILLIAM DUNN

Said Dr. Jenkins' question was an important one. There was a danger of overdoing it, but there were many guides as to the limit of its application. Except the use went beyond eight or ten minutes, within 300,000 oscillations a second, no results were obtained but stimulation. Beyond that there was cauterization. Szerny, who was treating cancer with the current, was cauterizing the surface of the

epithelium and found there was great reduction on the surface in the formation of the cells.

WISCONSIN STATE DENTAL SOCIETY, LA CROSSE, JULY, 1908.

DISCUSSION OF DR. GEILFUSS' PAPER, "SOME VIEWS OF INFANT DENTITION."

DR. W. C. WENDEL:

This subject is a very extensive one and has received possibly more attention from the medical profession than the dental. There are two causes for that. In the first place, the physician is closer to the family during childhood than the dentist is. Then there is a feeling existing between the physician and the dental practitioner as to how far the medical man has jurisdiction in oral diseases, such as the rhinologist and ophthalmologist claim, and as to where they begin and how far they are allowed to go. There are some that claim, for instance, that in diseases of the antrum, or nasal passages, the oral surgeon or dentist has no right to encroach, and that it should be left to the medical practitioner. However, these diseases are so closely associated with one another, and the diseases of the teeth, and also the eruption of the teeth, that it is hard to differentiate as to where the dentist begins and the medical man has a right to follow.

The doctor has been to a great deal of labor in securing the different statistics and opinion of the medical profession, and has delved into the literature of the subject, to formulate the opinions and facts from the different practitioners. He takes you back to Hippocrates in 450 B. C., and tells you that at that time, and even up to the fifteenth century possibly, they paid more attention to diseases and had more pathological conditions from defective dentition than at the present time; that they laid all of the diseases of children, mostly, to the matter of teetching. He also tells you that Aristotle, whose time was about one hundred years afterwards, takes up this subject. In 100 B. C., Galen's time, they had not only specialists, the same as we have to-day, of dentists and physicians and veterinary surgeons, but that they also had, as I understand it, chicken specialists. We have to consider the embryological con-

dition as well as the histologieal. The embryologist tells us that in the human being the three primary layers of the germinal membrane are the epiblast, the mesoblast, and the hypoblast. The enamel of the teeth is derived from the epiblast, the dentin from the mesoblast. The osseous portion is taken from the middle or mesoblast layer. The epiblast is also productive of the epithelium. The mueous membrane existing in the mouth is continuous, and takes in, as the doctor tells you, the pharynx, the esophagus and the stomach, and also the larynx and the bronchial tubes, and they are all more or less affected. We find that the mucous membrane covering the mouth is not so hard or callous as the gum line. In dealing with this subject of difficult dentition we have to eonsider the deciduous teeth more than the permanent. What we call Meekel's cartilage appears perhaps in the forty-eighth day of foetal life, and extends out in bow-shaped form, and is united at the symphysis. Calcification takes place about the eighteenth month, but is not entirely complete until later. The superior maxilla takes similar movements, with this exception, that it is sometimes defeetive, and in three parts, and perhaps this is due to this fissure which we have, and forms occasionally what we call cleft palate, union not properly taking place in these parts. The support of the lower maxilla receives pretty near all of its growth on the lingual side, and backward; that is to say, when your lower jaw is praetically formed, you have no further outgrowth, but the growth is backward, bringing the jaw forward.

Another thing—this is diverging a trifle—perhaps the size of the tongue has a great deal to do with the expanding, and I think you will find where you have a large tongue in the individual's mouth that you are less liable to have irregularity in the teeth than where you have a small tongue. That is not necessarily the ease, but you will find it. The middle of the second month is when the first enamel germ makes its appearance. We have always been taught that the enamel germ, or what we call the dental papilla or sac, is formed from one tooth, and buds out from that to the others. That does not seem to be the case, but we have a tooth bank; in other words, the epithelium presses down and you have the buds of all the deeiduous teeth, twenty of them, distributed in a line. These are distributed also in eonjunction with the first permanent molar. There is a tendon or cordon around them, and it is supposed that this tooth band

is for the purpose of holding these teeth in line. Now we want to take into consideration the eruption. The incisors are erupted first, and there is not much difference between the upper incisors and the lower. The lower are erupted a trifle earlier than the upper, but yet practically they are about the same. Now, what causes the forcing of the deciduous teeth through the gum? It has been said that it is due to the force of the permanent teeth; but this is not true. Their pressure is not brought directly at the apex of the root of the deciduous tooth, but laterally, or one-third up on the line of the tooth, and therefore does not produce a direct pressure upon the nerve. It evidently must be due to some other source than the pressing of the permanent teeth. What the element is that enters into the absorption of the deciduous teeth the embryologist and the histologist so far have not given us any light upon. There is a good field here for some of our young men to investigate. Is it the odontablast that reabsorbs and forms a sac and destroys the deciduous teeth, or is it some other cause connected with the development of the permanent teeth? The permanent tooth sac, and the tooth, lies slightly on the lingual side of the erupted deciduous teeth. There is another question for our medical and dental practitioners, and that is where we have inflammation existing in connection with difficult dentition, whether that inflammation takes place more extensively in the eruption of the incisor teeth, or does it produce more of an inflammation under the eruption of the molar teeth? I am under the impression, from observing different conditions, that it is more extensive in the molars, because there they are more subject to convulsions. You will find that in the child of about a year to eighteen months. There is a reason for that. You know the bicuspid, when it is erupted, comes between the bifurcation of the deciduous molar. When the permanent tooth is pressing against the temporary tooth it is not completely calcified, and you must be careful about the extraction of the deciduous teeth too early. I have seen deciduous teeth extracted and the permanent crown clinging between the bifurcation.

The histologist and embryologist are not telling us what is producing the convulsion. Is it caused from the permanent tooth in its development, or from the deciduous? The practitioner of medicine as well as the dental practitioner ought to observe when the diseased conditions exist in a child, and ascertain whether there is a thicken-

ing of the mucous membrane or the tissue above it. If you do lance the gums you ought to be very careful that the tooth is making its appearance, and close to the surface. It is often the case that inflammation exists for a time, and you have what you would call a restlessness of the child, a feverish condition, sleeplessness, the diarrhœal condition, and you have all the symptoms of a fever. It will continue for some time, and it will naturally come back to a normal condition again. Now, if that condition exists previous to the time of the eruption of the teeth I would not think it advisable to lance the gums. I think where lancing is to be done it would be well to call a dentist in consultation. Dr. Geilfuss has quoted men who have simply scarified the gum, and I do not think the scarifying does any practical good. I do not think the dental practitioners of the present time uphold this system of scarification. If you are going to make an incision make it deep enough; and also use judgment in regard to the eruption. The sixth month is the time for the eruption of the central incisors, and the others come in at the seventh to the ninth month. The completion of calcification is about at the age of two years, therefore any disease that might exist after that time you must take into consideration that it is probably due to the eruption or the forcing of the permanent teeth rather than the deciduous teeth. We ought to try and bear that in mind, because I think that is the cause of a great deal of trouble. You will find in the statistics given by Dr. Geilfuss that 3,000 out of 200,000 died from a difficult dentition, or a pathological condition at that time; and 200 out of 3,000 that died from teething were over the age of two or two and a half. Two hundred out of 3,000 died after proper calcification had taken place.

Destruction of the roots, or decalcification, takes place at the age of about four years, when the deciduous roots are entirely destroyed. So if there is any pressing of that kind it must be from some other source, and we do not know what the elements are that enter into the destruction of those roots. I will give you an instance with my own child. He had a feverish condition, with restlessness, drooled at the mouth, and he was suffering a great deal. I had him playfully between my feet, sitting on the floor, and I took a lance and lanced through his gums. He was soon happy and prattling with me, even though I did punish him just for a moment.

Another case, of a child about four years old who was brought to me with a large abscess, and the physician exacted of me that I extract the second deciduous molar. I objected to it, and did not want to extract that tooth. He insisted upon my taking it out. I told him I was quite certain that the pulp was alive and all right. He had used a poultice and drew the abscess, and there was a discharge right below the maxilla. I took the forceps and extracted the tooth, and I found two little nerve fibres extending from the deciduous roots, the tooth was perfectly formed, and showing no diseased condition. But, after extracting that tooth, the abscess healed. It certainly was due to some other pressure besides the eruption of the tooth in itself. Whether it was the permanent tooth, or what caused his trouble, is more than I can tell.

Dr. B. G. Maercklein:

I desire to congratulate the author of the paper upon his most thorough and efficient manner of presenting this subject, and upon the research that was necessary for him, and the work in connection with it. If we had a few more such papers, and we would take a few of them before the medical societies and read them, I think it would do as much good as we can in our own society, if not more. In regard to the different opinions of a large number of the authorities cited by the essayist, it is very easy to explain how some of these men came to the different conclusions. It has often been said that ignorance is the stumbling block of almost all our ills and misfortunes. That is true in these instances. A large number of these writers are not conversant with the histology and embryology of the teeth. If they had been, their opinions necessarily would have been different. Nor is it reasonable to believe that what they called "lancing" was proper lancing. It was probably only scarification. The tooth originally is formed out of a complex follicle, known as the dental follicle, consisting of the dental organ, the dental sac, and the enamel organ, and it is all a soft or jelly-like mass, highly supplied with nerve filaments, which are necessary to development. When ossification takes place and enamel is formed, that portion is forced gradually, by a systematic contraction of the dental sac, to the surface, where the tooth is about to erupt. If nature goes on in a rational way and works harmoniously step by step, the absorption of the gum tissue overlying the crown of the tooth takes place as fast as the sac con-

tracts at the bottom of the root, and you have normal or physiological dentition. When there is some interference with these two processes, forming a tooth and absorption of the overlying tissues, there is a pathological condition which results, and you get pressure on the pulp mass, which is then in a soft and highly sensitive condition. The dental sac contracting around the root, trying to force the tooth to the surface, and the resistance of the gum surface is so great that it cannot proceed, then you have the same condition as results from a pressure upon the exposed pulp in a full formed tooth. The doctor has explained the situation. The sympathetic system is capable of producing almost all kinds of complications in the child up to the point of convulsions. If these medical writers understood the process of the formation of the teeth, and understood relieving the pressure, not at the gums, but at the apices of the roots, where the vein is, they would all agree upon that subject. Now, the men who have given that subject thought and study, and found it to yield results in practice, are absolutely unanimous on the value of lancing the gums in difficult dentition. It does not matter whether they are temporary or permanent teeth. There are very serious complications often setting in at the eruption of the first permanent molar; just as complicated as at the age of six months or two years. I have had considerable experience in that particular line. I have often been called in. It is a fact that dentists are not properly consulted in connection with these cases by the medical profession. A large amount of relief could be instantly given if they were promptly lanced at the proper time. Dr. Wendel has referred to his experience in his own family. I have had quite a large number among my relatives, cases where it has even gone to the extent of convulsions, and I have given absolute relief by lancing the gum where the teeth were still a quarter of an inch below the gum. Now, the lancing does not mean a mere scarifying, but lancing until you strike the form of the tooth, so that the tooth can make its exit. On a double tooth it is necessary to lance in the shape of a cross, striking the highest points of the cusps.

Dr. Harvey N. Jackson:

I am not going to talk very long, and I hope you will be patient with me. I used to sit with "Eddie" before Dr. Truman, and listen with him, and you may well imagine that I feel just the same as the

doctor does on this proposition of lancing the gum, but I have this advantage over Eddie, I have three youngsters and he has but one. I have not only lanced their gums, but have repeatedly lanced them; and my wife has done the same thing. If scar tissue formed we would lance it again, and always with good results.

There are one or two other points that I want to mention; one is with reference to the use of the lance, and with regard to winding it with a fine cord down to about the depth you wish to lance, if you want to be real safe. Wind it down to about the distance say, of one-sixteenth of an inch. You won't ordinarily want to lance deeper than that. As the doctor says, simple scarification does very little good. You should lance until you touch the tooth, and if you wind your lance in that way it is safe. The old ladies and the aunts will sometimes say, "Don't lance the gums," and they will ask daddy to get an old quarter out of his pocket, and they will take a corner of it and rub on the gum, causing the child a whole lot of pain, to say nothing of the danger of infection.

Another point I want to make is this: that the cuspid teeth will sometimes deceive you, because of the tough membranous ring that forms around it after the cusp is really erupted. It will remain in that condition for some time, and must be clipped to bring relief.

Another point: As to palliative remedies, we have found that the use of a little ice teat, instead of a sugar teat, is beneficial. Take a little piece of ice, about as large as a marble, and put it in a piece of muslin. We found that it was the next best thing we could use for the children. It cooled the parts, lessened the hyperemia and inflammation, and in that way gave a great deal of relief. Of course antiseptics, listerine, etc., are a help.

Another thing that I have observed: We have had two bottle-fed babies, and one breast-fed baby, and I have noticed that the bottle-fed babies did not erupt their teeth at the normal period. I have noticed that repeatedly. They do not erupt their teeth as early as the breast-fed baby. Two of ours had no teeth erupted until they were a year old. Now they are perfect and all right. That is one thing that you will run up against as practitioners. Mothers will worry you, about children who arrive at eight or nine months and haven't any teeth erupted. Some children will erupt teeth at five

months. Assure these mothers that there is nothing to worry about. My observation has been that there is very little to that schedule which we have been taught so many years, so far as the question of the period of eruption is concerned.

Another point with regard to the blood pressure theory as the cause of erupting these teeth. It seems to me to be the most plausible and sensible reason for the eruption of the teeth that has been given. I think it will stand the test of sound reasoning better than any other theory that has ever been expounded. Now you have all seen in the pictures the wavy line that these crypts represent. Force is exerted by the blood pressure upon these open crypts, and later on, as the pulp chambers slowly close, there is less pressure, until they are in position and erupted, and the apices gradually become closed, or nearly so. That, to my mind, is the best theory that has ever been given for the eruption of the teeth.

DR. RASMUSSEN:

I think one of the most important things brought out is that of lancing the gum. I want to call your attention to a couple of cases which came under my observation. Speaking of the permanent teeth being as important as the temporary, I wish to say that a girl twelve years old came to my office who had not slept for a week. She had been suffering from convulsions. I looked in her mouth and found a strip of gum about a quarter of an inch wide stretched over the second permanent molar. I took the lance and cut it, and she went home and slept.

Another case: The story the mother tells me is this: At the time the child was about twelve months old she became very restless. They called in their family physician, and the child kept getting worse and finally went into convulsions. She suffered from convulsions for about six weeks, and was treated for a great many things, among other things tuberculosis of the brain. She says that after six weeks one day the fourth molar tooth erupted, and the child never had another convulsion; up to this day the child is a cripple. She is paralytic; the right side is paralyzed and always will be. She has very little use of the right arm and leg. I mention this case to show the serious effects. I haven't the least doubt that if those gums had been properly lanced at the time, and kept open, if need be during the six weeks until the tooth was out, the child would have been a

healthy child today. Of course we have all seen a great many cases of third molars, which I need not take any time to mention.

DR. E. A. GEILFUSS:

Gentlemen, I wish to thank you for the very kind reception you have given this paper. My main purpose in bringing it before you was to give you a clear and definite history of the subject of teething. I realize that if any advance in this line of work is to be made it must be made by the dentists, and in the way of education; not alone educating the parent to the necessity of operative measures at this time, but also the necessity of educating the physician; for, as I have stated, as a rule the dentist has not an opportunity of seeing these cases. I have been very much interested in this work for over five years. I claim no originality. Dr. Truman used to expatiate at great length to us students on the subject of lancing in these cases, and it seemed so very obvious to us that I never realized until five years ago that, at least so far as the dental profession was concerned, there was any difference of opinion. At that time I had a case where I had lanced for five teeth which the child had erupted at the age of five months. The conditions were not so serious as to have produced convulsions. In fact I personally have never seen a case of convulsions due to teething; but the diarrhœa, the restlessness, the sleeplessness, and general febrile conditions were present, and they were in all cases relieved. During my absence in the South another practitioner, a man for whom I have the greatest respect, was called in and refused to lance. He did not believe in it. I returned two days afterwards and the first thing I was requested to do was to call at this house, and I was told that the child had not slept quietly for forty-eight hours. I lanced for the molars, and before I left the house, within half an hour, that child was sleeping quietly and had no more trouble. From that time on I took up the subject, and I have written a number of papers upon it. Tonight in my paper I have not gone into the matter of procedure, or the various causes of disease. I have simply endeavored to make an analysis of the literature on the subject, to the extent that I was able to find it. In a way I wish to apologize for the length of the paper, and the length of the quotations. In my work I found I had extreme difficulty in getting at complete library facilities in reference to dental literature. I went through the entire literature on the diseases of children in the Mil-

waukee Medical Library, and I was very fortunate in being able, through the courtesy of Dr. Arthur Holbrook of Milwaukee, to have access to the complete files of the *Dental Cosmos,* and even the *Dental News Letter,* which preceded it. I have worked through every reference on the subject of dentition appearing in the dental journals from 1847. You will notice in quoting from many of these ancient authorities that I did it for the purpose of showing that, through their lack of medical knowledge, it was customary to ascribe any and every disease which occurred from the age of six months to two and one-half years, to teething; and as medical knowledge advanced, and the etiology of diseases which were found during childhood were shown to be due to other causes, it gradually became the custom to take the stand that teething was not a causative factor of disease; going to the other extreme. It was hard to understand why that was the case. It was for that reason that I have given you these complete quotations from the literature on the subject. The matter is one that should be brought more particularly to the attention of the medical profession, because they are the ones who, as a rule, have access to these cases. I have the history of over a hundred cases that I have had. It has been due to the fact that I was interested in this subject that I have preached a whole lot to prospective parents of children, to whom I had access. In order to properly alleviate these conditions it is necessary for us to carry on this work. It is necessary for us to awaken the interest of the parents in the matter, and through them their family practitioners, or in cases where we have the opportunity to directly broach the subject to the medical practitioners. I have made it a practice during the last year to bore every medical friend or acquaintance with whom I came in contact with this subject, and I believe I can safely say that not one physician out of a hundred has any conception of the growth of a tooth; either of its embryology, its anatomy, or histology. About all they know about the teeth are the few lines which appear in Gray's Anatomy. Those that are honest will concede it. It is a subject which I think is of considerable importance. I thank you.

DISCUSSION ON THE PAPER OF DR. RAICHE ON "THE VALUE OF LIGHT ENERGY IN DENTAL PRACTICE."

DR. A. J. KUHNMUENCH:

In speaking of the anesthetic anodyne and analgesic effect pro-

duced by the leueodeseent lamp, I am of the opinion that the lamp merely acts to produce hypnotie analgesia. I believe the method to be valuable only in so far as it is capable of influeneing the mind of the patient. I do not believe that the light itself has anything whatever to do with the sueeess of the operation other than that it is a subdued form of light and tends to bring about a drowsy eondition beeause of its lack of stimulating effeet upon the optie nerve endings. As for its property or properties of destroying the pus and the miero-organisms, I wish to say that this is undoubtedly due, if it be the ease, to the stimulating effect produeed through the eleetrodes of the individual eell on the eell proper that is supplying or produeing the inerease in growth, and at the same time supplying the necessary elements that go to make up the organie system. If this be true, that the stimulating effect will destroy the pus and miero-organisms, I can see where the lamp will be of great value to the dental profession, as well as the medical.

In listening to Dr. Federspiel's paper yesterday, relating to after treatment in cases of orthodontia, that is where they reach a certain age, say after the age of fifteen, I would say that the stimulating effect produeed by this partieular lamp might produee the proper inerease in the growth of any tissues surrounding the regulated teeth, but I doubt it very much.

Dr. E. C. French:

I am very much in the position of the blind man that was brought before the Great Healer and was healed of his blindness. Some of the skeptieal at that time asked what eaused his healing? He said, "I only know that wherefor I was blind I now see." Now, I haven't had any experience in the use of the leucodescent light in the praetice of dentistry, but I have had the beneficial effects of its use on myself. About the first of April, after fighting the grip for a month, trying to do work when I should have been in the hospital, a friend of mine said to me, "Why don't you quit work; you are not fit to work." I said, "You know why, beeause I can't stop; it is as natural for me to work as to eat." A few mornings after that he came up to my office about 8 o'clock. I had been there since 6 o'cloek. He knows my methods of work. I was sitting at my beneh in the laboratory. He came in and looked at me and he says, "Doetor, put down your tools and go home and go to bed." I paid about as much atten-

tion to it as I did to his previous advice. The next morning he was at his office and I was at mine. In a few minutes he came up, and I was sitting in the same position as the morning before. He asked me to stop work a minute. He examined my pulse, looked at my tongue and examined my lungs. He stepped into the laboratory and told my son to order a closed carriage and get me home, and get what necessary things I would need for the hospital. He said: "Take your father to the hospital at once; I have made provisions for him, and the nurses have their orders what to do." It startled me. I obeyed the doctor's orders and went to the hospital. When I was in bed I found that I was "all in." I did not get out of bed I think for ten days. I was completely exhausted. I had an attack of pneumonia, and on my chest today you will see the effects of the treatment I had. As soon as I was able to get out of the hospital I went home. I tried to get to my office each day, but I had a terrible cough and could not sleep nights. I went to a specialist and he examined my throat. He said, "I cannot do anything for you except to give you a little palliative treatment; you have got to get outdoors." In the meantime my friend said, "Why don't you go over to Dr. Bailey and let him use a leucodescent light on you." I didn't believe in it. Now this isn't hypnotism, but plain fact. I knew the doctor well. Said I, "Can you relieve me?" He said, "I think I can. I have relieved several similar cases. Get on the table and expose your chest. I am not going to tell you anything, but leave this entirely to me." I have had some of the best hypnotists in the country who could not hypnotize me. They had no more control over me than an infant. I am too positive for anybody to operate on me along that line. I was on the table and he had the 500-candle power lamp, and applied that to my chest. In less than five minutes the whole congestive condition was outlined on the outer surface, so that you could see exactly where it was. After twelve minutes' treatment I felt a relief. After treating me on my chest he turned me over and treated me on the back, and when the rays of that light struck the position corresponding with the trachea I could feel it going right to that point. Now, mind you, there had not been a night from the time I left the hospital up to this time that I did not cough half of the night, and I could not get relief. The specialist told me: "You have no force there; the organs are so inflamed that you cannot get any grip on it

to throw it off." I went home that night. He gave me about thirty minutes' treatment. I slept that night without any disturbance.

DR. C. C. SOUTHWELL:

May I ask if this is on the subject matter of the paper? I cannot hear very well here.

DR. E. C. FRENCH:

I am talking about the leucodescent light.

DR. C. C. SOUTHWELL:

I am wondering if you are speaking to the paper under discussion.

DR. E. C. FRENCH:

I am simply substantiating from a medical standpoint what the doctor says here with reference to the effects that he has had in the treatment of the teeth. Five treatments cured me. Two treatments relieved me absolutely, and I haven't had a tickling sensation in the bronchial tubes after the fifth treatment. I am going to continue that treatment for catarrh, and I know I am going to be benefited. Now I say there is an efficacy in the leucodescent light, and I hope it may prove one of the best things we have ever had for treating the special conditions of the mouth.

DR. M. N. FEDERSPIEL:

I want to thank the essayist for having so ably discussed in his paper the value of light energy. We are informed through the writings of various pathologists in the medical and dental literature that the leucocytes play an important part in stimulating, and in arresting the formation of pus that has accumulated from various causes. I am firm in my belief that light energy is a powerful factor in causing the heart centers to act upon the heart, increasing the pulse and producing a rush of blood, carrying with it a vast amount of leucocytes. They are thus enabled to eat up these pus cells, and destroy the formation of pus.

DR. T. A. HARDGROVE:

This question of light therapeutics, or whatever it may be called, carries with it a great deal of value, but it is due to no mysterious value held within the leucodescence, or any other quality of the light, according to my judgment. It is simply a thermal condition. They are accomplishing with other means nowadays the same thing that is accomplished with the lamp. The destruction of pus organisms, which is caused, as you know, by the increased number of white blood

corpuscles and the activity of the cells as a result of that, can be produced by an increased heat or hyperemia, and then a relieving of the hyperemic condition tends to produce a resolution; and in my judgment that is the sum and substance of the whole thing. You simply assist nature by thermal means to bring about resolution. In the case of Dr. French I think he had reached the crisis in his condition of pneumonia, and the lamp, from its thermal effect, undoubtedly helped the resolution; but I do not believe it has any mysterious bacteriacidal benefit, as is claimed so much for it, except that it helps nature to establish leucocytosis, or an increase of the white corpulscles, the function of which is to destroy the pus microbe and bring about resolution.

DR. J. S. DANFORTH:

There appear to be two theories advanced. One advanced by Dr. Federspiel, and the other the frequency of the light vibration. I know very little about these vibrations, but it is possible that this light vibration has a frequency of such a character that certain microorganisms could not withstand such frequency; either too great or too small, I wouldn't say which. But that is possible, it seems to me, to be one of the factors in the curative properties of the leucodescent light.

DR. DOYLE:

Dr. Hardgrove has suggested perhaps the principal effect of the light ray is due to thermal conditions. The fact that the most useful ray in the light spectrum in this treatment seems to be near the end of the spectrum, approximating the octave of the heat rays, would lend strength to that argument. But it has been said that, excluding the heat ray and applying only the light ray in this manner of treatment, the effect is produced without any appreciable diminution in result. The rays of light approaching the octave of the heat rays seem to be the most effective in the hands of those who have used it. That is the only information I have. I have no experience with it myself. The fact occurred to me that approaching the heat rays might give strength to Dr. Hardgrove's idea.

DR. F. E. RAICHE:

It is hard to understand that we get any chemical effect, but if you would study it as I have studied it you would readily understand it. As I said, a test of the light was made at the University of Chi-

cago, and it was shown that the light covered the spectrum to the ultra-violet rays; and it is well known by light specialists, for instance a man like Finsen, that the ultra-violet rays are germicidal. It has been decided in Chicago that it has a germicidal effect. Tests have been carried on where the light has been used upon the cultures, and has killed them and inhibited them. In cases of running sores the pus seems to have been dissolved and the pus microbes simply wiped out. Of course the hypnotic influence of the dentist over the patient has a great deal to do with that, as well as with all our work. If you can gain the thorough confidence of the patient by a certain amount of hypnotism without getting them completely under the influence, your work will be a great deal easier. You know there are a great many people suffering from imaginary pain, and this would help wonderfully where you would not get the effect if you did not use it. It is a fact that it is germicidal; and you can use it with the same effect without the heat. There is an apparatus to be used in certain cases where you do not want the heat. It is better to use the heat if you can use it, because the heat has a good effect also. It is a fact that it takes care of the disease by stimulating the blood cells. We know that if nature could have its way, and the blood do its duty, we would not need to help it; the blood would do it. The light helps by stimulating the blood cells into action; and the vibration of the light we suppose is what causes a part of the cure, by the vibrations causing the blood to circulate. The higher the vibration the more germicidal it is. That is why we want high candle power, and high amperage. Dr. Kulnmuench spoke of its value in orthodontia. I reported in my last paper mention of a case which I treated, a small frail young girl whose membranes in the jaws were extremely sensitive. If I hadn't had the light I would have had to take off my apparatus. Instead of that I used the light on it, and left the apparatus on, and in two treatments of two hours' time stopped that pain, and from that time I carried on the case without further trouble.

Dr. French described his experience with it, and that is the experience of a great many people that I have read about. I have not treated any cases as bad as that, but it has been reported many times that consumption has been cured by sterilizing the pus, and stimulating the blood. I have used it in my own family, in one case on my little daughter. She caught a bad cold and it settled on her chest, and I believe she was starting on a run of pneumonia. I took

her to my office and gave her two treatments, and aborted it. It is practically on the lines of the Finsen ray, only the Finsen ray requires an expensive apparatus and very high current, and this gives you the same effect without going to such an expense. The Finsen ray is only a violet ray, and it does not do all that this light does. In treating cases of troubles of the teeth I have noticed, where they have had bad colds and would be hardly able to breathe, that in a great many instances I have cured the cold in treating the troubles in the jaws.

Dr. Hardgrove mentioned, I believe, that the principal effect was thermal; that we would not get results without the thermal effect. Of course it is better to use the thermal effect if we can. Again you must remember that heat alone will promote suppuration; so if we think it is the heat of the lamp which does the business, why I have an idea that we would get even more suppuration instead of stopping it. Dr. Hardgrove asked what action I hoped to produce on the blood current. I believe the action introduces the vibration of the light and the way we use it causes the blood to circulate. The light is hung on a bracket on the wall, the same as the Ritter engine, and it is swung over. I do not know that it causes the blood to circulate, but in the vibration of the light the blood seems to follow the way the light is used. When we use it in general treatment of the spine we begin high up and go down to the feet, and from the feet to the head again. If you want to bring the blood to the head you reverse it. If we want to use it on the abdomen we have to be careful. If we turn the light in a circular motion in opposition to the peristaltic motion of the bowels, we will have the peristaltic motion going the other way, in the stomach. This was done at one time and the patient was thrown into an epileptic condition. Then the physician used the light in the other direction and cured the epilepsy, and cured constipation. In using it on the spine and abdomen we can cure constipation without cathartics. The movement of the light has a good deal to do with the circulation, and with the heart-beat.

Dr. Hauser:

Do you strip the body?

Dr. Raiche:

You have to strip the body to use the light for general treatments. The light won't go through the clothes. In dentistry the general treatments are seldom used.

CHICAGO-ODONTOGRAPHIC SOCIETY, MEETING OCTOBER 20, 1908.

A PAPER ON "OUR LITTLE PATIENTS" WAS READ BY DR. C. B. ROHLAND, ALTON, ILL.

DISCUSSION.

DR. J. N. CROUSE:

At an unguarded moment, when Dr. Gallie called me up on the telephone to know if I would open the discussion on Dr. Rohland's paper, I gave my consent. I knew five minutes afterwards that I had made the great mistake of my life. Then I wrote the essayist to let me have a copy of his paper beforehand, and he sent it, but I did not read it; it was about thirty-odd pages long, written with pencil, and it would have taken me about a week to read it. So I thought I would take the chances on guessing what might be the nature of his paper, but I have missed it. I have readily obtained the line of discussion he would pursue and the plea he would make, but I did not suppose he would have made it so thoroughly that I could not get a wedge in edgewise. I thought I knew something about that subject and would be able to say something he didn't say, but it is all covered; there is nothing left. However, I would say that I differ with him in one or two essential principles, wherein if I have a child that is not governed at home, that has never been made to mind anywhere, if in order to get that child in hand it is necessary to use some force, I use it. I do not take a cudgel or anything of that kind, but hold him, and hold him till he cannot get away, and that is a method used in the kindergarten. A kindergartener that is thoroughly versed will at times take a child and hold him until he will do what is desired of him. I have made more reputation, gained more in my practice, from my control of children, over and above some others, than from any other one thing. I have had children brought to me from other cities that could not be handled by anybody else, and I have kept at it until I conquered the child, sometimes in one way and sometimes in another. If the child is timid we must not start to work quickly and frighten him, but handle him in a gentle manner until he becomes acquainted with us. Then there are other children in regard to whom I discover in five minutes I have a customer on hand who must have the conceit taken out of him, sometimes in one way and some-

times in another. The study of the way to handle the different temperaments and dispositions, with the varying methods of government that have been employed at home, is full of value and interest. The child is one of the biggest problems the dentist has to deal with. If I were going to make a prescription (I don't want you to think I am a crank on the subject) I would prescribe a course in kindergarten work for every young practitioner before commencing practice. He could learn a lot. I received my training in this respect late in life, but much of it was in association with one of the trained kindergarteners of the world, Miss Harrison, who at one time lived in my family for eleven years, and I studied the subject and learned many things I never dreamed of before. So I put that out as a prescription.

I know that many here wish to discuss this subject and I am not going to answer Dr. Rohland's last problem as to what we are going to do with the child who comes with the teeth knocked out. Dr. Rohland did not tell us what he would do, and I do not think I will tell what I would do. I have seen such cases, but never knew what to do with them except to use palliative treatment. I certainly would not put a plate or bridge in the mouth.

Now, how many of you cannot recall the deformed mouth, the deformed teeth, of adult patients who come to you with one of the permanent molars having been extracted or lost early, and the mouth deformed for life on account of it? There is nothing that can take its place, nothing that can restore that loss. This is not always the fault of the dentist, and yet more and more I think it is the duty of the dentist, and if I was going back forty years I would adopt a system—it is the duty of the dentist to instruct the families for whom he works that the children should go to the dentist early and often, much oftener than I have been in the habit of having them come, because it is in the early examination and care of the mouth that the greatest amount of good will be accomplished. We generally, as Dr. Rohland says, get the child when the toothache comes and causes a disturbance. If that happens to come early, all the better; if it comes before the first permanent molars have shown through, all the better—then we begin to get at the permanent molar when it does come; it gives us a chance to meet the difficulty. And when you think in how few cases comparatively the permanent teeth first to erupt receive sufficient care, the importance of seeing our children early

eannot be too much emphasized. I have made many mistakes in the eare of ehildren; I have often made too prolonged operations, attempted to be too thorough with a little ehild, instead of making the work temporary and gradually advancing in the line of work. I know I have made mistakes that way, the ehild as a result dreading to come again. And in that case it takes a long time to overeome that dread and regain eonfidenee.

When a ehild myself, the first dental operation I had was when a distant relative of my mother eame to the house with foreeps and instruments (we lived on a farm), my mouth was shown to the dentist, as my teeth were crowded in front; he got me in the chair, the foreeps up his coat sleeve, and took out the lateral incisor without explaining what he was going to do. I was so angry that if I could have procured a elub I would have killed him, and he ought to have been killed! I never will do that sort of thing, and I do not think I ever have. Deception is not one of my qualities. But many times I have overtaxed my little patients and tried to do too mueh, and if there is any one thing I regret it is wherein I have made the dental ehair a dread for years afterwards.

I would, therefore, advise several sittings, having them eome six or eight times before doing anything. If I am disciplining the ehild in a way that has not been praeticed at home, this is the most essential thing I can do for the child, and I often have him come time after time simply as an exeuse to get the child there and beeome aequainted with him. The process of getting well aequainted with the ehild and having the child become well acquainted with you, is one of the most important things that you ean do in the praetice of dentistry in families of young children. Then there should be a system, which is being agitated, whereby the dental profession may see the children more frequently than they do, and suggestion of that at the proper time will doubtless be made. I do not have any prescription for it, I have thought of it a great deal, but I have never seen my way quite clear to advocate a plan that would bring about a reform in this direetion.

In closing let me say that the biggest fees I ever get is for work done for the ehildren. I consider I have a right to have more for my services to the children than to adults, for I have more ability in that direction. And I explain this to the parents, giving it to them early and then again later, so they will not be mistaken about it.

Dr. F. H. Skinner:

I am a little worse off for a discussion than Dr. Crouse was, for I did not receive a copy of the paper till three p. m. today, and since then I have been too busy to read it.

I want to compliment the essayist on the broad view he has taken of this subject, and the usefulness of his suggestions, especially the stress he lays on becoming acquainted with the children.

Regarding the last case cited, that of the child with the teeth broken out in front, I hesitate to venture any suggestion; but it seems to me that something ought to be put on there that would keep the arch expanding. I had a similar case, wherein a little boy lost his central incisors from being struck with a baseball bat. I put bands on laterals and temporary cuspids, with spurs running to lingual of first temporary molars, set a jack-screw and kept it spreading. I did not get as much room as I would have liked, but at least succeeded in keeping the arch from closing up, and thereby made a better looking lad of him when later I put in a bridge.

One point which I think is very important in the treatment of children is the education of the parents to the necessity of closely watching for foreign substance and stains on the children's teeth, for these will usually result in decay, unless removed. Induce the parents to bring the child in and let you become acquainted with him; give the little one a ride up and down in your operating chair for the first sitting; the next time let him look in the hand-glass, and if you find any stain on the teeth show it to him, with the help of the mouth mirror if necessary; then with an orange-wood stick, or dental engine, and flour pumice stone, polish off all stains and accumulations, and let the little one see how much better his teeth look. This encourages pride in his appearance. He also becomes accustomed to the dental engine, used in this way, and is not afraid of it when it is necessary to use it.

If the child is brought to you suffering, of course the pain must be relieved. As suggested by Dr. Crouse, never say that you are merely going to look at the tooth and then extract it, even should the parents suggest it. I tell them that I will not prevaricate to a child under any consideration. If the tooth has to be extracted, tell the child so. Always use an anesthetic with children when possible in painful work, ethyl chlorid, some form of cocain, or gas; if ethyl chlorid, tell the child it will be cold; throw a little on his hand first

and let him learn how cold it is. Give gas, if necessary, but never lie to the child; make a friend of him. Where possible, for the first operation, do something you are sure will not hurt. One rule I have is never to say a thing is going to hurt. I say: "It may be a little warm; if so, you squeeze my assistant's hand, and just the squeezing of the hand will give me the signal that will stop this humming-bird." The child often tries it by way of experiment, but it always stops the engine. This gives confidence and teaches him not to reach up and catch hold of the operator's hands.

I have always made it a rule to give children a present when they come into my office, a ball, a bat, a top, a doll's flat-iron, a doll, perhaps only a ten-cent Japanese fan, but these little attentions make friends of them and they like to come back.

I often stain foreign substances on the teeth with iodin, not the alcoholic solution, however, for that smarts the little gums. I use iodid of potassium and iodin, ten or fifteen grains of each to the ounce of water, which solution can be used on the teeth without smarting the gums, and is just as good a stain. Where possible, begin prophylactic work before any decay starts; also cover fissures of molars with copper cement; Dunn's Oxydate is going to be very good, I believe, and the color is not so objectionable, but as yet I have not experimented with it much.

It is frequently very hard to work on the mouths of little ones, especially the lower molars, on account of the tendency to gag. A one per cent solution of cocain on the side of the tongue will give a bitter taste, which they do not like, but it acts as a mild anesthetic and also takes the mind of the child off from what you are doing, which is important.

We should never, I believe, clean a child's teeth without charging something for the service. This brings them up with the idea that prophylactic work is worth something. I lost two families through charging what I considered a reasonable fee for the time spent in cleaning children's teeth, if we may call it such, by reason of their having talked with friends who said, "Dr. So-and-So never charged anything for cleaning my children's teeth," naming a prominent dentist in the city. I think this is a mistake; it is an education to the parents and to the rising generation that this class of work should be paid for, and paid for well.

Again I wish to thank the essayist for the able manner in which he has handled this most interesting subject.

Dr. G. V. Black:

I do not feel like entering into the discussion this evening. I came especially because I knew Dr. Rohland would say something that I wished to hear, and I have not been disappointed. I knew I would not be. And I came also for the reason that I am interested in the little children. If there is anything that the dentists of America have neglected more than another, it has been the little children, and if I could make an appeal to you this evening that would induce you as a body of men to spend more time and thought, to put more earnestness into teaching, as you have occasion in your offices, the parents of these little children their duty towards them in this respect, I should be very glad indeed to spend any amount of time that would be available to bring this about. The more I study the subject of dentistry, the more clearly it is shown to me that much of the difficulties that occur later, occur because of neglect at the proper time with the little children. So I want to appeal to every man here to interest himself in appealing to parents to do justice to their children, to bring them to their dentists, no matter who he may be, sufficiently early, and they cannot bring them too early. And see to it that the wisest thing is done then, before the shedding process of these teeth begins, before decay has begun and become irreparable—get to these little patients early enough to do the best thing for them. We may not be able to tell just how to do it in every case, but I take it for granted that every man will do the best he can, and he can usually do the best thing when he is interested and tries. Now be interested.

Dr. H. A. Cross:

The very frequent and uproarious applause that greeted the reading of the paper this evening is sufficiently complimentary to our assayist without my adding to it.

A few years ago a paper was read before the Chicago Dental Society, which goes largely in making up this society, as you all know, upon practically the same subject.

On that occasion Dr. Crouse opened the discussion and I was foolish enough to make some remarks myself. I evidently then placed myself on record as being cross by nature as well as by name, judging from the manner in which my remarks were taken by those present.

Dr. Crouse, in the course of his remarks, referred to a case in his practice which reminded me of a case in my own practice which I recited, telling how I had dealt with a child who evidently was accustomed to having her own way about everything in her home life. The members present on that occasion when I cited that incident in my practice evidently thought that that was my general rule in dealing with a child of that nature, when in fact it was my only case. I will review it briefly.

The child had been to my office several times with her mother, and it became very evident from the outset that the mother had no control over her whatever. I tried in every sort of pleasant way, with smiles and coaxings, and promises to be very careful in the work of filling her teeth, all to no purpose or satisfactory results. I could accomplish nothing to speak of.

On another occasion the child came again, but with an older sister this time, the mother not being present, and I made another attempt to render the needed service, explaining to her what was necessary to do, and that I would exercise the greatest care to avoid hurting her, but my efforts were of no avail. I then said to the older sister: "Will you take a seat in the reception room, please?" She did so. I then said to my young patient, "Now, my young lady, I have explained to you what is necessary to do in your case. It is not on my own account that I am trying to accomplish it, nor on your parents' account, nor your sister's, but for your own good and welfare. Now you will either submit to this careful operation or you will get out of my chair, and you will leave my office, and you will not be allowed to enter it again. There is no sense in your making such a fool of yourself. I don't propose to waste any more time with you."

I suppose our essayist would say that such a course was unjustifiable. What was the result?

She hastily glanced up at me with an expression indicating that she thought she was "up against it." *And she was.* She then submitted very quietly and patiently while I inserted several fillings. In doing the work I worked myself into a high state of perspiration in my efforts to avoid causing pain. Upon the completion of the work, to my astonishment she inquired, "Aren't you going to extract that tooth, doctor?" I had previously explained to her that it was necessary to extract a tooth. I extracted it without administering an anesthetic of any kind, it not being a serious case. My young patient

did not shed a tear while I was filling her teeth, nor in the extracting either.

You notice that I gained control and at the same time the confidence of my little patient by being firm and decisive with her, having her separated from her mother and sister. Having her separated from all her family associates and thrown upon her own resources, it was an easy matter to overpower her spoiled will power. When parents bring their children to me for dental service I tell the parents that I prefer to take the child into my office alone with none other present than my young lady assistant. I also tell them that I may not accomplish much the first time, when the child is not acquainted with me nor familiar with my methods; that it is absolutely essential that I should gain the confidence of the child by doing some unimportant thing with their teeth which could not possibly cause any pain. It has been said that "the first impression is the most lasting," and when our little patients are not hurt in the least at their first call they have no fear of the second or subsequent calls. And I want to say that as a rule I have less trouble with the children than with many older people.

Dr. C. N. Johnson:

I am extremely full of this subject, but I have some hesitancy in rising here tonight for a reason that I am going to mention. I come to these meetings month after month and I fear there is a tendency to have the same speakers over and over again, and I have the feeling that we want to bring out the young men and the new timber in this society. I think I am entitled to say that, because I speak almost every time myself, and for that reason I come out and say that I believe the men here who come so frequently and sit and listen should be brought to the floor. I do feel there should be reform in this matter, that we should bring out new timber and not listen all the time to those accustomed to speak so much. I wish the society would bear that in mind, and that the president would take occasion to call out new men here. You never will develop talent in speaking before societies except in that way. There are many men here who have within them the elements of instruction for every one of us, and so I think they should be brought out.

I have seldom listened to a paper that has pleased me as this one has. That paper is, as are nearly all of Dr. Rohland's papers, a classic; it is a delight to listen to the reading of a paper like that.

Do you know we have some of the best timber in the dental profession of any profession on earth—I challenge any profession, even as learned as that of the law, to produce a member who will read a paper on any topic in law that will be as nearly a classic as is this on the management of children.

The keynote of the paper is honesty in our treatment of children, and that should be the keynote of every practitioner in his attitude towards children. I am sometimes inclined to feel that were I to start out on a campaign of deception I probably could succeed in deceiving the adults with whom I came in contact, but I haven't sufficient confidence in my own ingenuity to believe that I could ever deceive a child. Children have not reached that age yet which gives them a perverted point of view. They take a man or a woman at par. And I would rather have the commendation of my child patients than the commendation of the adults.

It has been the custom tonight to recite cases, and sometimes cases are very instructive. Therefore I want to recite one, if I may be permitted, which will serve as an index to my method of treating children.

One day many years ago a mother brought her little daughter into my office, dragging her by the hand, and I want to say that this mother was well dressed, she was not of the ordinary class—she dragged this little child, with the tears streaming down her cheeks, into my office. "Doctor," she said, "this child's teeth need attention, and if you can do anything with her you can do more than I can!" "Well," I said, "I will try; have you any shopping to do?" "Yes—why?" "Because you had better go and do your shopping and leave the child with me." I saw instinctively that there was something wrong between the mother and the child. I took that little girl into the operating room, quieted her, talked to her, and, needless to take you all through the details, finally was able to attend to the dental work that was necessary without any trouble at all. When the mother came back the tears were all dry, the child smiling and happy. "What in the world have you done with her, doctor?" the mother asked. "I have simply attended to the dental service for which you brought her," I replied. "Well," she said, "we could not do anything with her; I cannot understand it." I made an appointment for another sitting and the mother brought her back in a few days, saying: "What did you do with the child, hypnotize her? She never hesitated to come

at all." I said, "No, madam, I did not hypnotize her, except to treat her kindly, which I believe is the best hypnotism we can practice on our patients." "But we cannot do anything with that child at home," she insisted. "Allow me to say this, madam," I replied, and it was the most pathetic thing I ever said, "as a mother you do not understand your own child. You have not treated her right, you are not fit to be her mother, and you should be ashamed of the relationship between you. You have not done anything to train her, you have done nothing but abuse her. If you wish to control your child, you must learn to be kind to her. You talk about me hypnotizing her, but you should hypnotize her with kindness—that, every mother owes her child; study her temperament, for she has a temperament different from yours; you do not understand her, and yet it is your first duty to understand your child." And it is the first duty of the dentist to understand the little children that come to him; he cannot always take them the same, but every man who practices dentistry should study human nature sufficiently to learn the motives and impulses that are behind those little brains and hearts of the children that we treat. That little patient would sit in my chair and submit to any kind of pain if it was necessary and never complain. I believe this, and it is the one single remark I want to make in conclusion: That it lies with the dental practitioners of this country to develop the manhood and womanhood of these children as no other class of people can. We come in contact with them even more frequently than does the family physician, and when we speak of discipline, I believe that some of the best discipline many children have had has been by the dentist. And I believe also that the best discipline some of our adult patients have had has been in the dental chair. With the opportunity that is presented to every practitioner, it is the duty of the dentist not only to attend to the teeth of the children, but to so develop character in them that he will make better men and better women of them. We can do that, and we have a function here to perform that few men realize.

It is a higher function even than that of preserving the teeth.

PRESIDENT GETHRO:

What Dr. Johnson has said about the younger men is very true and we want to have them brought out, we want to have them make the best of their opportunities in speaking at these meetings. The program committee had that in mind the last time when they had

plied for crown work were at all satisfactory. When ground they left a gritty surface, disagreeable to the patient, and very difficult to polish. To try and glaze them was running the risk of cracking.

Dr. I. Davenport, of Paris,

Fully concurred with everything Dr. Davis had said and emphasized the importance of the final trying in the mouth after having used the Bonwill articulator.

Mr. George Northcroft, of London,

Was very glad to hear Dr. Davis support the anatomical articulation of artificial teeth, but thought he hardly went quite far enough. Bonwill's work was done several years ago, and other investigators had followed in his footsteps and had suggested more perfect apparatus and had obtained better results. There was very little doubt that with the Grittman articulator combined with the use of a Snow bow better results could be obtained than with the Bonwill articulator. The use of the Snow bow enabled one more nearly to reproduce the individual curves of the condyle and glenoid fossæ, which was considered by modern writers a very necessary matter in articulating artificial dentures in individual cases. Probably Dr. Davis was not aware that there were anatomical teeth now on the market made on the lines suggested. Mr. Hubert Visick induced a firm of English manufacturers to get out patterns to avoid the necessity of so much grinding of the surfaces of teeth, and those teeth, although not quite ideal, were the most satisfactory at present on the market, and saved an enormous amount of time. Mr. Booth Pearsall had suggested that it was a good thing to apply the principle of anatomical articulation of artificial teeth to crown and bridge work. He himself had found it extremely useful in setting up cases to reproduce the motions of the jaw in crown work as well as for artificial dentures.

Dr. W. Mitchell

Said the subject was one in which he had been interested for a great many years, and he was delighted that Dr. Davis had brought the matter before the society. He concurred with what Mr. Booth Pearsall had said in regard to not understanding the ideals of the late Dr. Bonwill, but it was quite possible to at least partially grasp his meaning. The triangulation and mathematical arrangement of teeth must necessarily be arbitrary. Nature as a rule did not duplicate. In arranging a set of teeth there were controlling conditions, especially when the patient required a full upper and lower denture. Changes

had been going on and in all probability teeth had been lost that made a different action of the muscles necessary in mastication. He quite agreed with what Dr. Northcroft had said with regard to the advancement made in connection with the Grittman articulator, and Dr. Snow's articulating bow, the latter of which he had never found occasion to use. He was, however, one of the first to see his articulator and to see him use it, but he could not discover that it was other than an arbitrary arrangement. He gave his fancies scope and combined the articulator with the old methods, and the outcome was that he was able to do much better work. He agreed with Mr. Pearsall as to the necessity of judicious and intelligent arrangement of artificial teeth by the dentist himself. The average workman at the bench could not understand the requirements of the patient, and consequently the dentist who shirked the difficulty of antagonizing a set of teeth was doing his patient out of some of his intelligence and best efforts. The dentist was just as much under obligation to do that as to put in the best filling. In considering the curves in the arrangement of artificial teeth the necessity was for the plates to antagonize at at least three points. It could be so arranged that it was practically impossible to tip either an upper or a lower denture. He quite agreed with what had been said with regard to the distorted teeth that had been forced upon dentists for so many years. Some years ago he read a paper before this society on the subject with regard to anatomical relation and coloring, and advocated the condition of affairs presented that morning. He utilized to a considerable extent the principles laid down by Dr. Davis. He quite agreed that if dentists were shoulder to shoulder in demanding the things they desired they would get them, but the demand must come from men who were not afraid or ashamed to do their own work. There were many people who looked upon prosthetic dentistry as a thing with which they would not soil their fingers, but such men he did not consider to be dentists.

Dr. William Hirschfeld, of Paris,

Asked Dr. Davis whether his patients objected to the noise of artificial sets, and whether in that case he was compelled to replace the back teeth by rubber. Also whether he thought it was professional to do such work.

Dr. L. C. Bryan, of Basle,

Said the difficulty of getting an ideal set of teeth was very great, and

some charity had to be extended to the manufacturers in considering their efforts. The trouble was that every man who made artificial teeth had his ideal, but it was not the ideal of other men. The manufacturer, therefore, had to make a general average and furnish something that had to be modified by the grinding wheel. It was, so to speak, getting out of a block of marble what each man considered the ideal for helping his patients in the best way. Nature did not often make an ideal set of teeth. A studious dentist in Zurich was desirous of getting an impression of a certain set of teeth in which certain points articulated perfectly, and in which certain conditions existed. He advertised for young women between certain ages to appear at his office to have impressions taken. Although he had three or four thousand patients in his practice and was anxious for such an impression, he had never been able to obtain one. Nature so seldom gave an ideal set of teeth that he thought dentists must be satisfied to do the best they could with what the manufacturer gave them. ("No, no.") What the manufacturers said was that there was no market for ideal teeth and that not one dentist in a thousand would take them. Manufacturers would not make an article of which they could not sell at least 10,000 of the one pattern; in fact, the whole question was a commercial one. If the society would adopt a number of ideal forms and agree to support the manufacturers in purchasing them, or if the society would agree on an ideal and undertake the expense of manufacture, something perhaps might be done. For twenty years he had seen the question agitated, but nothing had resulted.

Dr. J. W. Gale, of Cologne,

Said that for years, instead of trying to caliper the distance, he simply used very rigid steel wire of different lengths. With an instrument he made a round hole in one of the casts and set in a little double right angle caliper and made a little scratch on the upper, and at very short periods, while articulating, took a little staple and proved the bite to see whether it had lengthened or shortened.

The President

Had been very much interested in the paper, but there was one point he thought he must have misunderstood. Dr. Davis mentioned that in making his base plate he used paraffin wax, but he himself had found that the use of paraffin wax caused difficulties because it softened so readily in the mouth.

Dr. Davis,

In reply, said a wire could be put in the paraffin wax to prevent it from setting and the patient was not required to bite too hard; it was not a question of bite at all. It was simply to be sure of getting the jaw in the natural position and taking a hot instrument and sealing the two plates together. One could use ideal base plate material, but he did not like it because it was too thick. He thought Dr. Gale's idea was very good. Dr. Bryan's remark about the manufacturer not making the teeth unless it paid him to do so commercially was perfectly true. Nearly all the manufacturers had taken off the market the old celluloid teeth, which were very beautiful, and a great many others were taken off, continuous gum teeth, because they were not used sufficiently to pay for manufacture; in fact, they had gone backwards instead of forwards in teeth making. The question was: Could the manufacturer make the teeth as sharp as required? Some men would not want them sharp, but others would. Dr. Grittman of Philadelphia, who was Dr. Bonwill's assistant for years, and a great many other men who were followers of Dr. Bonwill, used the method described and required sharp teeth. When he first started to set up teeth in the manner described it took him eight hours to set up a full upper and lower, and he had never been able to do it in less than two hours. There were, no doubt, a number of very good articulators, but he had something that satisfied him and it was no use his trying other things. He had no desire to say anything against any other articulator. Eight or nine years ago he was one of the demonstrators in the Chicago College of Dental Surgery, Chicago, when Dr. Grittman came with his articulator. No one moved the articulator properly, simply moving the hinged motion up and down without understanding the side motion. He himself moved the jaw to the side and the only teeth that came in contact were the two cuspids. There could be no bite in such a case. With regard to the bow, one side of a patient's jaw might be developed more than another, and it was not a definite way of arriving at a proper measurement. With regard to Mr. Pearsall's remarks, it did not matter how one began as long as the work was accomplished afterwards. There was not a tooth but what he had to grind. Usually the molar and bicuspid had a very thin, lingual cusp with the buccal cusp very long, and the first thing he had to do was to make the buccal cusp the same length as the lingual before he began to cut the grooves. With

regard to the gritty surface of ground teeth, the teeth could be polished sufficiently to satisfy the patient. He had asked Dr. Bonwill whether the patients did not object to the sharp edge, and he said he had had patients who chewed holes in their cheeks, but they got over that in a couple of days. In such cases the outer edge could be smoothed off a little, but he did not do it unless it was absolutely necessary. Dr. Grant Molyneux of Cincinnati had published an article in the American Prosthetic Text-Book in which he gave a very good idea of alignment of teeth. Many patients ordered two, three and four sets of teeth, and not long ago a man came to him who said that, although he had four different sets of teeth made by four different dentists, he could not eat. The man was over sixty, and asked for a set of teeth with which he could chew. He said: "If you will agree to make me a set of teeth with which I can eat, I will allow you to make them under the condition that if they are not perfectly satisfactory and better than anything I have now, I shall not pay you one cent." He accepted the terms, and that man had had two different sets made and was able to use them comfortably.

DISCUSSION OF DR. HARLAN'S PAPER, "COMPRESSED AIR IN DENTAL THERAPEUTICS."

Dr. Northcroft, of London,

Wished to know what methods Dr. Harlan adopted for warming compressed air. He had had great difficulty himself in getting the stream of air sufficiently warm, and found that it got cold very rapidly, even when passing over white hot electric coils.

Dr. Schaffner, of Florence,

Had used compressed air for a great many years and believed that Dr. Bing of Paris was one of the first to advise its use. He did not know whether he was the inventor of the system of the tank in the operating room, but he knew that Dr. Bing used compressed air in his laboratory. The idea was suggested by one of his pupils. With regard to heating the air he did not know any apparatus but that which he had used for a great many years. It was simply a little aluminum tank, through which the current of air was allowed to pass through a passage heated by a gas frame. There was a handle which could be held in the hand and from which the jet could be controlled. Beneath was a tiny little gas jet which gave an equable temperature to the apparatus. When he had finished using it he simply let the apparatus fall into a guide, which brought it into position over the

frame. In that way moderate heat was obtained; great heat was unnecessary, and if used there was danger of dessicating the dentine. The moisture was got rid of not so much by heat as by the force of the jet.

Dr. Harlan

Quite agreed with Dr. Schaffner that a great degree of heat was not required. He himself had a gas heating apparatus that kept the coil constantly heated, the jet being about twenty inches from the field of operation. That was quite sufficient, because beyond 160 degrees the patient objected. He did not think the ordinary patient knew the difference between air at 65 deg. F. and 110 deg. F., especially if it was driven against a tooth containing a live pulp. It was only when operating on a pulpless tooth that a temperature was required above 110 or 120. It was almost fatal to extract all the moisture. It was only, as Dr. Schaffner had said, the force of the current that caused the evaporation of the moisture to the extent necessary for the treatment of the case.

DISCUSSION OF DR. DUNN'S PAPER, "THE USE OF HIGH FREQUENCY CURRENTS IN DENTISTRY."

Dr. Jenkins, of Paris,

Asked if the high frequency current had ever been noticed to have any pathological action on the tissues of such cases as Dr. Dunn had had under his care.

The President

Was afraid Dr. Dunn had brought something before the society which very few of the members were capable of discussing. The paper was so interesting that he did not wish it to pass without extending to Dr. Dunn his sincere thanks for it. Electricity seemed to be one of the forces which were very little known even now, but he could not help feeling that in the hands of the dentist it would prove of great benefit and be largely used in the future.

Dr. William Dunn

Said Dr. Jenkins' question was an important one. There was a danger of overdoing it, but there were many guides as to the limit of its application. Except the use went beyond eight or ten minutes, within 300,000 oscillations a second, no results were obtained but stimulation. Beyond that there was cauterization. Szerny, who was treating cancer with the current, was cauterizing the surface of the

epithelium and found there was great reduction on the surface in the formation of the cells.

WISCONSIN STATE DENTAL SOCIETY, LA CROSSE, JULY, 1908.

DISCUSSION OF DR. GEILFUSS' PAPER, "SOME VIEWS OF INFANT DENTITION."

DR. W. C. WENDEL:

This subject is a very extensive one and has received possibly more attention from the medical profession than the dental. There are two causes for that. In the first place, the physician is closer to the family during childhood than the dentist is. Then there is a feeling existing between the physician and the dental practitioner as to how far the medical man has jurisdiction in oral diseases, such as the rhinologist and ophthalmologist claim, and as to where they begin and how far they are allowed to go. There are some that claim, for instance, that in diseases of the antrum, or nasal passages, the oral surgeon or dentist has no right to encroach, and that it should be left to the medical practitioner. However, these diseases are so closely associated with one another, and the diseases of the teeth, and also the eruption of the teeth, that it is hard to differentiate as to where the dentist begins and the medical man has a right to follow.

The doctor has been to a great deal of labor in securing the different statistics and opinion of the medical profession, and has delved into the literature of the subject, to formulate the opinions and facts from the different practitioners. He takes you back to Hippocrates in 450 B. C., and tells you that at that time, and even up to the fifteenth century possibly, they paid more attention to diseases and had more pathological conditions from defective dentition than at the present time; that they laid all of the diseases of children, mostly, to the matter of teetching. He also tells you that Aristotle, whose time was about one hundred years afterwards, takes up this subject. In 100 B. C., Galen's time, they had not only specialists, the same as we have to-day, of dentists and physicians and veterinary surgeons, but that they also had, as I understand it, chicken specialists. We have to consider the embryological con-

dition as well as the histological. The embryologist tells us that in the human being the three primary layers of the germinal membrane are the epiblast, the mesoblast, and the hypoblast. The enamel of the teeth is derived from the epiblast, the dentin from the mesoblast. The osseous portion is taken from the middle or mesoblast layer. The epiblast is also productive of the epithelium. The mucous membrane existing in the mouth is continuous, and takes in, as the doctor tells you, the pharynx, the esophagus and the stomach, and also the larynx and the bronchial tubes, and they are all more or less affected. We find that the mucous membrane covering the mouth is not so hard or callous as the gum line. In dealing with this subject of difficult dentition we have to consider the deciduous teeth more than the permanent. What we call Meckel's cartilage appears perhaps in the forty-eighth day of foetal life, and extends out in bow-shaped form, and is united at the symphysis. Calcification takes place about the eighteenth month, but is not entirely complete until later. The superior maxilla takes similar movements, with this exception, that it is sometimes defective, and in three parts, and perhaps this is due to this fissure which we have, and forms occasionally what we call cleft palate, union not properly taking place in these parts. The support of the lower maxilla receives pretty near all of its growth on the lingual side, and backward; that is to say, when your lower jaw is practically formed, you have no further outgrowth, but the growth is backward, bringing the jaw forward.

Another thing—this is diverging a trifle—perhaps the size of the tongue has a great deal to do with the expanding, and I think you will find where you have a large tongue in the individual's mouth that you are less liable to have irregularity in the teeth than where you have a small tongue. That is not necessarily the case, but you will find it. The middle of the second month is when the first enamel germ makes its appearance. We have always been taught that the enamel germ, or what we call the dental papilla or sac, is formed from one tooth, and buds out from that to the others. That does not seem to be the case, but we have a tooth bank; in other words, the epithelium presses down and you have the buds of all the deciduous teeth, twenty of them, distributed in a line. These are distributed also in conjunction with the first permanent molar. There is a tendon or cordon around them, and it is supposed that this tooth band

is for the purpose of holding these teeth in line. Now we want to take into consideration the eruption. The incisors are erupted first, and there is not much difference between the upper incisors and the lower. The lower are erupted a trifle earlier than the upper, but yet practically they are about the same. Now, what causes the forcing of the deciduous teeth through the gum? It has been said that it is due to the force of the permanent teeth; but this is not true. Their pressure is not brought directly at the apex of the root of the deciduous tooth, but laterally, or one-third up on the line of the tooth, and therefore does not produce a direct pressure upon the nerve. It evidently must be due to some other source than the pressing of the permanent teeth. What the element is that enters into the absorption of the deciduous teeth the embryologist and the histologist so far have not given us any light upon. There is a good field here for some of our young men to investigate. Is it the odontablast that reabsorbs and forms a sac and destroys the deciduous teeth, or is it some other cause connected with the development of the permanent teeth? The permanent tooth sac, and the tooth, lies slightly on the lingual side of the erupted deciduous teeth. There is another question for our medical and dental practitioners, and that is where we have inflammation existing in connection with difficult dentition, whether that inflammation takes place more extensively in the eruption of the incisor teeth, or does it produce more of an inflammation under the eruption of the molar teeth? I am under the impression, from observing different conditions, that it is more extensive in the molars, because there they are more subject to convulsions. You will find that in the child of about a year to eighteen months. There is a reason for that. You know the bicuspid, when it is erupted, comes between the bifurcation of the deciduous molar. When the permanent tooth is pressing against the temporary tooth it is not completely calcified, and you must be careful about the extraction of the deciduous teeth too early. I have seen deciduous teeth extracted and the permanent crown clinging between the bifurcation.

The histologist and embryologist are not telling us what is producing the convulsion. Is it caused from the permanent tooth in its development, or from the deciduous? The practitioner of medicine as well as the dental practitioner ought to observe when the diseased conditions exist in a child, and ascertain whether there is a thicken-

ing of the mucous membrane or the tissue above it. If you do lance the gums you ought to be very careful that the tooth is making its appearance, and close to the surface. It is often the case that inflammation exists for a time, and you have what you would call a restlessness of the child, a feverish condition, sleeplessness, the diarrhœal condition, and you have all the symptoms of a fever. It will continue for some time, and it will naturally come back to a normal condition again. Now, if that condition exists previous to the time of the eruption of the teeth I would not think it advisable to lance the gums. I think where lancing is to be done it would be well to call a dentist in consultation. Dr. Geilfuss has quoted men who have simply scarified the gum, and I do not think the scarifying does any practical good. I do not think the dental practitioners of the present time uphold this system of scarification. If you are going to make an incision make it deep enough; and also use judgment in regard to the eruption. The sixth month is the time for the eruption of the central incisors, and the others come in at the seventh to the ninth month. The completion of calcification is about at the age of two years, therefore any disease that might exist after that time you must take into consideration that it is probably due to the eruption or the forcing of the permanent teeth rather than the deciduous teeth. We ought to try and bear that in mind, because I think that is the cause of a great deal of trouble. You will find in the statistics given by Dr. Geilfuss that 3,000 out of 200,000 died from a difficult dentition, or a pathological condition at that time; and 200 out of 3,000 that died from teething were over the age of two or two and a half. Two hundred out of 3,000 died after proper calcification had taken place.

Destruction of the roots, or decalcification, takes place at the age of about four years, when the deciduous roots are entirely destroyed. So if there is any pressing of that kind it must be from some other source, and we do not know what the elements are that enter into the destruction of those roots. I will give you an instance with my own child. He had a feverish condition, with restlessness, drooled at the mouth, and he was suffering a great deal. I had him playfully between my feet, sitting on the floor, and I took a lance and lanced through his gums. He was soon happy and prattling with me, even though I did punish him just for a moment.

Another case, of a child about four years old who was brought to me with a large abscess, and the physician exacted of me that I extract the second deciduous molar. I objected to it, and did not want to extract that tooth. He insisted upon my taking it out. I told him I was quite certain that the pulp was alive and all right. He had used a poultice and drew the abscess, and there was a discharge right below the maxilla. I took the forceps and extracted the tooth, and I found two little nerve fibres extending from the deciduous roots, the tooth was perfectly formed, and showing no diseased condition. But, after extracting that tooth, the abscess healed. It certainly was due to some other pressure besides the eruption of the tooth in itself. Whether it was the permanent tooth, or what caused his trouble, is more than I can tell.

Dr. B. G. Maercklein:

I desire to congratulate the author of the paper upon his most thorough and efficient manner of presenting this subject, and upon the research that was necessary for him, and the work in connection with it. If we had a few more such papers, and we would take a few of them before the medical societies and read them, I think it would do as much good as we can in our own society, if not more. In regard to the different opinions of a large number of the authorities cited by the essayist, it is very easy to explain how some of these men came to the different conclusions. It has often been said that ignorance is the stumbling block of almost all our ills and misfortunes. That is true in these instances. A large number of these writers are not conversant with the histology and embryology of the teeth. If they had been, their opinions necessarily would have been different. Nor is it reasonable to believe that what they called "lancing" was proper lancing. It was probably only scarification. The tooth originally is formed out of a complex follicle, known as the dental follicle, consisting of the dental organ, the dental sac, and the enamel organ, and it is all a soft or jelly-like mass, highly supplied with nerve filaments, which are necessary to development. When ossification takes place and enamel is formed, that portion is forced gradually, by a systematic contraction of the dental sac, to the surface, where the tooth is about to erupt. If nature goes on in a rational way and works harmoniously step by step, the absorption of the gum tissue overlying the crown of the tooth takes place as fast as the sac con-

tracts at the bottom of the root, and you have normal or physiological dentition. When there is some interference with these two processes, forming a tooth and absorption of the overlying tissues, there is a pathological condition which results, and you get pressure on the pulp mass, which is then in a soft and highly sensitive condition. The dental sac contracting around the root, trying to force the tooth to the surface, and the resistance of the gum surface is so great that it cannot proceed, then you have the same condition as results from a pressure upon the exposed pulp in a full formed tooth. The doctor has explained the situation. The sympathetic system is capable of producing almost all kinds of complications in the child up to the point of convulsions. If these medical writers understood the process of the formation of the teeth, and understood relieving the pressure, not at the gums, but at the apices of the roots, where the vein is, they would all agree upon that subject. Now, the men who have given that subject thought and study, and found it to yield results in practice, are absolutely unanimous on the value of lancing the gums in difficult dentition. It does not matter whether they are temporary or permanent teeth. There are very serious complications often setting in at the eruption of the first permanent molar; just as complicated as at the age of six months or two years. I have had considerable experience in that particular line. I have often been called in. It is a fact that dentists are not properly consulted in connection with these cases by the medical profession. A large amount of relief could be instantly given if they were promptly lanced at the proper time. Dr. Wendel has referred to his experience in his own family. I have had quite a large number among my relatives, cases where it has even gone to the extent of convulsions, and I have given absolute relief by lancing the gum where the teeth were still a quarter of an inch below the gum. Now, the lancing does not mean a mere scarifying, but lancing until you strike the form of the tooth, so that the tooth can make its exit. On a double tooth it is necessary to lance in the shape of a cross, striking the highest points of the cusps.

Dr. Harvey N. Jackson:

I am not going to talk very long, and I hope you will be patient with me. I used to sit with "Eddie" before Dr. Truman, and listen with him, and you may well imagine that I feel just the same as the

doctor does on this proposition of lancing the gum, but I have this advantage over Eddie, I have three youngsters and he has but one. I have not only lanced their gums, but have repeatedly lanced them; and my wife has done the same thing. If scar tissue formed we would lance it again, and always with good results.

There are one or two other points that I want to mention; one is with reference to the use of the lance, and with regard to winding it with a fine cord down to about the depth you wish to lance, if you want to be real safe. Wind it down to about the distance say, of one-sixteenth of an inch. You won't ordinarily want to lance deeper than that. As the doctor says, simple scarification does very little good. You should lance until you touch the tooth, and if you wind your lance in that way it is safe. The old ladies and the aunts will sometimes say, "Don't lance the gums," and they will ask daddy to get an old quarter out of his pocket, and they will take a corner of it and rub on the gum, causing the child a whole lot of pain, to say nothing of the danger of infection.

Another point I want to make is this: that the cuspid teeth will sometimes deceive you, because of the tough membranous ring that forms around it after the cusp is really erupted. It will remain in that condition for some time, and must be clipped to bring relief.

Another point: As to palliative remedies, we have found that the use of a little ice teat, instead of a sugar teat, is beneficial. Take a little piece of ice, about as large as a marble, and put it in a piece of muslin. We found that it was the next best thing we could use for the children. It cooled the parts, lessened the hyperemia and inflammation, and in that way gave a great deal of relief. Of course antiseptics, listerine, etc., are a help.

Another thing that I have observed: We have had two bottle-fed babies, and one breast-fed baby, and I have noticed that the bottle-fed babies did not erupt their teeth at the normal period. I have noticed that repeatedly. They do not erupt their teeth as early as the breast-fed baby. Two of ours had no teeth erupted until they were a year old. Now they are perfect and all right. That is one thing that you will run up against as practitioners. Mothers will worry you about children who arrive at eight or nine months and haven't any teeth erupted. Some children will erupt teeth at five

months. Assure these mothers that there is nothing to worry about. My observation has been that there is very little to that schedule which we have been taught so many years, so far as the question of the period of eruption is concerned.

Another point with regard to the blood pressure theory as the cause of erupting these teeth. It seems to me to be the most plausible and sensible reason for the eruption of the teeth that has been given. I think it will stand the test of sound reasoning better than any other theory that has ever been expounded. Now you have all seen in the pictures the wavy line that these crypts represent. Force is exerted by the blood pressure upon these open crypts, and later on, as the pulp chambers slowly close, there is less pressure, until they are in position and erupted, and the apices gradually become closed, or nearly so. That, to my mind, is the best theory that has ever been given for the eruption of the teeth.

Dr. Rasmussen:

I think one of the most important things brought out is that of lancing the gum. I want to call your attention to a couple of cases which came under my observation. Speaking of the permanent teeth being as important as the temporary, I wish to say that a girl twelve years old came to my office who had not slept for a week. She had been suffering from convulsions. I looked in her mouth and found a strip of gum about a quarter of an inch wide stretched over the second permanent molar. I took the lance and cut it, and she went home and slept.

Another case: The story the mother tells me is this: At the time the child was about twelve months old she became very restless. They called in their family physician, and the child kept getting worse and finally went into convulsions. She suffered from convulsions for about six weeks, and was treated for a great many things, among other things tuberculosis of the brain. She says that after six weeks one day the fourth molar tooth erupted, and the child never had another convulsion; up to this day the child is a cripple. She is paralytic; the right side is paralyzed and always will be. She has very little use of the right arm and leg. I mention this case to show the serious effects. I haven't the least doubt that if those gums had been properly lanced at the time, and kept open, if need be during the six weeks until the tooth was out, the child would have been a

healthy child today. Of course we have all seen a great many cases of third molars, which I need not take any time to mention.

Dr. E. A. Geilfuss:

Gentlemen, I wish to thank you for the very kind reception you have given this paper. My main purpose in bringing it before you was to give you a clear and definite history of the subject of teething. I realize that if any advance in this line of work is to be made it must be made by the dentists, and in the way of education; not alone educating the parent to the necessity of operative measures at this time, but also the necessity of educating the physician; for, as I have stated, as a rule the dentist has not an opportunity of seeing these cases. I have been very much interested in this work for over five years. I claim no originality. Dr. Truman used to expatiate at great length to us students on the subject of lancing in these cases, and it seemed so very obvious to us that I never realized until five years ago that, at least so far as the dental profession was concerned, there was any difference of opinion. At that time I had a case where I had lanced for five teeth which the child had erupted at the age of five months. The conditions were not so serious as to have produced convulsions. In fact I personally have never seen a case of convulsions due to teething; but the diarrhœa, the restlessness, the sleeplessness, and general febrile conditions were present, and they were in all cases relieved. During my absence in the South another practitioner, a man for whom I have the greatest respect, was called in and refused to lance. He did not believe in it. I returned two days afterwards and the first thing I was requested to do was to call at this house, and I was told that the child had not slept quietly for forty-eight hours. I lanced for the molars, and before I left the house, within half an hour, that child was sleeping quietly and had no more trouble. From that time on I took up the subject, and I have written a number of papers upon it. Tonight in my paper I have not gone into the matter of procedure, or the various causes of disease. I have simply endeavored to make an analysis of the literature on the subject, to the extent that I was able to find it. In a way I wish to apologize for the length of the paper, and the length of the quotations. In my work I found I had extreme difficulty in getting at complete library facilities in reference to dental literature. I went through the entire literature on the diseases of children in the Mil-

waukee Medical Library, and I was very fortunate in being able, through the courtesy of Dr. Arthur Holbrook of Milwaukee, to have access to the complete files of the *Dental Cosmos,* and even the *Dental News Letter,* which preceded it. I have worked through every reference on the subject of dentition appearing in the dental journals from 1847. You will notice in quoting from many of these ancient authorities that I did it for the purpose of showing that, through their lack of medical knowledge, it was customary to ascribe any and every disease which occurred from the age of six months to two and one-half years, to teething; and as medical knowledge advanced, and the etiology of diseases which were found during childhood were shown to be due to other causes, it gradually became the custom to take the stand that teething was not a causative factor of disease; going to the other extreme. It was hard to understand why that was the case. It was for that reason that I have given you these complete quotations from the literature on the subject. The matter is one that should be brought more particularly to the attention of the medical profession, because they are the ones who, as a rule, have access to these cases. I have the history of over a hundred cases that I have had. It has been due to the fact that I was interested in this subject that I have preached a whole lot to prospective parents of children, to whom I had access. In order to properly alleviate these conditions it is necessary for us to carry on this work. It is necessary for us to awaken the interest of the parents in the matter, and through them their family practitioners, or in cases where we have the opportunity to directly broach the subject to the medical practitioners. I have made it a practice during the last year to bore every medical friend or acquaintance with whom I came in contact with this subject, and I believe I can safely say that not one physician out of a hundred has any conception of the growth of a tooth; either of its embryology, its anatomy, or histology. About all they know about the teeth are the few lines which appear in Gray's Anatomy. Those that are honest will concede it. It is a subject which I think is of considerable importance. I thank you.

DISCUSSION ON THE PAPER OF DR. RAICHE ON "THE VALUE OF LIGHT ENERGY IN DENTAL PRACTICE."

DR. A. J. KUHNMUENCH:

In speaking of the anesthetic anodyne and analgesic effect pro-

duced by the leucodescent lamp, I am of the opinion that the lamp merely acts to produce hypnotic analgesia. I believe the method to be valuable only in so far as it is capable of influencing the mind of the patient. I do not believe that the light itself has anything whatever to do with the success of the operation other than that it is a subdued form of light and tends to bring about a drowsy condition because of its lack of stimulating effect upon the optic nerve endings. As for its property or properties of destroying the pus and the micro-organisms, I wish to say that this is undoubtedly due, if it be the case, to the stimulating effect produced through the electrodes of the individual cell on the cell proper that is supplying or producing the increase in growth, and at the same time supplying the necessary elements that go to make up the organic system. If this be true, that the stimulating effect will destroy the pus and micro-organisms, I can see where the lamp will be of great value to the dental profession, as well as the medical.

In listening to Dr. Federspiel's paper yesterday, relating to after treatment in cases of orthodontia, that is where they reach a certain age, say after the age of fifteen, I would say that the stimulating effect produced by this particular lamp might produce the proper increase in the growth of any tissues surrounding the regulated teeth, but I doubt it very much.

Dr. E. C. French:

I am very much in the position of the blind man that was brought before the Great Healer and was healed of his blindness. Some of the skeptical at that time asked what caused his healing? He said, "I only know that wherefor I was blind I now see." Now, I haven't had any experience in the use of the leucodescent light in the practice of dentistry, but I have had the beneficial effects of its use on myself. About the first of April, after fighting the grip for a month, trying to do work when I should have been in the hospital, a friend of mine said to me, "Why don't you quit work; you are not fit to work." I said, "You know why, because I can't stop; it is as natural for me to work as to eat." A few mornings after that he came up to my office about 8 o'clock. I had been there since 6 o'clock. He knows my methods of work. I was sitting at my bench in the laboratory. He came in and looked at me and he says, "Doctor, put down your tools and go home and go to bed." I paid about as much atten-

tion to it as I did to his previous advice. The next morning he was at his office and I was at mine. In a few minutes he came up, and I was sitting in the same position as the morning before. He asked me to stop work a minute. He examined my pulse, looked at my tongue and examined my lungs. He stepped into the laboratory and told my son to order a closed carriage and get me home, and get what necessary things I would need for the hospital. He said: "Take your father to the hospital at once; I have made provisions for him, and the nurses have their orders what to do." It startled me. I obeyed the doctor's orders and went to the hospital. When I was in bed I found that I was "all in." I did not get out of bed I think for ten days. I was completely exhausted. I had an attack of pneumonia, and on my chest today you will see the effects of the treatment I had. As soon as I was able to get out of the hospital I went home. I tried to get to my office each day, but I had a terrible cough and could not sleep nights. I went to a specialist and he examined my throat. He said, "I cannot do anything for you except to give you a little palliative treatment; you have got to get outdoors." In the meantime my friend said, "Why don't you go over to Dr. Bailey and let him use a leucodescent light on you." I didn't believe in it. Now this isn't hypnotism, but plain fact. I knew the doctor well. Said I, "Can you relieve me?" He said, "I think I can. I have relieved several similar cases. Get on the table and expose your chest. I am not going to tell you anything, but leave this entirely to me." I have had some of the best hypnotists in the country who could not hypnotize me. They had no more control over me than an infant. I am too positive for anybody to operate on me along that line. I was on the table and he had the 500-candle power lamp, and applied that to my chest. In less than five minutes the whole congestive condition was outlined on the outer surface, so that you could see exactly where it was. After twelve minutes' treatment I felt a relief. After treating me on my chest he turned me over and treated me on the back, and when the rays of that light struck the position corresponding with the trachea I could feel it going right to that point. Now, mind you, there had not been a night from the time I left the hospital up to this time that I did not cough half of the night, and I could not get relief. The specialist told me: "You have no force there; the organs are so inflamed that you cannot get any grip on it

to throw it off." I went home that night. He gave me about thirty minutes' treatment. I slept that night without any disturbance.

Dr. C. C. Southwell:

May I ask if this is on the subject matter of the paper? I cannot hear very well here.

Dr. E. C. French:

I am talking about the leucodescent light.

Dr. C. C. Southwell:

I am wondering if you are speaking to the paper under discussion.

Dr. E. C. French:

I am simply substantiating from a medical standpoint what the doctor says here with reference to the effects that he has had in the treatment of the teeth. Five treatments cured me. Two treatments relieved me absolutely, and I haven't had a tickling sensation in the bronchial tubes after the fifth treatment. I am going to continue that treatment for catarrh, and I know I am going to be benefited. Now I say there is an efficacy in the leucodescent light, and I hope it may prove one of the best things we have ever had for treating the special conditions of the mouth.

Dr. M. N. Federspiel:

I want to thank the essayist for having so ably discussed in his paper the value of light energy. We are informed through the writings of various pathologists in the medical and dental literature that the leucocytes play an important part in stimulating, and in arresting the formation of pus that has accumulated from various causes. I am firm in my belief that light energy is a powerful factor in causing the heart centers to act upon the heart, increasing the pulse and producing a rush of blood, carrying with it a vast amount of leucocytes. They are thus enabled to eat up these pus cells, and destroy the formation of pus.

Dr. T. A. Hardgrove:

This question of light therapeutics, or whatever it may be called, carries with it a great deal of value, but it is due to no mysterious value held within the leucodescence, or any other quality of the light, according to my judgment. It is simply a thermal condition. They are accomplishing with other means nowadays the same thing that is accomplished with the lamp. The destruction of pus organisms, which is caused, as you know, by the increased number of white blood

corpuscles and the activity of the cells as a result of that, can be produced by an increased heat or hyperemia, and then a relieving of the hyperemic condition tends to produce a resolution; and in my judgment that is the sum and substance of the whole thing. You simply assist nature by thermal means to bring about resolution. In the case of Dr. French I think he had reached the crisis in his condition of pneumonia, and the lamp, from its thermal effect, undoubtedly helped the resolution; but I do not believe it has any mysterious bacteriacidal benefit, as is claimed so much for it, except that it helps nature to establish leucocytosis, or an increase of the white corpulscles, the function of which is to destroy the pus microbe and bring about resolution.

Dr. J. S. Danforth:

There appear to be two theories advanced. One advanced by Dr. Federspiel, and the other the frequency of the light vibration. I know very little about these vibrations, but it is possible that this light vibration has a frequency of such a character that certain microorganisms could not withstand such frequency; either too great or too small, I wouldn't say which. But that is possible, it seems to me, to be one of the factors in the curative properties of the leucodescent light.

Dr. Doyle:

Dr. Hardgrove has suggested perhaps the principal effect of the light ray is due to thermal conditions. The fact that the most useful ray in the light spectrum in this treatment seems to be near the end of the spectrum, approximating the octave of the heat rays, would lend strength to that argument. But it has been said that, excluding the heat ray and applying only the light ray in this manner of treatment, the effect is produced without any appreciable diminution in result. The rays of light approaching the octave of the heat rays seem to be the most effective in the hands of those who have used it. That is the only information I have. I have no experience with it myself. The fact occurred to me that approaching the heat rays might give strength to Dr. Hardgrove's idea.

Dr. F. E. Raiche:

It is hard to understand that we get any chemical effect, but if you would study it as I have studied it you would readily understand it. As I said, a test of the light was made at the University of Chi-

cago, and it was shown that the light covered the spectrum to the ultra-violet rays; and it is well known by light specialists, for instance a man like Finsen, that the ultra-violet rays are germicidal. It has been decided in Chicago that it has a germicidal effect. Tests have been carried on where the light has been used upon the cultures, and has killed them and inhibited them. In cases of running sores the pus seems to have been dissolved and the pus microbes simply wiped out. Of course the hypnotic influence of the dentist over the patient has a great deal to do with that, as well as with all our work. If you can gain the thorough confidence of the patient by a certain amount of hypnotism without getting them completely under the influence, your work will be a great deal easier. You know there are a great many people suffering from imaginary pain, and this would help wonderfully where you would not get the effect if you did not use it. It is a fact that it is germicidal; and you can use it with the same effect without the heat. There is an apparatus to be used in certain cases where you do not want the heat. It is better to use the heat if you can use it, because the heat has a good effect also. It is a fact that it takes care of the disease by stimulating the blood cells. We know that if nature could have its way, and the blood do its duty, we would not need to help it; the blood would do it. The light helps by stimulating the blood cells into action; and the vibration of the light we suppose is what causes a part of the cure, by the vibrations causing the blood to circulate. The higher the vibration the more germicidal it is. That is why we want high candle power, and high amperage. Dr. Kuhnmuench spoke of its value in orthodontia. I reported in my last paper mention of a case which I treated, a small frail young girl whose membranes in the jaws were extremely sensitive. If I hadn't had the light I would have had to take off my apparatus. Instead of that I used the light on it, and left the apparatus on, and in two treatments of two hours' time stopped that pain, and from that time I carried on the case without further trouble.

Dr. French described his experience with it, and that is the experience of a great many people that I have read about. I have not treated any cases as bad as that, but it has been reported many times that consumption has been cured by sterilizing the pus, and stimulating the blood. I have used it in my own family, in one case on my little daughter. She caught a bad cold and it settled on her chest, and I believe she was starting on a run of pneumonia. I took

her to my office and gave her two treatments, and aborted it. It is practically on the lines of the Finsen ray, only the Finsen ray requires an expensive apparatus and very high current, and this gives you the same effect without going to such an expense. The Finsen ray is only a violet ray, and it does not do all that this light does. In treating cases of troubles of the teeth I have noticed, where they have had bad colds and would be hardly able to breathe, that in a great many instances I have cured the cold in treating the troubles in the jaws.

Dr. Hardgrove mentioned, I believe, that the principal effect was thermal; that we would not get results without the thermal effect. Of course it is better to use the thermal effect if we can. Again you must remember that heat alone will promote suppuration; so if we think it is the heat of the lamp which does the business, why I have an idea that we would get even more suppuration instead of stopping it. Dr. Hardgrove asked what action I hoped to produce on the blood current. I believe the action introduces the vibration of the light and the way we use it causes the blood to circulate. The light is hung on a bracket on the wall, the same as the Ritter engine, and it is swung over. I do not know that it causes the blood to circulate, but in the vibration of the light the blood seems to follow the way the light is used. When we use it in general treatment of the spine we begin high up and go down to the feet, and from the feet to the head again. If you want to bring the blood to the head you reverse it. If we want to use it on the abdomen we have to be careful. If we turn the light in a circular motion in opposition to the peristaltic motion of the bowels, we will have the peristaltic motion going the other way, in the stomach. This was done at one time and the patient was thrown into an epileptic condition. Then the physician used the light in the other direction and cured the epilepsy, and cured constipation. In using it on the spine and abdomen we can cure constipation without cathartics. The movement of the light has a good deal to do with the circulation, and with the heart-beat.

Dr. Hauser:

Do you strip the body?

Dr. Raiche:

You have to strip the body to use the light for general treatments. The light won't go through the clothes. In dentistry the general treatments are seldom used.

CHICAGO-ODONTOGRAPHIC SOCIETY, MEETING OCTOBER 20, 1908.

A PAPER ON "OUR LITTLE PATIENTS" WAS READ BY DR. C. B. ROHLAND, ALTON, ILL.

DISCUSSION.

DR. J. N. CROUSE:

At an unguarded moment, when Dr. Gallie called me up on the telephone to know if I would open the discussion on Dr. Rohland's paper, I gave my consent. I knew five minutes afterwards that I had made the great mistake of my life. Then I wrote the essayist to let me have a copy of his paper beforehand, and he sent it, but I did not read it; it was about thirty-odd pages long, written with pencil, and it would have taken me about a week to read it. So I thought I would take the chances on guessing what might be the nature of his paper, but I have missed it. I have readily obtained the line of discussion he would pursue and the plea he would make, but I did not suppose he would have made it so thoroughly that I could not get a wedge in edgewise. I thought I knew something about that subject and would be able to say something he didn't say, but it is all covered; there is nothing left. However, I would say that I differ with him in one or two essential principles, wherein if I have a child that is not governed at home, that has never been made to mind anywhere, if in order to get that child in hand it is necessary to use some force, I use it. I do not take a cudgel or anything of that kind, but hold him, and hold him till he cannot get away, and that is a method used in the kindergarten. A kindergartener that is thoroughly versed will at times take a child and hold him until he will do what is desired of him. I have made more reputation, gained more in my practice, from my control of children, over and above some others, than from any other one thing. I have had children brought to me from other cities that could not be handled by anybody else, and I have kept at it until I conquered the child, sometimes in one way and sometimes in another. If the child is timid we must not start to work quickly and frighten him, but handle him in a gentle manner until he becomes acquainted with us. Then there are other children in regard to whom I discover in five minutes I have a customer on hand who must have the conceit taken out of him, sometimes in one way and some-

times in another. The study of the way to handle the different temperaments and dispositions, with the varying methods of government that have been employed at home, is full of value and interest. The child is one of the biggest problems the dentist has to deal with. If I were going to make a prescription (I don't want you to think I am a crank on the subject) I would prescribe a course in kindergarten work for every young practitioner before commencing practice. He could learn a lot. I received my training in this respect late in life, but much of it was in association with one of the trained kindergarteners of the world, Miss Harrison, who at one time lived in my family for eleven years, and I studied the subject and learned many things I never dreamed of before. So I put that out as a prescription.

I know that many here wish to discuss this subject and I am not going to answer Dr. Rohland's last problem as to what we are going to do with the child who comes with the teeth knocked out. Dr. Rohland did not tell us what he would do, and I do not think I will tell what I would do. I have seen such cases, but never knew what to do with them except to use palliative treatment. I certainly would not put a plate or bridge in the mouth.

Now, how many of you cannot recall the deformed mouth, the deformed teeth, of adult patients who come to you with one of the permanent molars having been extracted or lost early, and the mouth deformed for life on account of it? There is nothing that can take its place, nothing that can restore that loss. This is not always the fault of the dentist, and yet more and more I think it is the duty of the dentist, and if I was going back forty years I would adopt a system—it is the duty of the dentist to instruct the families for whom he works that the children should go to the dentist early and often, much oftener than I have been in the habit of having them come, because it is in the early examination and care of the mouth that the greatest amount of good will be accomplished. We generally, as Dr. Rohland says, get the child when the toothache comes and causes a disturbance. If that happens to come early, all the better; if it comes before the first permanent molars have shown through, all the better—then we begin to get at the permanent molar when it does come; it gives us a chance to meet the difficulty. And when you think in how few cases comparatively the permanent teeth first to erupt receive sufficient care, the importance of seeing our children early

cannot be too much emphasized. I have made many mistakes in the care of children; I have often made too prolonged operations, attempted to be too thorough with a little child, instead of making the work temporary and gradually advancing in the line of work. I know I have made mistakes that way, the child as a result dreading to come again. And in that case it takes a long time to overcome that dread and regain confidence.

When a child myself, the first dental operation I had was when a distant relative of my mother came to the house with forceps and instruments (we lived on a farm), my mouth was shown to the dentist, as my teeth were crowded in front; he got me in the chair, the forceps up his coat sleeve, and took out the lateral incisor without explaining what he was going to do. I was so angry that if I could have procured a club I would have killed him, and he ought to have been killed! I never will do that sort of thing, and I do not think I ever have. Deception is not one of my qualities. But many times I have overtaxed my little patients and tried to do too much, and if there is any one thing I regret it is wherein I have made the dental chair a dread for years afterwards.

I would, therefore, advise several sittings, having them come six or eight times before doing anything. If I am disciplining the child in a way that has not been practiced at home, this is the most essential thing I can do for the child, and I often have him come time after time simply as an excuse to get the child there and become acquainted with him. The process of getting well acquainted with the child and having the child become well acquainted with you, is one of the most important things that you can do in the practice of dentistry in families of young children. Then there should be a system, which is being agitated, whereby the dental profession may see the children more frequently than they do, and suggestion of that at the proper time will doubtless be made. I do not have any prescription for it, I have thought of it a great deal, but I have never seen my way quite clear to advocate a plan that would bring about a reform in this direction.

In closing let me say that the biggest fees I ever get is for work done for the children. I consider I have a right to have more for my services to the children than to adults, for I have more ability in that direction. And I explain this to the parents, giving it to them early and then again later, so they will not be mistaken about it.

Dr. F. H. Skinner:

I am a little worse off for a discussion than Dr. Crouse was, for I did not receive a copy of the paper till three p. m. today, and since then I have been too busy to read it.

I want to compliment the essayist on the broad view he has taken of this subject, and the usefulness of his suggestions, especially the stress he lays on becoming acquainted with the children.

Regarding the last case cited, that of the child with the teeth broken out in front, I hesitate to venture any suggestion; but it seems to me that something ought to be put on there that would keep the arch expanding. I had a similar case, wherein a little boy lost his central incisors from being struck with a baseball bat. I put bands on laterals and temporary cuspids, with spurs running to lingual of first temporary molars, set a jack-screw and kept it spreading. I did not get as much room as I would have liked, but at least succeeded in keeping the arch from closing up, and thereby made a better looking lad of him when later I put in a bridge.

One point which I think is very important in the treatment of children is the education of the parents to the necessity of closely watching for foreign substance and stains on the children's teeth, for these will usually result in decay, unless removed. Induce the parents to bring the child in and let you become acquainted with him; give the little one a ride up and down in your operating chair for the first sitting; the next time let him look in the hand-glass, and if you find any stain on the teeth show it to him, with the help of the mouth mirror if necessary; then with an orange-wood stick, or dental engine, and flour pumice stone, polish off all stains and accumulations, and let the little one see how much better his teeth look. This encourages pride in his appearance. He also becomes accustomed to the dental engine, used in this way, and is not afraid of it when it is necessary to use it.

If the child is brought to you suffering, of course the pain must be relieved. As suggested by Dr. Crouse, never say that you are merely going to look at the tooth and then extract it, even should the parents suggest it. I tell them that I will not prevaricate to a child under any consideration. If the tooth has to be extracted, tell the child so. Always use an anesthetic with children when possible in painful work, ethyl chlorid, some form of cocain, or gas; if ethyl chlorid, tell the child it will be cold; throw a little on his hand first

and let him learn how cold it is. Give gas, if necessary, but never lie to the child; make a friend of him. Where possible, for the first operation, do something you are sure will not hurt. One rule I have is never to say a thing is going to hurt. I say: "It may be a little warm; if so, you squeeze my assistant's hand, and just the squeezing of the hand will give me the signal that will stop this humming-bird." The child often tries it by way of experiment, but it always stops the engine. This gives confidence and teaches him not to reach up and catch hold of the operator's hands.

I have always made it a rule to give children a present when they come into my office, a ball, a bat, a top, a doll's flat-iron, a doll, perhaps only a ten-cent Japanese fan, but these little attentions make friends of them and they like to come back.

I often stain foreign substances on the teeth with iodin, not the alcoholic solution, however, for that smarts the little gums. I use iodid of potassium and iodin, ten or fifteen grains of each to the ounce of water, which solution can be used on the teeth without smarting the gums, and is just as good a stain. Where possible, begin prophylactic work before any decay starts; also cover fissures of molars with copper cement; Dunn's Oxydate is going to be very good, I believe, and the color is not so objectionable, but as yet I have not experimented with it much.

It is frequently very hard to work on the mouths of little ones, especially the lower molars, on account of the tendency to gag. A one per cent solution of cocain on the side of the tongue will give a bitter taste, which they do not like, but it acts as a mild anesthetic and also takes the mind of the child off from what you are doing, which is important.

We should never, I believe, clean a child's teeth without charging something for the service. This brings them up with the idea that prophylactic work is worth something. I lost two families through charging what I considered a reasonable fee for the time spent in cleaning children's teeth, if we may call it such, by reason of their having talked with friends who said, "Dr. So-and-So never charged anything for cleaning my children's teeth," naming a prominent dentist in the city. I think this is a mistake; it is an education to the parents and to the rising generation that this class of work should be paid for, and paid for well.

Again I wish to thank the essayist for the able manner in which he has handled this most interesting subject.

Dr. G. V. Black:

I do not feel like entering into the discussion this evening. I came especially because I knew Dr. Rohland would say something that I wished to hear, and I have not been disappointed. I knew I would not be. And I came also for the reason that I am interested in the little children. If there is anything that the dentists of America have neglected more than another, it has been the little children, and if I could make an appeal to you this evening that would induce you as a body of men to spend more time and thought, to put more earnestness into teaching, as you have occasion in your offices, the parents of these little children their duty towards them in this respect, I should be very glad indeed to spend any amount of time that would be available to bring this about. The more I study the subject of dentistry, the more clearly it is shown to me that much of the difficulties that occur later, occur because of neglect at the proper time with the little children. So I want to appeal to every man here to interest himself in appealing to parents to do justice to their children, to bring them to their dentists, no matter who he may be, sufficiently early, and they cannot bring them too early. And see to it that the wisest thing is done then, before the shedding process of these teeth begins, before decay has begun and become irreparable—get to these little patients early enough to do the best thing for them. We may not be able to tell just how to do it in every case, but I take it for granted that every man will do the best he can, and he can usually do the best thing when he is interested and tries. Now be interested.

Dr. H. A. Cross:

The very frequent and uproarious applause that greeted the reading of the paper this evening is sufficiently complimentary to our assayist without my adding to it.

A few years ago a paper was read before the Chicago Dental Society, which goes largely in making up this society, as you all know, upon practically the same subject.

On that occasion Dr. Crouse opened the discussion and I was foolish enough to make some remarks myself. I evidently then placed myself on record as being cross by nature as well as by name, judging from the manner in which my remarks were taken by those present.

Dr. Crouse, in the course of his remarks, referred to a case in his practice which reminded me of a case in my own practice which I recited, telling how I had dealt with a child who evidently was accustomed to having her own way about everything in her home life. The members present on that occasion when I cited that incident in my practice evidently thought that that was my general rule in dealing with a child of that nature, when in fact it was my only case. I will review it briefly.

The child had been to my office several times with her mother, and it became very evident from the outset that the mother had no control over her whatever. I tried in every sort of pleasant way, with smiles and coaxings, and promises to be very careful in the work of filling her teeth, all to no purpose or satisfactory results. I could accomplish nothing to speak of.

On another occasion the child came again, but with an older sister this time, the mother not being present, and I made another attempt to render the needed service, explaining to her what was necessary to do, and that I would exercise the greatest care to avoid hurting her, but my efforts were of no avail. I then said to the older sister: "Will you take a seat in the reception room, please?" She did so. I then said to my young patient, "Now, my young lady, I have explained to you what is necessary to do in your case. It is not on my own account that I am trying to accomplish it, nor on your parents' account, nor your sister's, but for your own good and welfare. Now you will either submit to this careful operation or you will get out of my chair, and you will leave my office, and you will not be allowed to enter it again. There is no sense in your making such a fool of yourself. I don't propose to waste any more time with you."

I suppose our essayist would say that such a course was unjustifiable. What was the result?

She hastily glanced up at me with an expression indicating that she thought she was "up against it." *And she was.* She then submitted very quietly and patiently while I inserted several fillings. In doing the work I worked myself into a high state of perspiration in my efforts to avoid causing pain. Upon the completion of the work, to my astonishment she inquired, "Aren't you going to extract that tooth, doctor?" I had previously explained to her that it was necessary to extract a tooth. I extracted it without administering an anesthetic of any kind, it not being a serious case. My young patient

did not shed a tear while I was filling her teeth, nor in the extracting either.

You notice that I gained control and at the same time the confidence of my little patient by being firm and decisive with her, having her separated from her mother and sister. Having her separated from all her family associates and thrown upon her own resources, it was an easy matter to overpower her spoiled will power. When parents bring their children to me for dental service I tell the parents that I prefer to take the child into my office alone with none other present than my young lady assistant. I also tell them that I may not accomplish much the first time, when the child is not acquainted with me nor familiar with my methods; that it is absolutely essential that I should gain the confidence of the child by doing some unimportant thing with their teeth which could not possibly cause any pain. It has been said that "the first impression is the most lasting," and when our little patients are not hurt in the least at their first call they have no fear of the second or subsequent calls. And I want to say that as a rule I have less trouble with the children than with many older people.

Dr. C. N. Johnson:

I am extremely full of this subject, but I have some hesitancy in rising here tonight for a reason that I am going to mention. I come to these meetings month after month and I fear there is a tendency to have the same speakers over and over again, and I have the feeling that we want to bring out the young men and the new timber in this society. I think I am entitled to say that, because I speak almost every time myself, and for that reason I come out and say that I believe the men here who come so frequently and sit and listen should be brought to the floor. I do feel there should be reform in this matter, that we should bring out new timber and not listen all the time to those accustomed to speak so much. I wish the society would bear that in mind, and that the president would take occasion to call out new men here. You never will develop talent in speaking before societies except in that way. There are many men here who have within them the elements of instruction for every one of us, and so I think they should be brought out.

I have seldom listened to a paper that has pleased me as this one has. That paper is, as are nearly all of Dr. Rohland's papers, a classic; it is a delight to listen to the reading of a paper like that.

Do you know we have some of the best timber in the dental profession of any profession on earth—I challenge any profession, even as learned as that of the law, to produce a member who will read a paper on any topic in law that will be as nearly a classic as is this on the management of children.

The keynote of the paper is honesty in our treatment of children, and that should be the keynote of every practitioner in his attitude towards children. I am sometimes inclined to feel that were I to start out on a campaign of deception I probably could succeed in deceiving the adults with whom I came in contact, but I haven't sufficient confidence in my own ingenuity to believe that I could ever deceive a child. Children have not reached that age yet which gives them a perverted point of view. They take a man or a woman at par. And I would rather have the commendation of my child patients than the commendation of the adults.

It has been the custom tonight to recite cases, and sometimes cases are very instructive. Therefore I want to recite one, if I may be permitted, which will serve as an index to my method of treating children.

One day many years ago a mother brought her little daughter into my office, dragging her by the hand, and I want to say that this mother was well dressed, she was not of the ordinary class—she dragged this little child, with the tears streaming down her cheeks, into my office. "Doctor," she said, "this child's teeth need attention, and if you can do anything with her you can do more than I can!" "Well," I said, "I will try; have you any shopping to do?" "Yes—why?" "Because you had better go and do your shopping and leave the child with me." I saw instinctively that there was something wrong between the mother and the child. I took that little girl into the operating room, quieted her, talked to her, and, needless to take you all through the details, finally was able to attend to the dental work that was necessary without any trouble at all. When the mother came back the tears were all dry, the child smiling and happy. "What in the world have you done with her, doctor?" the mother asked. "I have simply attended to the dental service for which you brought her," I replied. "Well," she said, "we could not do anything with her; I cannot understand it." I made an appointment for another sitting and the mother brought her back in a few days, saying: "What did you do with the child, hypnotize her? She never hesitated to come

at all." I said, "No, madam, I did not hypnotize her, except to treat her kindly, which I believe is the best hypnotism we can practice on our patients." "But we cannot do anything with that child at home," she insisted. "Allow me to say this, madam," I replied, and it was the most pathetic thing I ever said, "as a mother you do not understand your own child. You have not treated her right, you are not fit to be her mother, and you should be ashamed of the relationship between you. You have not done anything to train her, you have done nothing but abuse her. If you wish to control your child, you must learn to be kind to her. You talk about me hypnotizing her, but you should hypnotize her with kindness—that, every mother owes her child; study her temperament, for she has a temperament different from yours; you do not understand her, and yet it is your first duty to understand your child." And it is the first duty of the dentist to understand the little children that come to him; he cannot always take them the same, but every man who practices dentistry should study human nature sufficiently to learn the motives and impulses that are behind those little brains and hearts of the children that we treat. That little patient would sit in my chair and submit to any kind of pain if it was necessary and never complain. I believe this, and it is the one single remark I want to make in conclusion: That it lies with the dental practitioners of this country to develop the manhood and womanhood of these children as no other class of people can. We come in contact with them even more frequently than does the family physician, and when we speak of discipline, I believe that some of the best discipline many children have had has been by the dentist. And I believe also that the best discipline some of our adult patients have had has been in the dental chair. With the opportunity that is presented to every practitioner, it is the duty of the dentist not only to attend to the teeth of the children, but to so develop character in them that he will make better men and better women of them. We can do that, and we have a function here to perform that few men realize.

It is a higher function even than that of preserving the teeth.

PRESIDENT GETHRO:

What Dr. Johnson has said about the younger men is very true and we want to have them brought out, we want to have them make the best of their opportunities in speaking at these meetings. The program committee had that in mind the last time when they had

those questions, and we did bring out a lot of talent that had never been on the floor. So I wish to extend an invitation to the younger men of the society to make the best of their opportunities and speak here as often as they will.

Dr. W. R. Parker, of Brisbane, Australia:

I am sure, after what Dr. Johnson has just said in presenting me to you, that in the few remarks I have to make you will be disappointed, as they will not come from an orator. I have certainly come a long way, but the paper read this evening is one, I say it with all feeling, that it was worth coming from Australia to listen to. The subject is one of far-reaching importance, as has been impressed upon us by the previous speakers. When we come to consider what a little care in the early years will do for the children, this must be brought home to every one of us. The gentleman who opened the discussion related the disfigurement he had suffered; that has been done with many of us, with the best intentions, but it has been done. It is a case of malpractice and at the same time a case of trickery which the patient, young or old, as the case may be, will never forgive.

In listening to the paper the thought struck me that I only wished that in my childhood days I might have been able to have had the services of such a dentist, because I lost confidence for many years, a loss from which I am still suffering.

Speaking about the children, my experience has been that the best of us will hurt them sometimes. But I have found that by first pacifying the little one, then doing some trifling thing, you will gain the confidence of the patient; then when I come to something that will hurt I say, "Now be as brave as possible, I will hurt you a little this time," and if you do the work with a quick and dextrous movement you will accomplish something and the child will not notice it, but instead will perhaps say, "Why, I thought you were going to hurt me, I was not hurt a bit."

The subject of the care of children's teeth is something that is growing, and there are so many new and clever ways of doing things that some of us may be in danger of losing sight of what is being done. Many magazine articles appear that are helpful. One thing that has been overlooked, I think, by the previous speakers is that not only should we strive to do the best we can in accomplishing actual dental work for the children, but even if the child has nothing to be done in the way of operation, the parents or guardian should be impressed

with the necessity for keeping the child's teeth clean. In one respect the child is too young to see the dentist, but that, gentleman, I think is the time of the dentist's life for him to impress upon the person the necessity for saving the first permanent molar. I suppose 999 parents out of 1,000 will say, "Oh, I didn't think that was the second tooth," and many of them have been lost through the want of care on the part of the parents in informing themselves as to the necessity of having work done at the right time.

I want to take this occasion to thank the members of the profession for the kindness they have shown me on this my first visit to the great city of Chicago. I am sure when I go back to my native land the dentists there will feel greatly honored at the way you have received me. And before I sit down I would also like to bring to your notice the fact that in November, twelve months from the coming month, the second Dental Congress of Australia is to be held in Melbourne, and not only the president of that association, but other members of the committee who have worked hard to make this congress a great success, have written me to extend to American dentists an invitation to attend this meeting. They feel that the success of our first congress was largely due to the help of our American brethren, and they are looking forward to getting some possible help in the way of papers for this meeting. So if our American brethren will be able to visit us in that land, which is really not far away, if any of you care to take a three months' vacation you can easily visit us, the profession will be glad to give you a right royal welcome. In addition to that, if at the last moment you should find you cannot come, any help that you can give us in the way of papers or new suggestions will be gladly received.

Gentlemen, I thank you.

Dr. L. D. Henderson:

My excuse for trying to say anything is through the kindness of Dr. Johnson and our worthy president in inviting the young men to come forward. I am not as young as a great many, but this is my first attempt to speak in a dental society.

I just want to call attention to one thing that seems to have been forgotten, and that is in regard to the education of the child. What has been said here tonight, both by the essayist and the speakers following, has not gone back quite far enough to suit me—it is not as far back as I go in my practice. When a mother comes to me to have

work done, and I know that she has a child two or three years of age, I tell her to bring the child to the office and let me get acquainted with it, which she does. I am very fond of children; love them dearly. As a consequence, when the time comes that it is necessary or advisable that something shall be done to the teeth of that child, the child is acquainted with me and I with the child. I put it in the chair, look at its teeth, suggest to the mother some way of keeping stains off the teeth, and follow that right up. Then when the child comes to me to have work done it comes with perfect confidence. It is surprising to see how patiently they will sit in the chair, even when I am obliged to hurt them; they will come so willingly and sit there looking into my eyes with a confidence that is pitiful, but not a whimper at anything I do. I think the office is the place where we should educate the children for the work to be done—commence early, get them familiar with the office and acquainted with us, after which we can do almost anything we wish.

Dr. C. R. E. Koch:

Mr. President, you were asking the young men to speak, and as I have been silent in this august body for a great many years I thought perhaps I might on this occasion be classed with the young men.

I do not wish to speak irreverently, but for a number of years I have believed that the great Teacher who spoke nearly nineteen hundred years ago and said, "Suffer little children to come unto me, and forbid them not," had especially in mind the dentist. Another great teacher said, "The child is father to the man." If that philosophy is correct, then as dental teachers, as dental practitioners and men in a profession devoted to the relief of human suffering, we ought not to forget that our first duty should be to the children. Aside from that, we are talking a great deal now about oral hygiene. If we wish to make that effective and bring about a condition that shall hereafter relieve dental practice from almost everything except the teaching of prophylaxis, we certainly must begin with the children. And in that connection I wish to say to the auditors here tonight that there has been a movement on foot for some time to secure dental service to the wards of the state in the state institutions, and I want to appeal to you to assist that movement, and especially in order that such service may be rendered in the institutions having the care of children, who should be trained in the proper laws of hygiene and the necessity for the preservation of the teeth. That is the place to begin a benefi-

cent work, and if next winter there is a legislative movement made in that direction, I hope that your entire co-operation will be obtained.

Before closing I wish to emphasize that which Dr. Johnson has much more eloquently said than I possibly could have done, for he has expressed the sentiments that have been mine throughout this evening: The paper of Dr. Rohland is a classic, and we all, I know, recognize our indebtedness to him for the pleasure he has given us.

Dr. H. A. Potts:

Referring to what Dr. Koch has just said in regard to state wards, I wish to voice the sentiments expressed by him very emphatically. It was my privilege to be a resident physician in one of the insane hospitals for a period of two years, and I can assure you that there is hardly anything more greatly needed than a dentist in the public institutions. Apropos of the evening's program I am reminded of what one of my colleagues said to me day before yesterday. As you are aware, the public schools of Chicago are now visited by physicians and nurses. One of these physicians said to me, "Potts, what shall I do with these decayed teeth of the children; what shall I tell the children to tell their mothers, and what shall I say to the teachers?" I should like to hear the will of the society in regard to a proposition which I will put as a motion, if it seems proper, afterwards. As you know, there is a dearth of dental teaching in our medical schools. The physicians are not to blame for their lack of knowledge—it is not taught. Now, it occurred to me that this society might do a very great work possibly if a committee were appointed to wait upon the health commissioner and through some manner of means devise a course of lectures to be given to these physicians who visit the schools regularly. In that way they may be taught the importance of the preservation of the temporary teeth, and, by knowledge which they do not now possess, be able to recognize various conditions of the mouth and appreciate the necessity for saving the first permanent molar, and more intelligently refer them to their dentist.

Dr. S. F. Duncan, of Joliet:

I was glad to hear the gentleman from Australia say that he was well repaid for coming so far to hear Dr. Rohland's paper. I even persuaded them to let me out of Joliet to hear it, because I knew it would be a fine treat for us.

There are two or three points I wish to speak about in the care

of children. One, particularly, is the attitude of the parents in the matter. I think that much of the dread that children have of the dentist and the dental chair is acquired because of the remarks they hear the parents make about the dental chair. They hear father and mother and the older members of the family say it is a terrible thing to visit the dentist, how they dread it, and all that, and naturally the children are timid about coming. Many times parents do their children a very great injustice in this way.

Another thing, they deceive their children in regard to the matter. I remember a case that came to me some time ago. A woman brought her little daughter to me. The mother had been to me a few months before and I could not do anything with her. But she brought her daughter to me, a child perhaps ten years of age, I think for extraction, although I do not quite remember now—but for some little service. The child was very nervous and timid, " a chip of the old block," and the mother kept saying to her, "Now, Bessie, it isn't going to hurt you a bit, just keep perfectly quiet." She hardly gave me a chance to get in a word edgewise, and kept it up until I really got mad, and I said: "Now, madam, there is no sense in your standing by my chair lying to your child; you may do it at home, but there is no sense in your doing it here; this will hurt the child some, and you know it will, and there is no use lying about it." She didn't like it very well, took the child away, and has not been back. I do not want her to come, but I trust she learned a lesson. That is just one instance of how parents often injure their own cause and that of their children. It is necessary, as has been said here, to gain the child's confidence, and you can not do it with a parent that does not stand back of you in it.

Of course, as regards the way we handle children, each one of us must have his own way. We are not all built alike, the children are not all built alike, and so we cannot lay down any hard and fast rules that will be adaptable to each and every child that comes to us. Personally, I always get along with the child pretty well if I can keep the mother away. I find that, as a rule, the mother does more harm in coming than she would in staying away. Of course, that is not always the case. As stated, we cannot lay down any hard and fast rules for all cases. There are some cases where it helps very much to have the mother with the children. There are others where it is a

very great detriment. But as a rule it is, I believe, better if the mother will stay away.

I certainly have been very much pleased to hear Dr. Rohland's paper tonight. It is an admirable paper and well worth coming to hear.

Dr. Rohland (closing the discussion):

Mr. President and Gentlemen: I know Dr. Crouse was perfectly justified in not reading through the copy of my paper that was sent to him. I sent it with an abject apology, however, because it really was in bad shape, but I simply couldn't help it. But I knew when he started in and said that the paper covered the entire field that there was a string to this statement, and, sure enough, before he had finished he managed to find a good deal that had not been covered and said a great deal that was very good. That one suggestion alone, that he made about young men starting in by taking a kindergarten course, was very apropos and worth considering. However, I will not take up any more of your time. I thank you very much for your kind attention.

BOOK REVIEWS.

Practical Dentistry by Practical Dentists.—Compiled and edited by I. Norman Broomell, D. D. S. Published by The L. D. Caulk Co., Philadelphia.

This is a book of 496 pages, consisting of short practical paragraphs compiled from the literature of the profession appearing in the last ten years. Dr. Broomell has arranged the contents under two leading parts, operative dentistry and prosthetic dentistry, and has subdivided these into chapters taking up the different phases of each subject. He has evidently given to this work much study, and the result is a volume which will prove of great benefit to those who are seeking for the greatest possible practical information in the smallest space. The book is useful alike to the student and the practitioner, and we cordially recommend it.

The Dental Review.

Devoted to the Advancement of Dental Science.

Published Monthly.

Editor: C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL.

CHICAGO-ODONTOGRAPHIC CLINIC.

On January 12 and 13, 1909, the Chicago-Odontographic Society will hold a meeting and clinic to celebrate the attainment of a membership of 1,000. The plan is to devote the afternoon of the first day to the exhibitors who will attend, and in the evening hold a session of the society. The second day will be devoted to clinics, of which there will be a large number on all subjects of interest to the profession. In the evening there will be another session, which will make two evenings with papers and discussions. The alumni associations of the dental colleges of Chicago have decided not to hold their usual midwinter clinics, but will all unite to make the Chicago-Odontographic clinic a monster success. This society is now the largest local dental society in the world, and it would seem a fitting thing to celebrate in this way. Remember the dates, January 12 and 13, and be sure to arrange to be present.

BISMUTH PASTE IN DENTISTRY.

Attention is called to the article in this issue by Dr. Rudolph Beck. The reports of medical practitioners on the efficacy of this paste in the treatment of old sores and chronic sinuses would lead us to believe that in this agent the dental profession has found a very important addition to its list of remedies for the management of many of the affections which have proved difficult of control in the

past. A very important consideration in the use of this paste is to follow the technique faithfully. Unless the paste is forced to the extreme depth of a pocket or sinus it will not work its greatest benefit, and in a just trial of the method care should be taken to see that the technique is conscientiously carried out. If this paste will do for dentistry what it is apparently accomplishing for medicine, we are one step nearer that perfect service of humanity for which we are all striving.

NATIONAL DENTAL ASSOCIATION.

The next annual session of this association will be held in Birmingham, Alabama, commencing the last Tuesday of March, 1909. The change of date of the meeting was made so as not to conflict with the usual vacation period, and also to accord with the most fitting time for a meeting in the south. Our southern friends are noted for their princely hospitality, and now that the association is to hold a meeting in one of the most beautiful cities of the south, it should really be considered a privilege to attend. The time is none too early to plan for this meeting, and those who desire detailed information regarding it may write the secretary, Dr. C. S. Butler, Buffalo, N. Y.

THE EDITOR'S DESK.

A VACATION ON TIRES.

(Continued from the December DENTAL REVIEW.)

When we left Mount Clemens we started for Port Huron. It was our purpose to go north of Port Huron about twenty-five miles to Amadore, to visit some friends before going to Canada. For a few miles out of Mount Clemens we had fine roads and then we got off our bearings and ran into the worst conditions we had yet experienced. It was a wild succession of hills and sand and roots of stumps across the track and finally a few miles of old-fashioned corduroy of the worst type. Such riding is said to be good for the liver, and if this is true our livers are all insured for life. The abrupt change from the corduroy to a beautiful macadam road a mile or so out of Port Huron soon made us forget our troubles, and from that to

Amadore the run was uneventful, except at one point where they were building a new bridge. A temporary roadway had been constructed in the ditch beside the bridge, but the bank was very steep and it didn't look inviting. There was nothing to do, though, but plunge down into it, and Betsey shut her eyes and made the dive, coming up on the other side like a water spaniel, shaking the mud from her coat as if glad it was safely over.

We remained at Amadore a few days, which gave us an opportunity to clean up the car and put her in good shape for the run to

ONLY AN INCIDENT OF THE TRIP.

Toronto. We spent nearly one whole afternoon overhauling her, putting in new spark plugs, packing the differential, etc. "It would be a joke on us now," said Fritz, "if we had put her out of commission so she wouldn't run at all after our tinkering with her." It must be remembered that neither of us had had much experience with the care or running of a car, and we never knew when we might make a wrong move.

The next morning we concluded to take the girls for a spin around the country, and ran Betsey out of the barn for this purpose. Fritz was at the wheel and I had gone ahead to open the gate. Just as he started up the engine suddenly stopped, and Fritz stared at

me in the blankest and most helpless manner. "What's the matter?" I asked. "Don't know," said Fritz, "she just simply stopped." I began to laugh. I couldn't help it. And then I laughed some more. In fact I gave the best imitation of a hilarious fool that ever trod the boards. I simply roared till my stomach ached and my mouth watered, and all the while Fritz sat there staring alternately at me and at the engine, evidently wondering if the sudden mishap to Betsey had turned me into a driveling idiot. As soon as I could get my speech I said: "Say, Fritz, don't you think it would be a good idea to turn on the *gasoline?* Even as good a car as Betsey won't run very far without that." A broad grin gradually but surely spread over his face and he uncovered the gasoline tank and turned it on. We had shut it off the day before while cleaning the car, and there had been just enough in the carburetor to run her out of the barn, but that was all. At intervals that entire day I found myself possessed of an uncontrollable spasm of laughter, and I never had to tell Fritz what I was laughing at. He knew more about the car in a minute than I could learn in a month, so it was a particular source of satisfaction to get it on him once. His only comment was, "Why didn't you 'string' me a little longer before telling me what was the matter?"

One morning we left Amadore and ran to Port Huron on our way to Canada. The customs regulations in crossing the line into Canada are exceedingly simple, and the officials accommodating and most courteous. We ran Betsey down to the ferry landing and then handed the United States officer a description of the car with her make and factory number. This is to facilitate matters on returning to the United States. Without this we might have been obliged to secure a consular invoice, which is expensive, while the fee for filing the manifest with the United States officer is only 10 cents. Then we backed the car on the ferry boat, which, by the way, was almost too narrow to accommodate so long a car as Betsey and we bumped our tail light and broke the glass. The ferry fee was prodigious and almost took away our breath. There were five of us as passengers besides Betsey, which weighed in herself 3,200 pounds. The fee for transportation across the river for passengers and car was 45 cents! And the trip was delightful. I have been wondering ever since if they are running that ferry for their health.

When we landed at Sarnia we filed a bond with the Canadian customs officer for the return of the car, and took out an Ontario

license for touring. The brokerage on the bond was $3.00 and the license with two numbers was $4.00. We must have been an honest looking crowd, as we stood grouped on the dock. I called the officer's attention to our luggage in the car, which consisted of three or four suitcases and grips packed full. He merely said, "You have nothing in there but your wearing apparel, have you?" I said we have not—forgetting all about Auntie's bottle of wine. "Well, that's all right," he remarked, "don't bother opening them." Such treatment as we received by the customs officials increases one's respect for the government which employs them, and places one upon honor not to betray in the slightest degree the confidence thus reposed. We shall always have a large place in our hearts for the officials at Port Huron and Sarnia. There was a conspicuous absence of red tape and a full measure of the most delightful courtesy, which always oils and smooths the machinery of any transaction. If any of those officials ever come to Chicago and I find it out, I will do my best to make them believe that they at one time harbored an angel unawares.

The run from Sarnia to London is really wonderful. It is sixty-three miles of almost straight road—and such a road. I do not dare tell how quickly we made this run because of the speed regulations over there, and yet I must affirm that we were exceedingly careful not to jeopardize the safety of any one. Our greatest difficulty was with frightened horses, and the farther we went into Canada the more terrified we found the horses. It was about eleven o'clock when we left Sarnia, but we did not stop for luncheon till we reached London. On our way to the Tecumseh Hotel I chanced to see the sign of my old friend, Dr. H. R. Abbott, and I ran up the stairs to shake him by the hand and say "Hello" for a moment. As soon as he had dug out my identity under cover of my dust-laden automobile ulster and cap, he seized a revolver and drove every patient out of his office. Then he grabbed his coat and hat, told his assistant to put a smallpox sign on his door for the rest of the day, and soon had our party seated around a table in the cozy grill of the Tecumseh. That man made me glad I was living, even through all the embarrassment I experienced at having interfered with his daily duties. I often wonder if there will be anything really sweeter in another world than the delightful loyalty and friendship we find among congenial spirits in this.

After luncheon we all got in the car and Dr. Abbott piloted us around the city, winding up with a tour through the beautiful asylum

grounds, one of the most artistic and picturesque spots we saw on our entire trip. We planned to make Woodstock that night, and so we said our good-byes to Dr. Abbott and started for Thamesford, and from there to Ingersoll, and then to Woodstock. We arrived here so early that we concluded to run on to Brantford, thirty miles farther, which we did. This made a wonderful day's run, considering the time spent in crossing the river at Port Huron and the stay at London, and yet no one complained of being tired.

Between Woodstock and Brantford we overtook a physician and his wife, who were touring in a small runabout. They had punctured a tire and were repairing it, and we as usual tendered our assistance. While talking with them an old farmer came up to the car and, putting one foot familiarly on the step, he said: "Well, you fellers do have a good time ridin' round over the country, don't you?"

I said, "It does look like that, doesn't it? But did you ever stop to consider that no one gets very much in this world without paying for it? This looks easy, but every rod in this car represents a backache, every turn of a wheel a tired feeling, every puff of the engine a rasp on a nerve. Don't you think for a minute that this car simply floats down from heaven into the lap of luxury and runs itself. There never was an effect without a cause, and the cause that produced this car back there in the city would wear you to a standstill in a month."

"Well, mebbe that's so," he said reflectively, "I notice I never got very much for nothin' myself." And we left him feeling more contented with his lot than he seemed to be when he first saw us roll up comfortably in a big touring car.

We remained over night at Brantford, which is a beautiful little city, and the next morning we ran to Hamilton and Toronto, passing over some terrific hills between the latter cities and running into the roughest roads just outside of Toronto. We found the approaches to Toronto both west and east of the city simply outrageous. The road bed had originally been macadam, but was now cut up and full of holes and deep ruts, which made travel, even with a lumber wagon, extremely uncomfortable. I can recall the time when the roads around Toronto were the finest to be found anywhere, and why the municipality has allowed them to run down in this way is beyond understanding.

(To Be Continued.)

PRACTICAL HINTS DEPARTMENT.

Edited By G. W. Johnson, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, The Dental Review, 55 State street, Chicago, Ill.]

Adjusting a Gold Crown:—If adjusting a gold crown to a tooth with a live pulp, paint the dentin with a saturated solution of bicarbonate of soda, wipe off the surplus, and then see if you have pulp trouble.—*C. B. Plattenburg, Chicago.*

The Chip Blower:—The best way to destroy the disagreeable odor of the chip blower is to draw a few drops of violet water, or some fragrant perfume, into it at close of day's work and dry it out with warm air before using.—*E. B. Strange, Hillsboro, Ill.*

Expansion of Plaster:—Much has been written about the expansion of plaster, but I have never found that it interfered with success of the denture. In the case of the impression it can expand only into the opening, which results in contraction. In case of the model it cannot expand inwardly, because held by the walls of the impression. Theoretically, the model is smaller than the jaw.—*L. P. Haskell, Chicago.*

Cement for Lining Cavities:—I do not think there is any question but what we all feel that a lining of cement is necessary under a large amalgam or gold filling, the cement preventing the showing of the color of the amalgam or the gold through the enamel wall. Another reason, and perhaps the main one, is to prevent the constant irritation from thermal changes, which in due time would cause death of the pulp.—*E. W. Elliott, Chicago.*

Heat Your Root-Canals Before Filling:—Heating or overheating of an empty root-canal should be the step previous to filling. To increase the action of the heat, it is well to flood the canal with pure alcohol and then heat it thoroughly with a fine copper point

brought to red heat by electricity or over an alcohol flame. The intense heating of the canal will facilitate the intimate adherence of the filling material to the walls of the dentin.—*Wm. Hirschfeld, Paris, France.*

Inserting Small Inlays:—While inserting small inlays I have often experienced some difficulty, on account of the small size of the cavity. It may be overcome by placing a little inlay wax on the flat end of an amalgam instrument—or any instrument that has the proper curve and is flat on the end. Heat the wax and place your inlay in it. After the wax is cooled the inlay will stick firmly to the instrument and can be inserted in the cavity very easily.—*L. E. Eaton, Sturgis, S. D.*

Success of Prosthetic Work:—The constructive plan of all prosthetic work has as much, if not more, to do with success than fineness of detail in fitting, because, like any other structure, if it is placed upon an inadequate or poorly balanced foundation, the stress of mastication is sure to weaken the attachments at some point. I do not intend to discourage nicety of detail, because that is very necessary, and it, with proper construction, should be considered as one, in which case we might hope to get stable fixtures.—*C. N. Thompson, Chicago.*

Treating Caries at Gingival Margins:—Where the caries extends through the enamel and very near the gingival margin, I cut away the margin freely, extending it mesial and distal past the angles, rounding the remaining margin of the cavity, forming as nearly as possible a new enamel margin; then planing smooth the neck of the tooth and the surface which has been affected by the caries, grinding if possible all surfaces with round Arkansas stones in the engine. I then polish with polishing wheels and pumice, finishing with wood points for surfaces that cannot be reached with wheels.—*A. F. James, Chicago.*

A Feature in Root-Canal Work:—Don't dehydrate root-canals with blasts of hot air. You will cause checks to form in the tooth structure which will result disastrously in teeth with frail walls; and those who fill canals with oxychoride cement, or some liquid or paste

to precede gutta percha, will have a much harder task to place these agents at the apex than if the walls contained the normal amount of moisture. You cannot flow a liquid over any dehydrated substance with the degree of certainty you can over one which contains moisture. Dry the canal with cotton rolled on a smooth broach.—*H. E. Latcham, Jefferson, Iowa.*

Massage:—Massage is one of the oldest methods of treating a great variety of human diseases. The friction method consists of rubbing, rolling under the finger, tapping gently, pinching and kneading. The percussion method consists of very rapid concussions of short blows, not forcible enough to cause pain. I do not know of any instrument for producing percussion in the mouth. Such a one would be more effective and safe on these tissues than the coarse bristle brush. In may practice I have used to a limited extent the ordinary small moose hide polishers on the mandril of the dental engine.—*C. M. Wright, Cincinnati, Ohio.*

Adapting a Cast Gold Inlay:—When a cast gold inlay does not fit close to the margins of the walls of the cavity, caused either by contraction, nodules, or the breaking of the wax, the inlay can be made good by fastening it in the cavity and malleting the edges towards the cavity walls. A space of one thirty-second of an inch can be thus filled up. If the enamel walls are weak this should be done on a model. Another way of repairing such defects is to cement the inlay to place with as little cement as possible, and while the cement is still soft a few pellets of non-cohesive gold foil are carefully plugged in the space. When the cement sets, this is condensed and finished.—*M. A. Gottlieb, New York, N. Y.*

Preparation of Enamel Margins for Inlays:—A dentist cannot prepare a cavity in a scientific manner without understanding the histology of the enamel, its physiology and pathology. An operator having knowledge of these subjects, who uses in the preparation of cavities chisels and enamel hatchets, soon learns the direction of cleavage of enamel, and with sharp instruments planes the enamel walls until all loose enamel prisms are removed. After this the cavo-surface angle should still be beveled from six to twelve centigrades,

so as to insure leaving no short or unsupported enamel prisms. For procuring this bevel I use medium grit disks, or strips, cavity stones, or finishing burs, depending on the class and position of the cavity.—*G. Walter Dittmar, Chicago.*

Fitting a Band for a Shell Crown:—With a ring or odontometer the root is measured. The wire or ring is then pushed as far as possible over a tapered rod of wood or metal, and the place marked where it exactly fits. Thin copper bands, of which most every dentist has a supply in his office for taking inlay impressions, are then tried upon the rod until one is found that exactly fits at the mark. The band is then trimmed and fitted to the root. The copper being thin and soft, the operation is easier and less painful than fitting a shell crown. A stick of softened modeling compound, of about the diameter of the root, is forced into the band on the root. By carefully examining the impression we can determine whether our original measurement was correct, or whether the root has any peculiarity of outline. Should the margins of the root be clearly defined, we may consider the impression to be satisfactory.—*H. W. C. Bödecker, Berlin, Germany.*

Testing Saliva:—In regard to saliva and its effect upon caries of the teeth, it has been found by many investigators that it is a vital factor, performing an important function, accelerating or decreasing the amount of caries owing to its composition. In tests that have been made of teeth that are particularly susceptible to decay there have been found in the saliva very small amounts of the sulphocyanids, while in those mouths in which the teeth have shown little or no decay there is always the presence of sulphocyanids in considerable amount. This you can determine for yourselves by mixing of saliva and distilled water and a drop of ferric chlorid; you will get a bright red color if sulphocyanids are present. Test this in the mouths of those patients whose teeth are practically immune to decay, and you will find in most of them the presence of sulphocyanids in the saliva. The administration of solutions of hydrocyanic acid in medicinal doses may be undertaken to increase the sulphocyanids in the saliva through the blood.—*George C. Poundstone, Chicago.*

Open Bite Malocclusion:—Of all the forms of malocclusion the most difficult to treat is the open bite malocclusion. This condition is the outcome of some form of nasal obstruction. The mouth is kept open so that the patient may breathe more freely. This position will sooner or later change the mechanical action of the depressor agents of the mandible. These muscles, assisted by gravity—the weight of the jaw—keep the mouth open, while the anterior segment of the temporal muscle, the masseter muscle and the internal pterygoid muscle antagonize the depressors of the mandible. This abnormal action of these opposing muscles will be influential in changing the development of the mandible. While considerable abnormal change may at times take place in the body of the mandible, due to mouth breathing, another change that takes place is in the formation of the glenoid fossa. In my examination of abnormalities I have found the lower teeth distal to the normal, the upper arch narrow, with the anterior teeth slightly protruding and sometimes resting on the lower lip, and am convinced by expanding the upper arch and reducing the slight protrusion of the upper anterior teeth sufficiently, I would obtain a correct relation of the teeth and improve the facial lines.—*M. N. Federspiel, Milwaukee, Wis.*

RECENT PATENTS OF INTEREST TO DENTISTS.

902,462. Treating teeth for filling. F. Armstrong, Dunedin, New Zealand.

902,463. Dental apparatus. F. Armstrong, Dunedin, New Zealand.

902,109. Dental finger-tray. J. G. Powell, Norris City, Ill.

902,122. Tooth cleaner. E. E. Sulzer, Philadelphia, Pa.

902,796. Combination tooth-brush and powder holder. F. W. Archer and T. H. Bates, Chicago, Ill.

902,942. Dental tool moistener. S. Craig, Clarksville, Tenn.

902,562. Dental cement. J. N. Crouse, Chicago, Ill.

903,489. Appliance for casting dental gold inlays. V. Macdonald, Melbourne, Victoria, Australia.

903,343. Artificial tooth. J. A. Van Vleck, Gallipolis, Ohio.

903,344. Dental lip protector. E. C. Wackler, Milwaukee, Wis.

904,126. Hand-operated plugger. C. H. Hart, Hartford, Conn.

904,159. Machine for boxing toothpicks. G. P. Stanley, W. W. Stanley and S. S. Tainter, Dixfield, Maine.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

FOREIGN DENTAL COLLEGES.

During the past year THE DENTAL REVIEW published illustrations of every dental college in the United States and Canada. This makes a record which has proved a revelation to many in the profession who had little idea of the present development of dental education. In 1909 we purpose publishing cuts of the dental colleges in foreign countries, and when these are completed the entire series will constitute a most interesting addition to our statistical literature. The date of founding and the total number of graduates of each college were published with the cuts, and furnish valuable data for reference. They will also be published (if we can obtain them) in the Foreign Dental College series.

The Dental Hospital, Manchester, England. First Class Graduated 1887. Total number of graduates to January, 1909, 156.

FOREIGN DENTAL COLLEGES.

Dental Department, University of Birmingham, Birmingham, England.

Royal Dental Hospital, London, England. First Class Graduated 1859. Total number of graduates to January, 1909, 1,000.

MEMORANDA.

DEATH OF DR. J. L. WILDBERG.

Dr. Wildberg, who was graduated from the Chicago College of Dental Surgery in 1906, died November 20, 1908, at Coalgate, Okla. He leaves a wife, mother and sister.

DENTAL WORK DONE AT THE ILLINOIS EASTERN HOSPITAL FOR THE INSANE DURING NOVEMBER, 1908.

Plates, 1; gold fillings, 7; gold crowns, 9; cement fillings, 0; amalgam fillings, 29; treatments, 24; extracted, 420; cleaned, 9; roots filled, 18.

Dr. Geo. A. Mills.

NEW YORK ALUMNI ASSOCIATION OF THE XI PSI PHI FRATERNITY.

The New York Alumni Association of the Xi Psi Phi Fraternity met at the St. Denis Hotel on November 18 and elected their officers for the ensuing year. It was decided to hold our banquet on January 30, 1909. Our membership has passed the 200 mark and it is earnestly desired that every alumnus be present. To any who have not received full particulars the same will be gladly furnished by our secretary.

J. N. Gelson,
673 Vanderbilt Avenue, Brooklyn, N. Y.

OHIO STATE DENTAL SOCIETY.

The following officers were elected at the forty-third annual meeting of the Ohio State Dental Society held in Columbus, December 1, 2 and 3, 1908: President, W. H. Whitslar, Cleveland; first vice-president, M. H. Fletcher, Cincinnati; second vice-president, A. O. Ross, Columbus; secretary, F. R. Chapman, Columbus; treasurer, W. A. Price, Cleveland. Directors for three years: L. P. Bethel, Columbus; C. I. Keely, Hamilton; J. R. Callihan, Cincinnati; Henry Barnes, Cleveland.

F. R. Chapman, Secretary,
305 Schultz Building, Columbus, Ohio.

ALUMNI ASSOCIATION MARQUETTE UNIVERSITY DENTAL DEPARTMENT.

On January 19 and 20, 1909, the Alumni Association, Dental Department, Marquette University, will hold their third Annual Clinic, Dealers' and Manufacturers' Exhibit, at the Marquette Auditorium.

The Clinic Committee have arranged an excellent program. The Operative Clinics will be on their usual high order and the Table Clinics will be the most interesting and instructive which we are able to obtain.

A cordial invitation is extended to the general profession to be present, as well as all members of the Alumni Association and all graduates of the university.

Wm. Kettler, Secretary.

THE

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SOME INCURABLE FORMS OF PYORRHEA ALVEOLARIS.*

BY L. L. DAVIS, D. D. S., CHICAGO.

Mr. President and Gentlemen: In presenting this subject for your consideration this evening, it is with the desire to provoke a discussion of one phase of the disease that will result in some clearly defined method of practice for the guidance of the practitioner endeavoring to secure for his patients the best possible results. By best results I mean a conservation of all the natural organs of mastication possible, with the least amount of pain, and the reduction to a minimum of the probable recurrence of the disease.

I know it is possible to retain for years, by splints, etc. (some even without) teeth that belong to the class designated by the title of this paper. There may at times be circumstances that warrant such procedure, but in many cases, where splints and bars are used, much greater benefit to the patient could be secured by extraction of the pus-producing natural organ and its replacement with an artificial substitute.

To lay down a hard and fast rule governing all such cases is not wise, but we may point out a few conditions that require our best thought to produce best results.

The etiology and pathology, and treatment, surgical or otherwise, does not enter into this discussion and is not under considera-

*Read before the Odontological Society of Chicago, October 13, 1908.

tion. These subjects have received much attention and have been written upon at considerable length by a number of authors during the last few years, and we have been well instructed as to the inadequacy of the name; the frequency of the disease; the causes—with full compliment of theories, and the treatment, local and systemic, with prescriptions and formulas; but essayists in outlining methods of procedure dismiss the subject of this paper with the sentence, "first extract all hopeless teeth."

Now, what constitutes this condition characterized as hopeless? Upon what signs and phenomena must we base our diagnosis, and prognosticate that the tooth under investigation should be removed? These are questions that require elucidation.

In examining a mouth affected several conditions must be considered and a comprehensive review of all these will aid us in our decision.

First, the amount of absorption of alveolar process; second, the nature of deposit or the absence of it; next, the position of the teeth in the jaw when in normal occlusion. Then their location. Finally the condition of adjacent teeth. These are all factors in our diagnosis.

From experience we have found certain cases that resist our best efforts.

After considerable observation of a number of these cases I have been forced to the conclusion that early recognition of certain peculiarities will materially aid us in determining whether or not the case before us can be brought to a successful termination.

The amount of absorption of alveolar tissue is a determining factor.

Where the plates of bone tissue forming the socket of the tooth have wasted away two-thirds the length of root, the undue leverage upon the remaining portion, even though put in a perfect condition, will prevent any permanent relief. Besides the immense interproximal spaces, or in the case of molars, the bifurcation of roots, form receptacles for the retention of irritating substances, food particles, bacteria, etc., not conducive to best results.

There may be an extensive absorption of alveolar tissue surrounding the root, but so long as the outer plate and attached gum tissue are present there is a favorable prognosis, except in cases where certain conditions exist which I will now describe.

Nature of deposit, or absence of any. In several instances in mouths under regular supervision teeth have been lost from a seeming melting away of bone tissue, without any apparent cause. The roots have been found free from deposit, with a translucent, waxy appearance, after being extracted and cleansed. But the conditions immediately upon removal show a grayish-white deposit over all parts not attached to membrane, indicating strongly the presence of colonies of bacteria.

Usually the gums show no marked change from those surrounding other teeth, except a thin edge and a slight depression at the point where alveolus should begin. Pus is not always present, but the instrument may disclose a cheesey exudate that responds beautifully to the litmus test. Pain may not be present. Given such a case as above described, and it is *incurable.*

There is another form that runs to the other extreme. A slight hypertrophy of the gum tissues at the point where pus flows copiously upon pressure of tooth, pain aggravating and intense. Exploration discloses a scaly or slightly nodular deposit upon the sides of root, free of attachment to membrane. In removing the calcic deposit upon the sides of root, we find that it is so dense in structure and so firmly attached that it requires the highest order of digital skill to remove it, and after much time spent, and pain caused, we reach the apex of the root and find a condition that defies our best efforts.

The removal of the offending member, either by extraction or root amputation, shows a dark brown—almost a black pinate deposit, beginning at a point just slightly removed from the apex, the sharp needle points extending mostly root-wise, but not unlike the quills on a porcupine's back. It is very hard; the instrument may break off the points but still leave some of the deposit, even after the most careful instrumentation. This is due to the location of deposit on the root, the practical impossibility of holding the tooth firmly enough to withstand the force necessary to remove it, and the location of the teeth on which it seems to be most prevalent, viz: the lower bicuspids and upper and lower molars.

The tooth is always loose, pus is present at all times, modified and maybe in amount of flow by the reduction in area of irritation, but it will not tighten even though an appliance be made to keep it at rest. Where only one root of a molar is affected by this form of

deposit, root amputation will conserve this organ, but its presence upon lower bicuspids or molars—if the teeth posterior to it are not affected in the same manner—should determine their removal, as usually an extensive necrosis has been established by the intense irritation of the deposit. I have not observed this form of deposit upon any of the incisors.

We have also another form of Pyorrhea, in which there is an absence of deposit, but a condition of tissues adjacent to the apex that results in the absorption of the root at that point. This absorption is not even in its action all over the root end, but excavates the tooth tissue so as to leave sharp edges and sometimes needle-like terminals. Amputation may retard the process of micro-organic destruction for a while, but the absorbative action recurs again later.

The color of the exposed portion of fang is a prominent factor, but where the tooth has more than one root, it is possible by amputation to eliminate this item from our sum total. The peculiar brownish-black appearance indicating a perverted condition of dentine and cementum with probable death of the remaining portion of the pericemental membrane.

Position of teeth in jaw when in normal occlusion. Location and condition of adjacent teeth. Ofttimes a case presents itself for our services where the disease has progressed to such a stage that the patient knows there is trouble without going to a dentist to find out. Certain teeth are loose and tender, gums bleeding at the least touch. Pus, in more or less quantity, flowing upon pressure. Exploration reveals lack of attachment to membrane and the presence of deposit upon the fang. Are they among those to be classed hopeless?

Location here is a determining factor.

A third molar, with all the rest of the teeth in situ, the condition of which is not as extreme as that of an incisor in the same mouth, may be placed in the catagory of "incurable, hopeless," because its position entails greater pain and expense to the patient in its treatment and also by its little use in mastication, and also the difficulty of keeping it thoroughly cleansed renders a recurrence of the disease very probable. Therefore it is advisable under these circumstances to extract, even though the operator knows that his skill is sufficient to conserve the faulty member. Sometimes it is necessary to retain for a time a tooth that we have labeled "hopeless" because its position in the arch enables the operator to hold in proper position and occlu-

sion by ligatures, etc., teeth that are loose but not hopeless. At a later period, when teeth have become firm and gums in healthy condition, extraction and substitution with artificial denture should be insisted upon.

There may be causes or factors which I have not mentioned in this paper, which will be brought out in the discussion.

THE SUPREME IMPORTANCE OF ORAL HYGIENE.*

BY H. EVERTON HOSLEY, SPRINGFIELD, MASS.

The dental profession is about entering upon the greatest era of progress in its history. President Eliot of Harvard College truly said: "The dental profession is being relied upon more than ever to assist in maintaining a hygienic condition of the community."

Practical freedom from dental disease is a possibility; in some cases an actual clinical fact. The first consideration of any disease should be its anticipation and prevention. Degeneration of the teeth and gums means physical and moral degeneration of the race. Oral hygiene is the removal and treatment of causes, and this should rank superior to all else.

Clinical observation reveals the following causes of dental disease: Lodgment of obnoxious septic material, pus pockets, caries of the teeth, pathogenic germ activity and contaminated saliva. Perhaps that nauseating word filth is most expressive of the cause of dental disease. There is no doubt but what dental disease is an important factor in spreading contagion. Many infections may be traced to the mouth and teeth as a starting place. I quote from the eminent authority, Sir Frederick Treves, surgeon to His Majesty, King Edward: "Defective masticating teeth are exceedingly common among the subjects of appendicitis, and especially among those who have passed the period of youth. Over and over again it would appear as if the want of proper and efficient teeth had been the direct cause of the attacks. Such patients often bolt their food, and such meat as they eat can hardly reach the stomach in a condition fit for complete digestion. The bolus passes into the bowel still ill digested. It fails to stimulate normal peristalsis, is prone to lodge in the great

*Read before the American Dental Society of Europe at London, August, 1908.

receptacle, the caecum, where it decomposes, and if there be any existing lesion of the appendix, must tend to encourage the morbid change."

The amount of septic matter entering the digestive tract from the mouth is appalling. Septic absorption by the stomach will undermine the best constitution. Catarrh of the stomach is a sufficiently recognized result of diseased conditions in the mouth.

An interesting case was presented in my practice some four years ago. A young woman, age 23, weak and anemic, weight, 85 pounds. Had been under the care of three different physicians in two years. Trouble pronounced tubercular. The last physician asked for consultation with a dentist. Examination showed mouth in a very foul condition, teeth badly decayed, gums very sore and mouth digestion absolutely impossible. Six abscesses were located, from which a half-teaspoonful of pus was taken. Proper dental treatment and oral hygiene restored this patient to health. Two years after she was a robust woman weighing 135 pounds. This is only one of the many cases where the supreme importance of oral hygiene means life or death.

Is not this far-reaching result of dental disease often overlooked by the average physician? In the London *Lancet* (Oct., 1902) Professor Osler says: "If I were asked to say whether more physical deterioration was produced by alcohol or by defective teeth, I should unhesitatingly say defective teeth.

More attention and preparation should be given the mouth before proceeding with surgical work of any kind. D. J. Brown, M. D., of Springfield, Mass., cites this case: "A young woman of 23. History, abscessed tooth of six months' standing, accompanied by swelling, chills and fever. Tooth extracted without preliminary treatment. Infection manifested itself in two days throughout the neck, chest, abdomen and anterior spine of the ilium. Diagnosis, abscess in several places in the body, necessitating several operations, patient finally dying of general toxaemia. Here is a case of secondary infection through the lymphatics from the oral cavity, in which a young and vigorous woman lost her life from lack of preliminary and post operative treatment for the removal of an abscessed tooth."

Endleman, in *Dental Cosmos* (Sept., 1906), says: "The involuntary ingestion of the pyogenic products of pericemental inflammation is, in addition to some well defined abnormal changes, respon-

sible for the onset of a series of general systemic manifestations which may be regarded in the light of pneumococcus toxaemia, for sufficient clinical evidence has been gathered to prove that, at least in some typical cases of pericemental inflammation, the diplococcus pneumoniae is one of the most conspicuous components of the mixed invasion." Thus we see the danger ever present in the uncared for mouth.

Dr. Sternberg, surgeon-general of the United States Army, has brought out in his investigations the fact that a single drop of saliva, taken from the mouth of a healthy human being, injected into the veins of a rabbit, will cause death in forty-eight hours. This would tend to show that the saliva in the neglected mouth which is laden with various germs, would cause illness and perhaps death in the human being.

In the United States we are paying a great deal of attention to disinfecting the mouth before the administration of ether or chloroform. The hospital staffs are looking to the dentist to take charge of this work. In many cases the pulmonary complications are chiefly due to the inhalations of pathogenic micro-organisms, carried from the mouth to the lungs. Pneumococci are found in nearly every mouth; these being carried to the lungs, no doubt cause pneumonia complications which sometimes follow the administration of ether and chloroform.

I quote from the *Journal of Infectious Diseases* (Oct. 30, 1906) "Wadsworth found that none of the so-called commercial solutions are efficient when tested upon pneumococci under conditions supposed to be most favorable for their action, and that even such active disinfectants as formalin, lysol, and hydrogendioxid failed to act on the pneumococcus in exudates. It is interesting to note that alcohol alone of all the antiseptics proved efficient when tested on pneumococci under all conditions."

Again Wadsworth found that the rapid diffusion of alcoholic solutions was greatly accelerated by the addition of glycerin. In other words, cleansing the mouth with a normal salt solution simply cleanses it, but does not destroy bacteria, whereas washing the mouth with an alcoholic wash containing 30 per cent alcohol actually produces true disinfection, particularly if to the 30 per cent solution of alcohol in water a small quantity of glycerin and salt is added."

I can not fully agree with Wadsworth that the glycerin aids the

action of the germicide. Professor Henry Leffman, the noted chemist, says, "Most germicides are very much more effective if used in a solution of water rather than glycerin or other solutions."

After careful observation in private practice, I am inclined to think that the constant use of a strong germicide is injurious to the mucous membrane. Without going into the chemical change that takes place with the mucous membrane, it is a proved fact that mucus plays an important part in digestion. It is suggested that the germicide should be used to bring about health in the membrane. When cured is there any need of a germicide?

Dr. George W. Cook, *Dental Digest,* (Feb. 1907) says, "There are, however, certain hygienic conditions, which if followed out will not only prevent, but will cure disease. In speaking of the specific cure of diseases, and especially those that are looked upon as parasitic, we ordinarily look forward to something of a chemical substance acting as a disinfectant only upon certain species of bacteria, many times losing sight of the fact that a substance might be introduced which would act as a stimulus to the body cells of the organism, and this way cause the cells of the body to become disinfectant in themselves. Chemical substances that act antiseptically on bacteria do not always act as a stimulus to the cells of the human organism. On the other hand, have a specific deleterious effect upon the cells of the higher organism, leaving a condition of the tissues predisposed to the action of certain parasites and defeating the very end it was hoped to obtain."

For a number of years I have obtained most satisfactory results by a thorough massage of the gum tissue with hot water. This promotes good circulation. For stimulation, tincture of iodin applied in small quantities.

Under the head of Proper Prophylactic Precaution, I will enumerate a few treatments that have been useful to me in my practice of oral hygiene. The child at three years is given the prophylaxis treatment every two months. To the mixture of flour pumice I add a few drops of alcohol. By this treatment alone I have been able to prevent many temporary sets from having any cavities. When the first permanent molars appear, they are treated in the same way with this additional precaution. The occlusal surface is bathed with permanganate of potassium and alcohol and the tooth thoroughly dried. Then cement is pressed into the sulci, being held in place with the

thumb or finger, which will protect it from getting wet. This acts as a protection for the sulci. Teeth of the type of those having but little resistance to decay are treated with nitrate of silver and iodin.

In the adult mouth, examination and filling of cavities is considered by many dentists all that is necessary. At this point should begin the critical examination and the all important treatment for prevention. Oral prophylaxis is best interpreted by the following methods: Removal of all deposits on the teeth, leaving well polished surfaces. Restoration of contours and closing of V shaped places. Careful polishing of fillings. Attention to pus pockets. If very deep, remove the gum by surgical treatment. The elimination of pus secreting areas, correction of mal-occlusion and proper orthodonic treatment. Inflammation of the gums should be reduced, the co-relation of naso-pharyngeal disease should be considered and if such disease is present, it should be treated.

Patients should be notified at regular intervals for systematic prophylactic treatment. In my private practice, many of the patients who have been faithful to this treatment have been free from cavities for a period of six years. Some of the less faithful show from twenty-five to eighty per cent less decay.

The tooth brush should be placed in a germicide after each cleaning. Otherwise, this becomes a favorable breeding place of bacteria. In the state tubercular hospital at Barre, Mass., this is one of the rules, that each tooth brush must be kept in a germicide.

I would not lead you to think that Oral Hygiene is a cure for all evils, for I recognize that such work of great importance as done by Dr. Eugene S. Talbot has demonstrated beyond doubt that systematic conditions cause disease of the mouth. Dr. Talbot's work on Inter stitial Gingivitis and Auto-Intoxication are of great value. To the late Dr. Miller the profession is indebted for most valuable work in the cause of oral hygiene. The results have been a source of inspiration to the whole world. I place my humble tribute to his honor.

Finally, in closing, I beg your indulgence in using the familiar words of Professor Osler: "You have one gospel to preach and you have got to preach it early and late, in season and out of season. It is a gospel of cleanliness of the mouth, cleanliness of the teeth, cleanliness of the throat. These three things must be your text throughout life. Oral hygiene—the hygiene of the mouth—there is not one single thing more important to the public in the whole range of hy-

giene than that, and it is with that you practitioners will have to deal."

AN EASY METHOD OF FORMING AND ANCHORING HOLLOW CAST INLAYS BY THE USE OF WHICH WE AVOID THE EXCESSIVE CUTTING OF CAVITY WALLS.*

BY DR. H. L. SCHAFFNER, FLORENCE, ITALY.

Of late our dental literature has been so prolific in articles and criticisms on cast inlays that it would seem almost superfluous and out of place that I should enlarge on the subject before you here today.

There is no doubt that this is a captivating subject, and we shall yet hear a great deal about it. This system is so revolutionary and yet so practical that most operators, especially the older ones, who will examine it will find it a Godsend.

However, as somebody has observed, speaking of the methods of working this system, "each one of us has his own little tricks," and it is for this very reason that I venture to give you an address on it today.

You may have been surprised at the title of my paper, which calls this method easy. He to whom this process is new and who has not had much time to follow its development, or has not realized the difficulties encountered by the inventors, may think so, but those who are eager to test and obtain the best results will not always find things go quite so smoothly. Many points up till the present have not been discussed, and it is only by trying and re-trying this method that we can obtain a correct idea of the new field which is open to us dentists. This style of work is so delicate and its application so varied that he who adopts it must often exercise his own judgment and not lose sight of the final object which it is desired to attain. There is a danger due to imperfect knowledge and to an excess of enthusiasm in its application. Take, for example, in connection with the method as it is now recommended, the cutting away of the cavity walls until all undercuts have been removed and note

*Read before the American Dental Society of Europe, August, 1908.

the destruction of the tissue of the tooth which is taking place. Furthermore, observe also the excess of gold which is displayed, which does not look pretty, especially in the mouth of a young person. In addition to this, we have to exercise caution in regard to the danger of the thermal changes resulting from a too great proximity of the metal to the pulp. Nor must we leave out of consideration the extra work required later on should it be necessary to open the pulp chamber. These difficulties, which we have mentioned, may all be avoided if the *modus operandi* is somewhat modified. In my opinion the preference should be given to an inlay which, even at the risk of being accidentally displaced, would require less cutting away of the walls and would enable us to leave the cavity with the undercuts as they generally present themselves, pared and smoothed down, of course, as has been done hitherto when a cavity has been prepared for a gold or an amalgam filling.

Figs. 1 and 2, before you on the table, will give you an idea how dilapidated a tooth would appear if all the undercuts in an interstitial cavity had to be removed and if the gutter, recommended between the two cusps indicated by dotted lines in the figures, were cut away in order to regain support for the inlay. This is a typical case and one which occurs most frequently in our daily practice. Had the cavity been left with its walls overhanging at *a* and *b*, a splendid anchorage would have been preserved and we should have avoided a weakening of the crown through the excessive removal of dental tissue.

It is true that by capping the cusps we could fit them to resist the tendency to split, but then we should sin against the esthetics of dentistry, and we should be going back to those bad times when operators were riding the all-gold hobby to death. Were it possible to discover an alloy which would accomplish our purpose and yet approximate to the color of the tooth without the alloy oxidizing in the mouth, we might fearlessly cut away the tissue, but until this is found and presented to the profession we had better stop to consider. My reason for writing this paper is chiefly to explain my endeavors to overcome these difficulties and to show how, by a system of hollow cast inlays and their anchorings I have solved the problem. For a long time I experimented, trying to obtain a product which should resemble a thickened stamped plate inlay, resulting in a system which I have used satisfactorily for

years. Afterwards, however, many difficulties came in my way, and I thought I should have to give it up as a bad job.

Now, relying on your indulgence, I will show you what I have done, and I feel confident that those of you who are painstaking and will follow my instructions will in a short time obtain the same results and most probably better ones still. Some practitioners may object to hollow inlays, urging that a narrow contact will not offer sufficient resistance to the encroaching fluids of the mouth into the cavity. On the other hand, there may be those who have experience in this connection and think the reverse is the case; indeed, considering the granulous nature of the surface of the cast, it is evident that a narrow contact will be much more readily pressed into place and under the strain the roughnesses crushed, than if it was broad.

In order to avoid misunderstandings, since there is a paucity of terms when referring to the adjustment or fitting of an inlay, as a preliminary, I propose the following:

Axial, for any displacement on a line with the long axis of the tooth as drawn between *A* and *B* on Fig. 2.

Radial, for any adjustment perpendicular to the axis as drawn between *C* and *D* on the same figure.

Lateral, any introduction tangential to the periphery of the tooth, see line *EF,* Fig. 1.

In a few words, this is how I proceed:

After opening to a moderate extent the cavity in the direction of the axis of the tooth, and removing from the masticating surface any weak enamel edges, I bevel and smooth down the walls, using as far as possible and safe, stones and discs which give us a clear outline of the margins. Thereupon I fill with ordinary moldine not only all the undercuts in the cavity, but build up further, so as to leave a clear outline of the edges, and see that sufficient space is left for the correct thickness of the wax model representing the final inlay.

A convenient way of packing in the moldine is to employ a matrix of polished steel which must fit accurately at the cervix and must not be too high for the bite. This I hold in position by means of a wooden wedge or a special metal clamp. I then oppose on the side facing the cavity a strip of rubber band measuring about 1 mm. in thickness. This strip I select from my stock, so that it will fit snugly to the floor and side walls of the cavity. I oil the rubber and

when the moldine has been put in as described above in the remaining space, I remove the rubber strip, making sure that the wall edges are free; slightly oil all the parts, not omitting the occluding teeth, and now I am ready to pour.

This is best accomplished with a hot spatula, or perhaps better still by means of a specially constructed wax syringe possessing a thin and flattened nozzle, which in the case of an upper tooth, will allow the wax to be forced straight home to the highest point in the cavity,

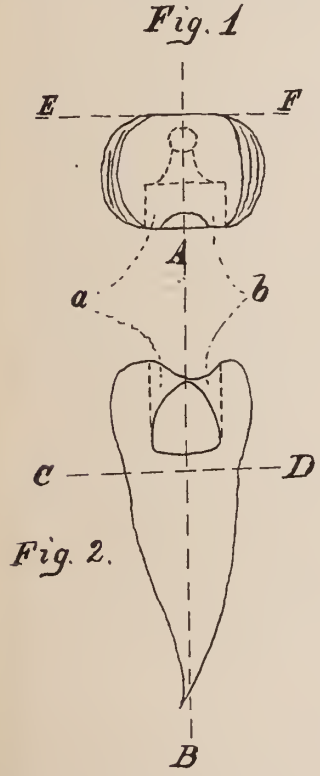


Fig. 1

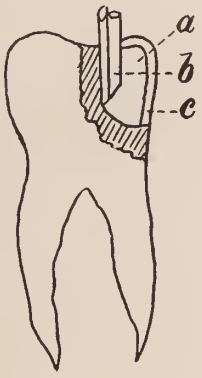


Fig. 3

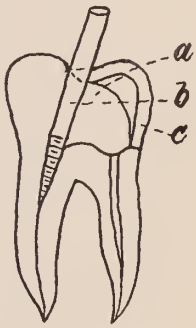


Fig. 5

Fig. 2.

Fig. 4

thus expelling all the air. If, however, some bubbles should still appear on the surfaces these are easily punctured with the hot metal nozzle and filled up. The wax is kept melted in readiness in a special swinging twin-trough over a gas or spirit flame, which also holds the syringe, allowing it to be kept hot at the same time.

While the wax mass in the tooth is still soft, I request the patient to bite. I then trim in the usual way, taking care, however, not to

displace the matrix, otherwise the moisture will penetrate and disorder the moldine lying underneath.

Now we reach an interesting point in our work. The sprue wire, with which you are all acquainted, instead of only just penetrating the layer of wax, is selected long enough and pointed so that we can push it, when hot, through the moldine as high up and in the direction of the axis of the tooth as the cavity will allow. I then thoroughly cool the model, loosen the matrix, pull it out laterally, trim the outer angle which is left sharp by the matrix, smooth the surface by means of a hot blast, withdraw the model, dislodging it radially first by pressing sideways upon the outer end of the sprue wire. The moldine which was packed in the cavity will partly come out with the model and can easily be brushed or syringed away or a pointed probe may be used when time is pressing. To avoid undue pressure on the fragile model I support the latter at the back with the index finger and holding the sprue wire with the thumb and middle finger. Thus we obtain a clear view of the inner end of the sprue wire which, when inserted with the model, as is usually done, will be found cast on to the inlay. In most cases no other aid of retention than this projecting point will be needed; if it is well embedded in the mass of cement in the cavity, and as it has a long leverage, without any additional contrivance it will offer a very strong anchorage.

Figs. 3 and 4 will show the sections of an inlay model and its anchor inserted in a cavity with live pulp; *a* is the moldine, *b* the penetrating end of a sprue wire and *c* the wax impression.

Fig. 5 shows a similar model, but with the pointed end of the sprue wire penetrating into the pulp chamber and an open canal, indicating which is the most suited for the withdrawal should there be several canals.

Should any stronger anchorage be required, a wire loop with bent extremities (see *d*, Figs. 6 and 7) can be made to pass round the cast pin of the inlay and pushed into the undercuts of the cavity.

Similarly a plate dowel with bent edges (see *d*, Fig. 8) can be cemented in place at the very outset in lieu of employing the moldine for filling up the undercuts of the cavity. See that the passage for the supplementary support, as shown at *b*, Fig. 6, is made wide enough to allow a radial play of the sprue wire when the model is withdrawn.

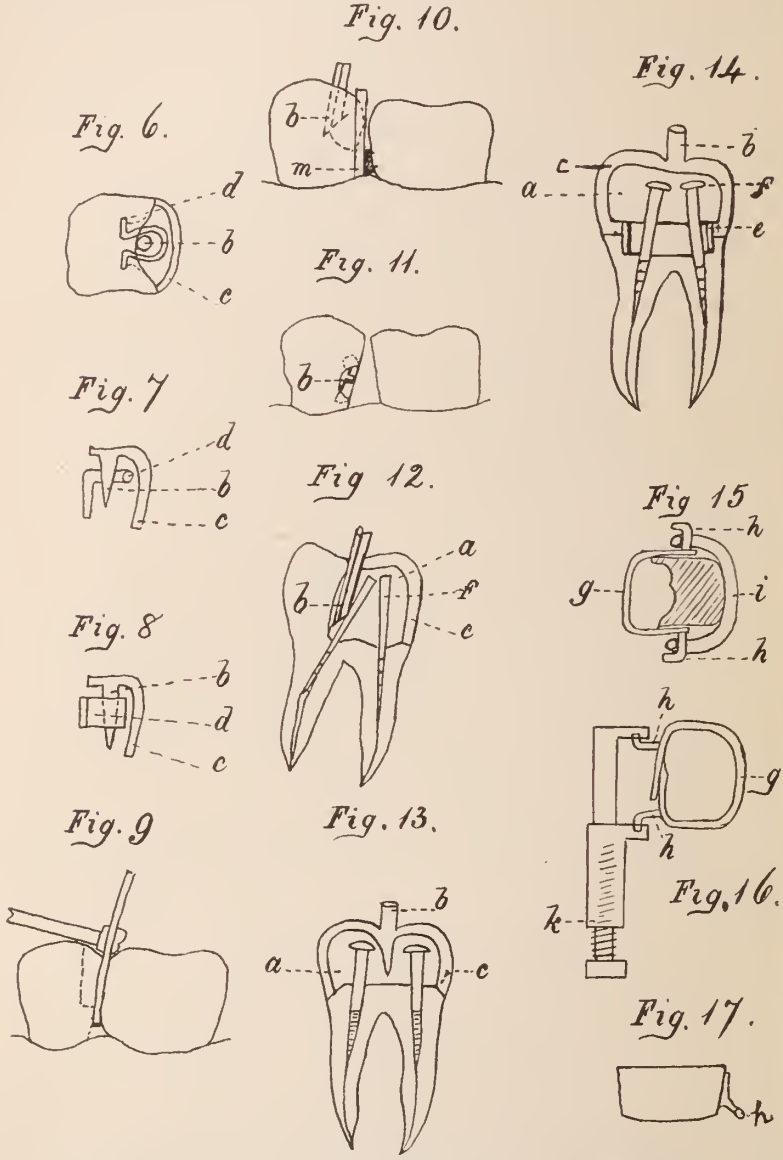
The most difficult cases are those connected with interstitial decay where the teeth are crowded. To enable us to introduce the inlay with ease into the cavity we shall require to separate the teeth. This we can accomplish when we put a temporary filling into the cavity after we have taken the impression. Cut with a disc, which for preference should be convex, a space between the teeth, thus smoothing the walls of the affected tooth neatly (see Fig. 9). Clear out all debris from the cavity, enlarging its orifice towards the masticating surface in the direction of the axis of the tooth, so as to be able to introduce as deeply as possible a specially shaped sprue wire, and then proceed with the moldine and the matrix in the usual manner. If the cavity is shaped in such a way that the removal of the wax model is rendered difficult, I choose a thick matrix which, when removed from between the teeth, will leave a sufficient space to force out the model radially first. This latter will have its contour marred, but this is easily remedied, for, by means of sandarac varnish, without destroying the delicate edges of the impression, I can at pleasure build up as much as I desire suitable to the case at the next visit of the patient, when we have separated the teeth more widely (see dotted line, Fig. 10, *m* representing the matrix).

Specimens with shallow retention (such as I am handing round for examination), after having been cemented in for a month and then being dipped in warm alkaline solution, have required a pull, applied at the external projection of the sprue wire, which has been purposely left for this experiment, of 2 kilos to pull them out, which centrally may be reckoned at over 4 kilos.

In most cases of interstitial decay, it is convenient to fit in the inlay laterally. Provided there is the possibility of a radial play when taking the impression the cavity does not need to be dovetailed to its full height, but need be opened only centrally sufficient for the introduction of the sprue wire (see *a,* Fig. 11).

With the growing use of inlays the question has also been raised as to the need for an easy removal of an inlay in case the tooth exhibits inflammatory symptoms. With hollow shaped inlays, such as I have shown, this would not be a difficult matter; all that would be needed would be to drill through the cast at the base of the anchor so as to sever it, and to force out the two parts one after the other. The anchor point penetrating a canal could also, previous to cementing in, be coated with gutta percha cement.

The following method of construction, as shown in Fig. 12, is also practical, especially when the inlay is to be used as an abut-



ment for a bridge: The metal points used as supports are first fastened with gutta percha into the enlarged root canals and the

inlay with its anchor pin is cemented in. The application of heat would loosen the supports and allow the inlay to be readily forced out.

Fig. 13 shows the section of a hollow constructed crown based on the same principle and made to embrace pins set independently into the root canals. These pins when used as a support for a bridge, previously to the moulding of the wax crown, can be bent to suit the introduction of the appliance.

As shown at *c*, in Fig. 13, the edges of the stump are well beveled to prevent lateral displacements; but if a case should present itself where the burring out centrally of a stump were possible without perforating it, I would advise hollowing it internally and outwards till a sound flat edge is left standing, and then place internally a collar with end projecting outwards. This is easily obtained by bending approximately a thin metal band with the ends left unsoldered. The moldine is packed internally as high as the pins fixed in the root or roots and the wax is made to flow externally over the collar. This method of construction is very strong, and one which certainly will not irritate the tissues around the tooth.

If you will examine Fig. 14 you will see at *a* the moldine filling the space between the crown *c* and the ring *e* and enveloping the supports *f* in the canal.

When dealing with partial or entire crowns I may use of an expanding matrix to hold in the melted wax, the cervical border of which is made to close tightly around the root by means of an elastic band or spring clamp held by hooks soldered at each end of the matrix. In Figs. 15 and 16, *g* is the matrix, *h* are the hooks, *i* is the rubber ligature and *k* the spring clamp. As the tightening only bears upon the base of the matrix and clear of the gum (see *h*, Fig. 17), the upper edge is left free to adapt itself to the required contour of the crown and does not close in as is the case with most of the devices on the market.

Now, before concluding, permit me to offer a few remarks in regard to other special implements and devices which I employ in this kind of work. In the first place, which sprue wire is best suited for each case? When a strong anchorage is needed, the strongest and longest is the best, but if thick, when introduced into small masses of moldine, it will force the latter a good deal apart and with it externally the model. To avoid this, I have devised a T-shaped

section (see *b*, Figs. 4 and 11) which, while offering a maximum of bending resistance, will cause a very slight displacement of the model, which can easily be overcome by burnishing externally over the matrix, and when cemented in the cavity leaves on each side of the inlay a groove which is very necessary when we have to deal with shallow cavities.

The part of the sprue wire which we have to handle I have enlarged so that it can be more easily manipulated. In cases which are difficult of access in the mouth, I employ a sprue wire which can be dismounted (see Fig. 18). *l* is the dismountable handle, *m* is the collar screwed in, showing free space needed for future investment when introducing wire through wax model, *n* is the right angled projection on one side of the beveled blade *o*.

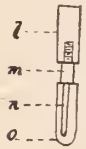


Fig 18

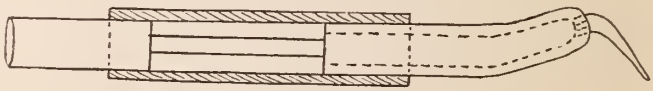


Fig 19

The wax syringe, Fig. 19, is one with a bulb of moderate capacity, for if it is too large it would get clogged with the wax, or air might be drawn in also; the handle, in order to secure steadiness of the point, reaches backwards beyond the finger bulb. The metal nozzle is flattened out so that it may be introduced deep into the space between the moldine and the matrix when we are pouring.

PROPHYLAXIS AND THE TOOTH BRUSH.

BY VICTOR C. ERAUSQUIN, BUENOS AIRES, R. A.

It is time that our profession should understand that its duty is prevention rather than cure, that when we attempt to make a perfect gold filling, an ideal porcelain inlay or a set of teeth which cannot be detected from the natural we are simply diminishing effects without eliminating the cause. The work of Dr. Miller will accomplish more in one hour than the dental chair in a day.

It is a pleasure, however, to note the extent to which the profession is beginning to pay attention to the important point of prophylaxis and how much thought has been given to the means to secure

it. It is without doubt the first and most important duty of a dentist to suggest prophylaxis to the patient. With this in view the tooth brush has been prescribed as one of the best means to attain the desired result without seeing, perhaps, that this simply diminishes the effects without removing the cause.

Though it is a little difficult for us to establish scientific prophylaxis, since we do not know exactly, as yet, the cause of dental caries, it seems to me that should we apply our present knowledge a little better we would be able to improve prophylaxis and know when it should be begun.

If it is known that dental caries is a chemico-parisitical process demanding the presence of micro-organisms and certain substances which will become acid then we will practice prophilaxis when we prevent one of the two factors because if one is not present the other will not act as such.

It is not my intention to consider the microbic factor, because I think it is impossible to do anything against it on a scientific basis until a follower of Dr. Miller points out the dental caries microbe and the means for its destruction.

Let me consider the other factor, which is as important as the former and toward which we must direct our efforts, since we have the means for its elimination very close at hand.

If the chemic process, ending in the formation of acids, requires not only that the substances which will become acids be present in the mouth but that they remain around the teeth for an extended length of time, it is evident that we must *prevent* the lodging rather than the removal of food after accumulation.

It is a well-known fact that "clean teeth will not decay," therefore we must prevent the lodging of the food rather than its removal, as it is done by the so-called "prophylactic tooth brush."

If we attempt to prevent the ravages of dental caries by means of the brush we will never accomplish our end, and since we are only treating effects, leaving the cause aside. Instead of avoiding the lodgment by the natural method we attempt it by an artificial means after its accumulation.

Why not use our best natural prophylactic tooth brush: mastication itself justly performed?

The lack of mastication, the irregularities of the teeth, the poor selection or inappropriate kinds of foods, and the excessive number

of meals are factors which we must consider if we wish to obtain prophylaxis. The lack of mastication is doubtless one of the most important of these factors. When mastication is not sufficiently performed, as is the rule at the present day, we prevent nature from performing the functions by which the teeth will be left perfectly clean, since she employs a better tooth brush than has ever been placed upon the market: teeth, lips, tongue, cheeks, foods and saliva. Dr. Sim Wallace says in this regard: "When fibrous food is chewed together with nonfibrous, the nonfibrous is swallowed first, and the fibrous follows after further chewing. This fact may be easily observed while eating meat and potatoes, the potato being swallowed a considerable time before the meat, which requires to be chewed longer. During the process of mastication the bolus is crushed again and again between the molars and bicuspids, and the part which has been partially softened is pressed between the dorsum of the tongue and the rugæ of the palate. The fluid and finely ground part, which is principally carbo-hydrate from the potato mixed with saliva, and other juices, is pressed backward to be swallowed, while the roughened surface of the dorsum of the tongue arrests the passage backwards of the fibrous part of the food by pressing it against the rugæ of the palate. The tongue then returns this fibrous part to the side of the mouth to be further disintegrated. If an unsavory simile may be used, this process may be likened to the mopping up of the dirt and water from a floor which is being cleaned; the fibrous mop or cloth is rubbed on the floor, the dirt and water soaked up, and the process repeated. This is essentially nature's method of cleaning the teeth, and is, I believe, more efficacious than a tooth brush, as it polishes the surface of the teeth and creates a healthy flow of saliva while removing the non-fibrous foodstuffs. This latter function is not performed by the tooth brush."

Now another point to consider is the tendency on the part of people to perform by machinery and cooking the functions which should be performed by the teeth. In so doing the food is put into a state favorable to lodgment in the teeth. The above being true, together with the fact that we are continually eliminating the coarse and fibrous matter of our food, we create conditions which are conducive to the swallowing of our food without thorough mastication.

While in attendance at the last meeting of the "American Dental Society of Europe" my attention was called to the influence of the

great number of meals upon dental caries; the five o'clock teas were especially emphasized. It is also my belief that too much stress cannot be placed upon this point. The tea itself is harmless, but mixed with milk, sugar and cakes we have a mixture of substances which on account of their soft, sticky nature require little mastication and leave the mouth in an excellent condition for the development of acids.

Another of these factors, irregularities of the teeth, which are becoming the rule rather than the exception, furnish a receptacle for the food, making its removal very difficult. Now if we see the intimate relation of dental caries to irregularities, to lack of development of the jaws and lack of mastication, I think we must also see that in order to obtain true prophylaxis we must use nature's tooth brush more and to better advantage. With this we are able to begin prophylaxis before the appearance of the temporary teeth: the time at which prophylaxis should be begun.

When I see a mother give her child, in place of her breast, a bottle with an India rubber containing a large hole, so that the child may suck the milk quickly and easily without disturbing the patience of the mother, and when I see her give sweets and candies in order that it may not cry, I predict an orthodontia case, and when I notice the present generation eating their meals in five minutes I see them later waiting for hours the professional service of the dentist.

DENTISTRY IN SWITZERLAND.

BY HORACE WYNDHAM.

Taking it all round, the condition of dentistry in Switzerland may be fairly regarded as a flourishing one. For this desirable state of affairs two things are mainly responsible. The first is that there is plenty of work, and the second is that there is not too much competition. Save in certain restricted areas the established dental practitioner will have the field very much to himself. Of course, in the big tourist resorts—such as Lucerne, Zurich, Geneva, Montreux, etc. —the case is different. But this cuts both ways, for if there is more competition at these centers there is also a larger clientele for which to cater. Then, again, the tourist as a rule is better able to spend money than is the resident, a circumstance of which the

dentist takes full advantage when making out his bill. In fact, it is scarcely too much to say that he has one scale of charges for the patient who happens to be a native of the country, and another for the chance traveler. The latter sometimes complain that the tariff in their case is almost as high as the mountain peaks! However, a little friendly discussion works wonders in the way of reducing it to more reasonable limits.

Switzerland is a much bigger country than most people who have not visited it imagine. Roughly speaking, it contains an area

Fig. 1. Sterilisol Apparatus.

of nearly 16,000 square miles and a fixed population of four millions. As may be imagined, these figures afford a good deal of scope for dentistry. The places where the largest number of practitioners may be encountered are naturally those where tourists are most apt to congregate. The principal ones among such include Lucerne, Geneva, Interlaken, Montreux, Zurich, Basle and Fribourg. But the smaller and less frequented resorts are by no means neglected.

As is the case elsewhere, dentists of varying degrees of ability are to be met with in Switzerland. Some are highly qualified and

know every detail of their work, while others could scarcely be trusted to perform the simplest operation. This is probably due to the fact that there is practically nothing to prevent anybody who possesses a rusty pair of forceps and a strong right arm from posting up a notice inscribed "Dentist" over his door and treating all such sufferers as may come to him. As need hardly be said, the last stage of these unfortunate patients is often a good deal worse than the first! What is wanted to put a stop to this sort of thing is a proper system of registration, such as exists in other parts of Europe. Of course it would prove the death-blow to the self-styled and totally incapable "dentist," but the others would hail it with satisfaction. Still, in this respect, things are certainly better than they used to be, and on the whole there is very little cause for complaint.

The really high class dentists in Switzerland are, as has been said, naturally attracted to the big towns, for here they find plenty of employment and a remunerative clientele awaiting them. During what is known as the "high season" (from the middle of May until the end of October) some of them have quite as much as they can do, and their working hours are often booked up for two or three days ahead. The large number of visitors hailing from the United States makes it necessary for the Swiss dentist who is seeking a good connection to acquaint himself with American methods. If he does so in a conscientious, and not perfunctory fashion, he will probably reap a rich reward. Another important qualification to possess is that of familiarity not only with English, but with French, German or Italian, or, better still, with all four tongues. This is because Switzerland is an exceedingly cosmopolitan country, with three different languages spoken by its resident population, and another one by the majority of its thousands of visitors. Whether they can really do so or not, nearly all every Swiss dentist will claim to speak English fluently, and "English Spoken Here" is quite a common notice on their door plates. Very often, however, the boasted "English" resolves itself merely into half a dozen words or sentences laboriously acquired from a conversation guide. These they discharge at the heads of their visitors indiscriminately, and quite irrespective of whether they apply to the case in point or not. "Your tooth hurt?" they enquire solicitously. "Oh, my! Never mind. This is a pleasant day for traveling. I do not want any more," is the sort of salutation with which the foreign patient is sometimes greeted. Fortunately, how-

ever, a swollen jaw more or less speaks for itself, and an examination will soon show what measures may be necessary to affect relief.

The Swiss dentist finds his most remunerative clientele in the visitors at the big hotels. With a view to securing their practice he sometimes has an understanding with the head waiter, in terms of which that functionary agrees to put in a good word for him whenever occasion offers, of course receiving a commission on any business that thereby results. Another plan much favored takes the form of distributing cards and pamphlets drawing attention to his skill

A Dental Office at Chamonie, Under the Shadow of Mont Blanc.

broadcast among the hotel guests. Of course a good many are promptly thrown into the nearest waste-paper baskets, but a proportion meet with a better fate. The hotel manager, too, often seconds these efforts for stimulating business by referring to the matter in the advertisements of his establishments. Thus, he will draw up an announcement worded more or less as follows: "Hotel Magnifique. Very high class house. Baths. Mountain view. Golf and dentistry."

The charges for dental treatment vary in accordance with the skill of the practitioner, the amount of work to be done, the sup-

posed status of the patient. The operator himself seems to be the sole judge of the latter, an arrangement that does not always make for satisfaction. Some dentists, however, have a fixed scale and adhere to it rigidly. The monetary system of Switzerland is the same as the French one, but there is no difficulty in negotiating English and American gold and bank notes. Silver coins, however, are apt to be looked at somewhat dubiously. An ordinary extraction is a matter of only a few francs, but if gas has to be administered the fee is raised considerably.

The practice of dentistry in Switzerland is by no means confined entirely to natives of the republic. A large proportion of French, Germans and Italians are established among them, as well as a number of English and Americans. These latter are for the most part graduates of recognized colleges, and many of them hold good degrees. Their superior work and methods soon become appreciated—especially by the better class of residents—and they seldom experience much difficulty in building up a good connection. A few of them contrive to add to their incomes materially by occupying appointments in hospitals or schools. These posts, however, are not plentiful and attract the very pick of the profession.

The dental offices of the leading practitioners in the chief towns are as a rule well fitted and provided with all the necessary equipment and appliances. The waiting-room contains the usual assortment of "comic" journals (the perusal of which is apparently intended to allay the pangs of sufferers until the operator is disengaged) and other familiar features of such apartments. In some instances cabinets of artificial teeth form part of the decorative scheme, while a volume of testimonials from grateful patients occupies the place of honor on a center table. As the practitioner descends in professional status the appointments of his office gradually become less ornate, until finally there is no waiting room at all, and a rough bench takes the place of the luxuriously upholstered operating chair. There is, however, even a grade below this humble one. It is occupied by the itinerant dentist who travels about the remote country districts and treats patients from the tail-board of a cart, or underneath a convenient tree on the village green. The methods of the traveling practitioner are, as may be imagined, extremely rough and ready. All he requires seems to be a case of second-hand instruments, a lusty voice, and well developed biceps. Sometimes he will

also go the length of providing himself with a few bottles of quack nostrums, the superlative merits of which he will proclaim at the top of his voice to the gaping crowd of yokels who surround him. The element of faith enters largely into his methods of procedure, for, on

Reception Room in a Dental Office in Geneva.

analysis, the bottles would yield little beyond colored water. Still, for all this, and to give him his due, he does occasionally manage to effect a "cure" of sorts, even if he does first inflict a good deal of pain. Still, so long as an aching tooth is removed the patient is generally quite satisfied.

STERILIZATION OF COMPLICATED INSTRUMENTS.

BY DR. VIGGO ANDRESEN, COPENHAGEN, DENMARK.

In spite of the many different methods of sterilization which have been practiced since the introduction of the science of antiseptics, we dentists have not been able to keep our complicated instruments, viz., the handpieces and the angle attachments of the engine, separators, etc., as clean as they ought to be from the hygienic point of view. This is best seen from "The American Text-Book," by Dr. Kirk, 1905, where James Truman writes as follows, page 119:

"Handpieces, of the various kinds in use, are probably the most difficult to keep thoroughly clean. Frequent taking apart and boiling are essential, and should not be omitted," and about separators: "They should be made as nearly sterile as possible before their use upon a patient."

It is therefore my firm conviction that the method which I have introduced in my practice since 1906 and at dental meetings in Copenhagen and Hamburg, 1907, and Cologne, 1908, will give us great advantages.

The process consists in heating the instruments in mineral machine oil (paraffinum fluidum ph. germ.), which must be brought up to 120-130 degrees Cel.

Before Lister's time hot oil was used for cleaning instruments, but as the paraffin oil bath at any rate does not seem to be well known I shall now take the liberty of mentioning what Forgue and Reclus write in *Traite de Therapeutique Chirurgicale,"* 98: Baths of a temperature over 100 degrees Cel. are used by certain surgeons who ascribe to them considerable advantages; they can be brought up to a high temperature without damaging either the polish of the nickel-plating or the tempering and the edge of the steel. Tripier used the oil bath heated to 120 degrees Cel.; Poncet, glycerin or paraffin oil. These baths, however, have one great drawback, their boiling point being much higher than the temperature necessary for disinfection. Whilst the latter is between 120-130 degrees Cel., the boiling point of oil is 300 degrees Cel., of glycerin 280 degrees Cel. and of paraffin oil more than 300 degrees Cel. It is therefore necessary to watch the heating with the help of a thermometer or to have recourse to a regulator."

These lines, which I did not know of before, confirmed my opinion concerning the practicability of the method and requisite temperature, and encouraged me to systematize it.

The advantages of this method are rather important: In the first place one is able to make a thoroughly mechanical cleansing, brushing and rinsing, which is completely satisfactory from an esthetic point of view without injuring the instruments. Secondly, the heating, afterwards, in oil has the effect of drying, lubricating and preserving the instruments. This method is decidely economical, and as it is easy to apply, it answers all practical demands. Thirdly, the sterilization itself at 120-130 degrees satisfies all hygienic demands

and furthermore the physical qualities of the oil prevent the septic matter which has dried up from sticking to the instruments.

Therefore, to prevent any inconvenience in connection with this method, the oil burning too hot, for instance, or the fumes becoming unpleasant in the laboratory. I have constructed the sterilisol apparatus, Fig. 1. Where there is an arrangement for carrying off the fumes or where one can be made it is best to make use of it for the

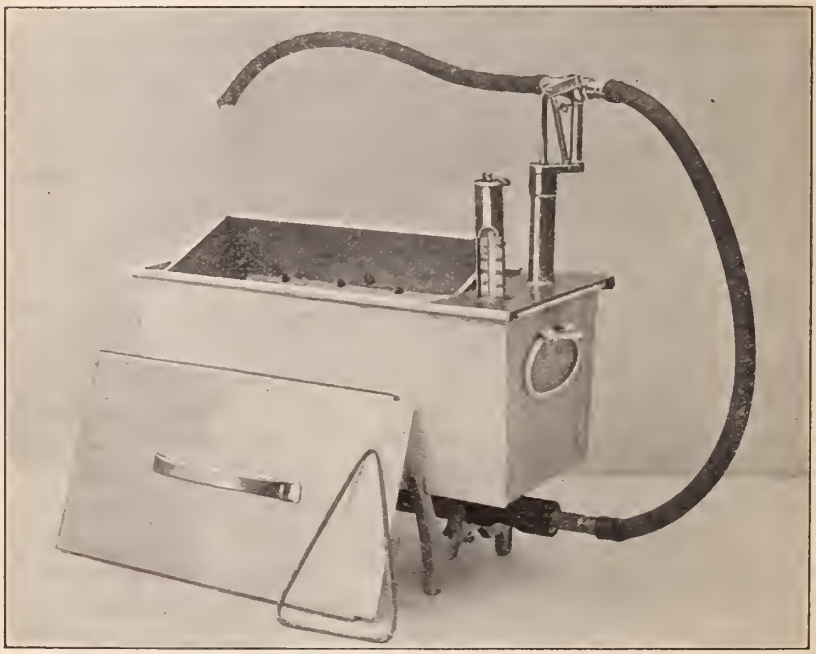


Fig. 1. Sterilisol Apparatus.

apparatus, in order to get quite rid of the fumes, which of course depend upon the quality of the oil, and just because of this inconvenience the sterilisol apparatus is not at all suited for the operating room. Among other precautions must be mentioned that the oil must be carefully wiped off the instruments while they are still warm, either with a cloth, which is used exclusively for cleaning instruments, or with a piece of sterilized linen, so that they may not be greasy to the touch.

Fig. 2 shows the apparatus in transverse section: I gas apparatus, II oil vessel, III basket for instruments, with removable handle, IV automatically closing gas tap. The gas tap is kept open when

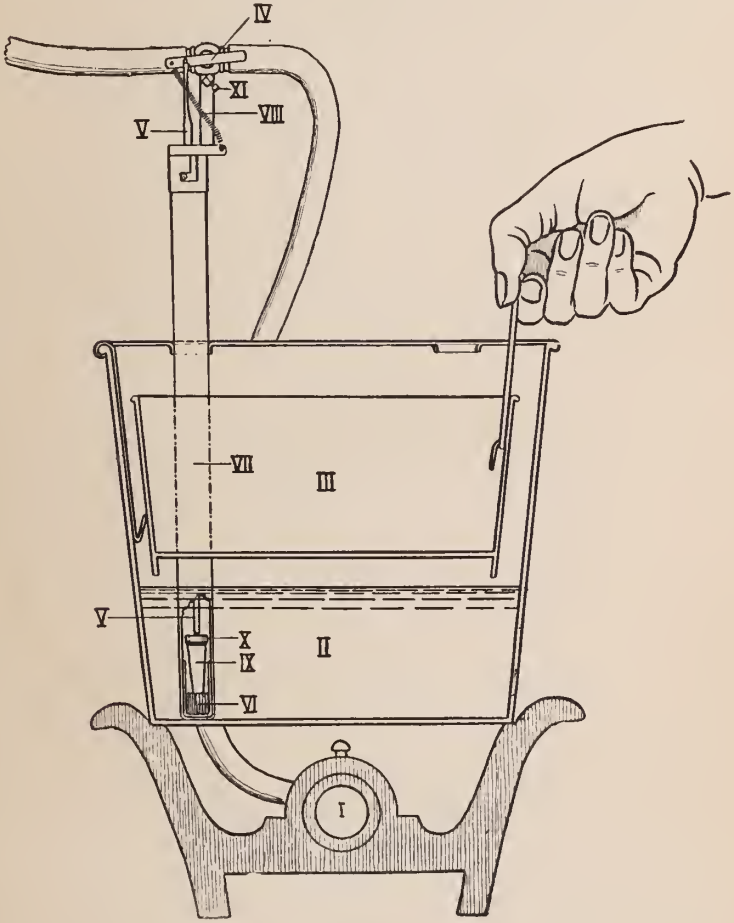


Fig. 2.

it rests on a rod (V), which is supported by a piece of fusible metal (VI) in a tube (VII) which goes down into the oil. As the metal melts the tap is deprived of its support and is closed by a spiral spring (VIII). At the same moment a spring, which is not seen in the drawing, causes the rod (V) to return to its former position. As soon as the metal has become stiff the arrangement is such that it is

only necessary to open the tap every time the apparatus has to be used.

The stream of gas may be lessened by shortening the rod, and this is done by screwing on the piece at the lower end, which must always be fastened with the unit (X). Careful attention must be paid to this. By means of the screw (XI) one can arrange the tap so that it either subdues the flame or extinguishes it altogether.

In Fig. 3 we see the basket for the instruments in its place, while the instruments are being put in, as well as after the sterilization, with the oil dripping off them. Through this arrangement we do not get any oil outside the apparatus; furthermore the basket is constructed in such a way that the instruments can not get too near the bottom, so that they may not be exposed to too great a heat.

The cover is only to be removed when the instruments are put

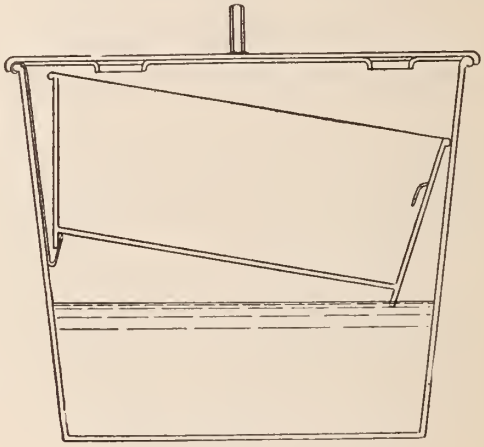


Fig. 3.

in or taken out, otherwise it must be in its place, so that the fumes do not escape. Close to the apparatus one must have an enameled tray or a photographic dish or something similar, where the basket with instruments can be put when they have to be wiped.

It is advisable to become familiarized with the apparatus and to use the best paraffin, or vaseline oil, to which now and then some drops of eucalyptus oil may be added.

As a rule old handpieces contain so much rust and dirty oil that the first portion of oil quickly becomes black and has to be renewed.

In order to remove the dirt more quickly one can let the handpieces rotate in the hot oil.

Sterilization in the oil bath is particularly suited for engine handpieces and angle attachments; furthermore for knives, scissors, forceps, excavators, both with ordinary handles and such of vulcanite, which can stand heating in oil to 150 degrees Cel. for half an hour without being damaged; also for rubberdam instruments, separators, pulp canal instruments, automatic and other gold hammers, burs, injection syringes, etc. The injection syringes made of metal only are sterilized in a little enameled dish of a suitable size only with oil enough to cover the syringe. The heating at 130 degrees takes about two minutes. If one has tried it once with thermometer and watch one can afterwards go by the watch alone. The small quantity of oil necessary for this causes no fumes worth mentioning. The syringe is dried on the outside with sterilized linen and is filled with alcohol to remove any superfluous oil after sterilization. After the syringe has been used it is cleansed well and replaced in the oil, where it is left to the next time. The advantages are great, the needles can be used several times and the injection causes no infection.

APICAL PERICEMENTITIS.*

BY EARL G. STEPHENS, D. D. S., ROBINSON, ILL.

Before considering the pathological conditions affecting the peridental membrane it might be of importance to briefly describe its structures. The peridental membrane is the soft tissue occupying the space between the tooth root and the alveolar wall. In the literature it is often referred to as dental periosteum, pericementium and alveolo dental periosteum. It completely surrounds the tooth root from the enamel line and serves as a connection between the tooth root and its bony socket as well as the gum tissue. It is the thickest in childhood and thinest in old age. This membrane differs from the periosteum in that both its surfaces are functioning. It can be said to have three functions; first, a physical function, maintaining the tooth in position; second, a vital function, building of bone to the alveolar wall, and of cementum to the tooth, and it also maintains the tooth

*Read before the Wabash River Section Dental Society, November 10 and 11, 1908.

vitality after the pulp has been destroyed; third, a sensory function—it not only transmits pain sensations, but the entire sense of touch in the tooth is supplied by this membrane.

Apical pericementitis is a term applied to the inflammation of that portion of the peridental membrane situated about the root apex. It may be either acute or chronic. An acute apical pericementitis is an inflammation just forming and characterized by all the pathological changes which occur in all other acute inflammations. There is a decided thickening of the membrane, and because of its bony surroundings it is a painful process. When we remember that the sense of touch in the tooth lies in this membrane it can readily be seen why this is such a painful process. The causes of apical pericementitis most frequently lie within the pulp chamber, but not always. It is usually dependent upon the death and the putrefaction of the pulp, but may be caused by a great variety of things, such as shock, severe use, unusual stress, iritating substances passing through the canal, following the expiration of pulp, root fillings, too severe wedging or separation, and the use of the mallet in large gold fillings. I have occasionally noticed that very rheumatic persons sometimes suffer from disturbances of this nature which are only temporary, passing away when constitutional conditions are relieved. In its simplest form, it is caused by the hyperemia or inflammation existing in the pulp extending through the apex from that tissue. In its severest form it is caused by infection from the pulp putrefaction by pyogenic organisms. The most prominent symptom is tenderness to percussion, patients complain of the tooth feeling too long, occluding before the others, and for this reason they locate it. There is usually some redness of the gum opposite the apex and a slight tenderness to digital pressure in the same region. There is an actual elongation of the tooth, due to the thickening of this membrane, forcing the tooth down from its socket; there will be the absence of sensitiveness to thermal changes.

The treatment in acute cases is very simple. If the cause is in the pulp chamber or canal then that must receive the first attention. Cleanse it out thoroughly and, so far as the membrane is concerned, it will take care of itself. Many teeth in this condition are lost or turned into chronic form by too frequent medication, especially with irritating agents. If the canal is filled with putrescent material it must receive careful attention in order to avoid running into alveolar

abscess. Apply your remedy the first sitting, and let it remain from 24 to 48 hours. When the patient returns, mechanically clean the canal, reapply your dressing and allow it to remain for a week or ten days, and in a majority of cases the canal will be ready for filling. Occasionally I meet cases that do not yield readily, the pain continues and we must resort to other means, such as counter-irritants with pepper pads, or iodine, chloroform confined, or bloodletting, sometimes opening into the apical space through the outer wall of the alveolus and lacerating the tissue. Sometimes we have to apply a systemic treatment like a hot bath, 5 to 10 grains of quinine, followed by small doses of tincture aconite and tincture gelsemium, alternately a half hour to 6 or 8 hours, and at bed time 10 to 15 grains of Dover's Powder. Where acute pericementitis develops while devitalization and pulp removal are in progress it is probable the operator is to blame, for he might have been careless with his instruments as regarding their proper sterilization, or pushed one through the apex, or used too great a quantity of iritating substance in the canal. There is often a little soreness following the pulp removal, and the same following the canal filling. Just give it rest and don't further irritate it.

Acute apical pericementitis will usually naturally terminate in one of two conditions, *i. e.,* either in acute alveolar abscess or in chronic apical pericementitis, depending mostly on the nature and severity of the irritant. If it be mild, somewhat constant, not suppurative in its nature, it is very liable to end in the chronic form, the treatment of which often baffles the skill of the best practitioners.

The chronic form presents the symptoms of acute in modified form. Patients will complain of more or less soreness, which might extend over a period of several weeks, or the tenderness may come and go every few days. The chronic form usually follows the acute attack where the irritant is mild and continuous, following canal treatment, root filling, broken broaches and such, but mostly is the result of very mild putrescence in the canals where the pulp dies under fillings and very slowly disintegrates, just enough poison being formed to keep up a constant irritation. The treatment of these cases is about the procedure already given. Relieve the tooth by grinding its occlusal surface so as to relieve the stress on that tooth. I sometimes get results by sealing in the canal, close to the foramen, a solution of iodine in creosote, for its irritant alterative effect. The chief objection to this is its discoloration.

Sometimes passing a broach through the foramen and stirring will be helpful, or anything that will cause a mild increase of soreness will usually do. These are the kind of cases that usually get sore soon after treatment is sealed, and patients either open the approach or ask you to; they should be encouraged to bear the added pain for a little time in the interest of a cure. No hard and fast rules can be laid down for treating these cases. The good judgment of the operator must determine how to manage each individual case that is presented.

EXTRACTION.*

BY B. G. WOOD, D. D. S., FORRESTON, ILL.

Members of the Northern Illinois Dental Society, Gentlemen and Friends: In presenting to your honorable body for discussion a paper on the subject of extraction, I am confronted by two handicaps, in that I am not, as yet, a member of the Society, and that I am an ordinary country dentist and not a specialist in the line. However, from the standpoint of the above named "country dentist," who has to do his own extracting, and in this case I am sorry to say a great deal of it, I wish to present a few points which have impressed themselves upon me in my few years of observation.

Too few of us while in college are found to spend sufficient time in the extracting room and surgical clinic, either from a natural dread possessed by a great many people or from a lack of stress placed upon this branch by members of the faculty. Therefore when we are nicely located and our patients begin to arrive and we are confronted with a difficult extraction, our inexperience lends a degree of fear to our hands which is communicated to our patient thereby, and he becomes dissatisfied and nervous before the real operation begins. The results are obvious. Let the faculties of the several schools therefore place more stress on the branch of extraction, for, with all of our skill in mechanics and medication the operation of extraction is still vital and necessary.

Some teeth must be extracted, and for the following reasons:

1. Deciduous teeth must at some time in their existence be re-

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moved, and are passed with the thought that they should not be removed until their mission is accomplished and their period of usefulness at an end.

2. Abcessed roots which are beyond medication or resection.

3. Neglected teeth and roots which are useless and offensive, causing foul breath and a secondary cause of stomatitis.

4. Pyorrhoea (so-called), which loosens the teeth, causes a collection of debris, produces pain and general systemic infection.

5. For plates when all else fails. (Of course plates never fail and are always a success.)

6. Impacted third molars, which are in a class by themselves and a fit subject for discussion alone. They will be spoken of briefly later on in the paper.

Of course all of our patients wish their teeth removed without pain, and in order to do this we rely on a general anesthetic or the use of a local. Personally, when I do not use nitrous oxid with a Teter outfit I employ a 1 per cent solution of cocain with good results, using 5 grains cocain to the ounce of a boric solution, which also contains thymol, menthol, potassium, iodid, phenol, oil gaultheria, eucalyptus and glycerin.

In introducing the above solution into the gums care should be first taken to sterilize the needle and all instruments to be used, and in this connection I find that by keeping my needle in a full strength solution of glyco thymoline and locking it into my hypodermic I avoid any rusting, and they are kept thoroughly sterile. Render the area to be injected aseptic by the use of a boric solution and remove any and all debris and deposits from the teeth to be extracted, thereby avoiding infection by forcing septic material beneath the gums. All the gums present an extremely sensitive condition, I find that by applying a drop of campho phenique on an orangewood point they will be sufficiently desensitized to allow the painless introduction of the needle. I inject freely on the lingual first, forcing toward the labral or buccal and confining in any locality by pressure on either side of the point with the first and second fingers of the left hand. When the area is white and hard we are ready to extract, and I do so immediately if injecting four or more teeth.

Now a word as to forceps: I find that in securing a firm hold on the root it is necessary to push the beak well up under the gums, and in order to do this the forceps must have a "butt end" handle

similar to the "Allen" pattern. Grasp the handles between the first and third fingers with the second between to regulate the distance between the beaks and to "feel." Place the beak on the lingual side first and push well up. Then place the buccal beak at the gingival and press up as before. This should secure a firm hold on the root. I prefer forceps with a blued or oxidized finish, which I think easier to keep clean and less unsightly to the patient than nickel-plated ones.

The lower incisors are removed with a Cryer universal lower root forcep placed as before described, the operator standing to the rear of the patient and in an elevated position. They present a flattened surface on the mesial and distal, and the thin process on the labial, so that they are best removed by pressure to the labial before any stress is placed in a direct line with their long axes.

The upper incisors present a conical appearance, and are removed with a rotary motion, loosening the tooth well before its removal downward.

The upper cuspids, lower third molars and lower bicuspid roots are the most difficult to extract, the cuspids being at the corners of the mouth and used in incising, rending and tearing, etc., all subject to more diverse applications of force and require a more firm anchorage than any other teeth, and together with the second bicuspids are often found to be held firmly in position by an excementosed area near the apex, forming a ball or protrusion, making it necessary to remove a portion of the labial plate by the use of a fissure bur before the loosened root can be removed. It sometimes occurs that in loosening these roots a portion of the labial plate is broken off and if small may be removed without harm, but if a large portion is broken it should be chiseled off the root before removal and pressed back into position, where it will unite with the jaw and no harm follow.

The upper bicuspids are more or less flat and have a distal tendency near the apex. They should have a gentle pressure toward the buccal, but not too great, on account of the denseness of their lingual plates. The second bicuspid is bifurcated in over 50 per cent of cases.

The upper first molars and also the seconds indicate a buccal pressure, while the upper third is in most cases positioned well toward the buccal and indicates its removal in that direction. These, the first and second molars, often present a badly decayed gingival on the buccal, in which case a forcep having one beak cowhorn will

either remove it or separate the buccal roots, making the removal easy using the butt end bayonet.

In removing the lower first and second molars I use the Ash universal lower, tipping first to the lingual then to the buccal, and a final movement to the distal with a tilting motion for these roots usually are inclined to the distal.

The lower third and impacted ones are a fit subject for a paper in themselves, and I only wish to say this concerning them: Locate the mesial surface and remove with stones the intervening surface. Remove by placing a spade-shaped elevator under the mesial surface and tilting upward and backward. Occasionally it is necessary to remove a portion of the process to the distal, using a fissure bur. A Physick forcep is used successfully by some operators, but has never been a help to myself.

These few points, gentlemen, are in every day use in your own practice, and therefore not new, but if I have said anything which will produce discussion we may receive benefit, and the object of my paper shall have been accomplished.

Finally, to be successful in your extracting, be sure of what you intend to do and then operate fearlessly.

PHYSICAL WELFARE OF THE DENTIST.*

BY DR. S. C. SIMS, STERLING.

Fully nine-tenths of the human race live their lives in a manner that is not conducive to the highest physical welfare. This fact is bad enough in itself, but the condition is made worse when we consider that a large percentage of that nine-tenths know that they are living contrary to the laws of health. Now why is this so? In America, for some reason, the spirit of inquiry among the laity into what is conducive to health seems to be in disfavor. To illustrate: Given a crowd of young or middle-aged persons, energetic, of average intelligence, and sound in health, let one of this number start a discussion regarding the effects on the system of certain customs or habits common in the life of the average man. And, if the discussion is persisted in, in an earnest desire to arrive at a rational conclusion,

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it would be safe to say that that man would be voted a bore and banished from the crowd. An important condition in the above illustration was that the members of the above mentioned crowd should be in average good health. On the other hand, let the crowd be composed of those whose machinery needs considerable attention to keep it running smoothly—the result, perhaps, of having lived not wisely but too well. Now, let a similar discussion be started in this crowd and it will continue like a house afire until perhaps the first group comes along, and they will then change the subject, as if ashamed to be caught discussing so tiresome a subject; or for fear of being considered "has beens."

To any one who is desirous of keeping his body in a healthy condition and thus be enabled to get the most out of life, the above life comedy it seems to me ought to be extremely pathetic.

I give this little prelude to my paper only to demonstrate to you gentlemen who are fated to listen to it that I fully appreciate the rashness of my attempt to interest you in a subject so generally in disfavor. Therefore, I approach my task with fear and trembling but with determination, if necessary, to die a martyr in a good cause, because I honestly believe that there is no subject so much in need of earnest, intelligent investigation as this one, and none that will give greater returns for the mental energy invested.

I said that nine-tenths of the human race live abnormal lives. This is due to many and varied influences, which may be divided for convenience of consideration into two classes. First, those influences which have to do with one's condition and environment in life, such as his vocation and financial condition. Second, those influences which depend upon one's volition and desires. The first class of influences one cannot always be master of; the second class one should and can always be master of unless there exists in the individual some hereditary mental condition which deprives the individual of self control, such as dipsomania or other allied neuropathic states. Both of these classes of influences frequently exist in the same individual.

We as dentists have in our vocation to contend with influences which decidedly are not conducive to the best physical welfare; these influences or conditions we cannot remove and still practice dentistry, but we can control the second class of influences so as to minimize the evil effect of the first class.

The human body has aptly been compared to a furnace; the

more work there is to be done the more steam needed to do it, and the more fuel needed to keep the pressure gauge up to the standard, and vice versa. So it should be with the body; the less the work done the less the energy needed, and the less the tissue and food consumed to produce that energy, and it should follow the less the food taken in to supply this demand and replace the lost tissue. If too much fuel is put into a furnace the result is increased steam pressure, and if the steam is not used an explosion results. This comparison is like all others—it must not be carried too far. If we take on too much fuel in the way of food it will either be stored up as fatty tissue or it will clog up and overwork the emunctory organs until they fail and we have Bright's disease, rheumatism, etc. It will eventually produce high pressure, but it will not be like high steam pressure, ready to perform greater tasks; but it will be high blood pressure, liable to result if other conditions favor in heart failure or apoplexy.

Herein I think lies the whole secret of right living from a physical standpoint, barring, of course, other forms of dissipation. It is this: make our intake of food balance as near as possible our outlay of energy, physical and mental.

I have been much interested in reading a book entitled "The Nutrition of Man," by Russell H. Chittenden and published by Frederick A. Stokes Company, New York, in which Prof. Chittenden gives the results of investigations that he has been conducting as professor of physiological chemistry in the Sheffield Scientific School of Yale University. In this book he proves conclusively that the recognized standard of food requirement for the average man is too high, and especially in proteids; that the common idea that proteids are necessary to produce energy is fallacious; that energy and heat come from the non-nitrogenous foods, the carbohydrates and fats; that the only proteid food needed is just sufficient to keep up the body weight by supplying waste tissues; that if the body is compelled through lack of non-nitrogenous food to use instead the proteid to produce heat and energy it is working at a disadvantage, and is handicapped just to that extent in the struggle for life. In other words, he shows that the system naturally uses the carbohydrates to produce heat and energy, and if through lack of these it must use proteids that the proteids must in some way be converted into carbohydrates by the elimination of the nitrogen in the form of urea before it can be used as a heat and energy producer; that only the small amount of pro-

teid needed to replace waste cell tissue is retained and utilized by the system, unless as stated above there is a lack of non-nitrogenous foods. The surplus over this amount must be eliminated. Roughly speaking, making one-sixth of our diet proteid will abundantly supply this demand. That does not mean that one-sixth of our diet may be meat and eggs, because almost everything we eat contains a percentage of proteid; for example, the sixty grams of proteid that Prof. Chittenden has determined is needed for a person weighing 154 pounds can be obtained exclusively from one-half pound fresh lean beef or one-half pound pale cheese or one and one-third pounds white bread or one-half pound dried peas or one and eleven-twelfths pounds potato chips, etc., etc. So, one can see how easy it would be to run above the required amount of proteid. Therefore, eat less food, especially meat; give yourself the rare pleasure of getting really hungry from actual want of food and see how you will enjoy eating "any old thing." We all eat too much in this day of plenty, especially meat. It is the curse of ordinary hotel and restaurant living that one cannot get a good meal without making meat the main article of diet.

Don't put this down as the vagaries of a vegetarian; read Prof. Chittenden's book: his deductions are based on cold scientific facts, and one cannot do otherwise than accept them.

You know how frequently it happens that people recovering from typhoid fever enjoy for a time exceptionally good health. Do you know why it is? In my opinion it is because the low diet that is a part of the treatment has allowed the highways and byways of their system to get thoroughly cleaned of the accumulated debris of their past life, perhaps the first time such an opportunity has been offered, and the system naturally takes a new lease on life.

When I first decided to write a paper on the subject of the physical welfare of the dentist I thought I might be able to obtain some statistics bearing upon the death rate among dentists or professional men, giving the average age at death and perhaps some of the commonest causes of death; but my efforts along this line were not very fruitful. The only facts I could get were from the obituary reports of thirteen volumes of the DENTAL REVIEW that I had in my office, and in these only fifty-four deaths were recorded so that I could get the age at death, and only in thirty-three was the cause of death given. Deaths by accident I did not record. So you see not much

value can be attached to any inference that might be drawn from so small a number. The average age at death was fifty-six years, the commonest causes were, given in the order of their prominence, heart disease, pneumonia, tuberculosis, rheumatism, typhoid fever and Bright's disease.

There is one point connected with the causes of death which, taken along with my remarks on diet it seems to me has some little significance—it is this: fourteen out of the thirty-three deaths whose causes were given were due to causes which are usually associated with high living, defective elimination and the high blood pressure that is usually associated with these two. These fourteen deaths were distributed as follows: Six due to heart disease, three to rheumatism, three to apoplexy and two to Bright's disease.

So much for our regular diet. Every dentist recognizes that the life of the dentist is one which is trying on the nervous system: the necessary attention to detail, the fine distinctions needed, the confining nature of his work, and the inability to throw oneself into full muscular activity all tend to an unusual testing of the nervous system. Right here is where he must use his volition to control his desires and minimize the deleterious influences which he cannot remove. First, he must not allow his chase for financial success or even what he may consider his duty to his patient to blind him to his own best interest as expressed by his physical welfare. Do not work at night at the chair, and not in the laboratory if you can help it. Do not work on Sundays; the good book says that the body needs a rest one day out of seven, and I think the best minds of today will back it up. I have in mind several instances where comparatively young men had to give up their profession because of failing eyesight or failing health, after working day and night and Sundays, and I doubt not but that all of you can cite instances of this kind. Take a vacation of two or three weeks every year, and between these the dental society meetings afford you an excellent opportunity for not only a rest but an education that you cannot possibly obtain in any other way. Do not say that you cannot get away from stress of work; that is often true with the physician, owing to the nature of his work, but it is most emphatically not true with the dentist. There may come a time when you will have to get away, and you will be like one of the "has been" group that I referred to in my prelude, much interested in discussing means of closing the barn

door after the horse is out or repairing an old house that may not be worth repairing.

One of the best means of counteracting the lethargy of office work is to leave the office after 4:30 and engage in some outdoor game. I am a tennis enthusiast myself, because I think there is no other game that will give one so much all round and enjoyable exercise in a short space of time. If you don't like tennis, do something that you do like, but be sure that it calls forth physical exertion and is in the open air. Don't go buggy riding or autoing when you want exercise. Don't make "never walk when you can ride" your motto, but rather the reverse, "never ride when you can walk." Another thing I believe I derive a great deal of benefit from is a business men's gymnasium class that I attend once or twice a week from five to six p. m. Doubtless some of you are thinking just now that at the close of a day at the chair you feel more like sitting down than taking exercise. This is often true, but there is only the fatigue of a few sets of muscles accompanied with the lethargy of inactivity. I have been tempted from the same cause to forego the gym exercise, but after undergoing the systematic floor drill, then a game of volley or basket ball and ending with a shower bath and plunge in the natatorium, although my drivers may tend to give out under me, I feel as the expression goes, like a new man.

Now, I have come to a subject that is of much more importance than many people think—it is the question of narcotic stimulation of all kinds.

Some people possess temperaments that are much more susceptible to narcotic stimulation than are others. From the dipsomaniac who periodically, unless he can stupefy himself with alcohol, will suffer a maniacal attack, and who is at this time totally irresponsible, to the individual in whom the exhilirant stage of narcosis seems to be totally absent, from the one extreme to the other there exists in individuals every gradation as regards this susceptibility to narcotic stimulation. This susceptibility is located, it seems, in the nervous system. It will be admitted, I think, that the work of a dentist is especially trying on the nervous system. Thus, possibly, this susceptibility is increased in the dentist. The dentist may not get to be a drunkard, though some do; but even a cup of coffee will, if it has any appreciable effect, produce a stimulation which is abnormal, because all stimulation, however slight, of any function or organ of the

body that does not arise from the natural use of that function is abnormal, and should only be used in an emergency. A nervous system that is overtaxed does not need stimulation unless you want to eventually cause a breakdown; what is needed is a tonic, and the only tonic that is safe here is a rest and diversion. If we allow our best judgment to control our actions we will rule out all narcotics, the most common being alcohol, tobacco, tea and coffee. But will we let our judgment control? I think that the main cause that we do not consult or reason more on this subject is that we, along with many others, do not feel any injurious effects arising from the moderate indulgence in narcotics, especially tobacco, tea and coffee, while the immediate pleasure derived is quite appreciable. The wise person will not be fooled by this. It is surprising how much abuse or disregard for the laws of health the system can adapt itself to in the way of stimulation or over indulgence before the evil effects are manifest in the form of a breakdown of one or more of the organs or functions of the body upon which the chief strain has been thrown. The sad part of it is that the evil effects that we did not feel in the beginning have been telling all these years, it may be fifteen or twenty years, on the various organs of the body, until those organs, like faithful horses, fall in the harness, unable to do their duty longer because they are worn out prematurely owing to the struggle against odds which we could have removed had we allowed reason instead of our appetites to control our action. What are we to do then? Why, take our place in the "has been" group, of course, where we belong.

I am afraid the American people too frequently are like the man in the song: "We want what we want, when we want it," and we don't weigh sufficiently the final price we have to pay for it.

If in the reading of this paper I succeed in causing some of my professional brethren to be more solicitous regarding their physical welfare than the immediate satisfaction of present desires or even success in their profession, I shall feel that I have accomplished some good.

ORAL PROPHYLAXIS.

BY A. F. JAMES, D. D. S., CHICAGO.

Dentistry as it is practiced to-day by the modern dentist is calling forth so many forms of knowledge and skill, that we are beginning to wonder if it will be possible for each individual dentist to perfect himself for the high requirements of each branch of the work so that he can give to the public all that can be accomplished.

In all branches of the healing science the trend is toward preventive measures, and dentistry is to the foreground in this work. Prophylaxis is one of the many waves that periodically sweeps over the profession, and at present is receiving a considerable amount of attention, but the possibilities and accomplishments of the prophylaxis treatment and just what results may be obtained, I am afraid is somewhat hazy in the minds of many, so it is the object of the essayist to make clear some of these possibilities and encourage every man present to take up this work and carry it out in his individual practice.

While on a camping trip in the Teton Mountains this summer, one thought which came to me while viewing this grand range of mountains, was that the only thing that is really beautiful that has not been aided or added to by the hand of man is the mountains or a natural landscape; all other things show the work of human hands —marble, diamonds, even our most beautiful flowers and trees are nothing, or do not show their greatest beauty until they are hewn into shape or cultivated by the hand of man. Our finest live stock, the most perfect animals, are the result of man's master mind and care.

In our past work as a profession we have accomplished much, but our attention has been largely toward the mechanical, or restoring that which has been affected by the process of decay or disease, but little has been done toward preventive measures and practically nothing toward the beautifying or care of the natural, comparatively healthy teeth.

Did you ever stop to think? Have you ever realized how wholesome and beautiful are perfect teeth?

In the past our work has been to add a patch here and there, in other words to mend or restore broken down teeth.

*Read before the Northern Illinois Dental Society, October, 1908.

Prophylaxis, if it means anything, means prevention of the necessity for adding these patches; it will make the teeth immune from decay. This is no idle theory, but a thing that has been proven so many times that I know it is true.

Your experience tells you that a perfectly polished, clean tooth is not often affected by caries. Why is it not equally true where there are a number of perfectly polished teeth? Gentlemen, the theory can be proven true in actual practice. The question is the thoroughness of the method and how it can be adapted to every practice.

One of our members said to me a short time ago, "I believe it is a good thing all right, but I haven't the time; I am too busy; if I could have an assistant, a young lady graduate or some one that I could turn this work over to in my office, I would take it up, but as it is I cannot give up the time to it."

Now, this is the question as it will resolve itself to many of you, but you all have time to keep in the procession with many other fads and fancies; why not work up enthusiasm on prophylaxis? Take a few cases; some beautiful young girl, with teeth that are only beginning to show signs of coming caries, and demonstrate to your own satisfaction the possibilities of prophylaxis in this particular mouth for a few years, and by and by you will become an enthusiast and you can tell your patients that you can do them a great service by preventing their teeth from decay, and will know that you can deliver the goods just the same as if you had contracted to place a filling, and you will be justified in asking a fee just in proportion, as for other service.

Some will say, after all this is only cleaning teeth, nothing new. Call it that if you choose. I have been called the manicure dentist, but I have known all the time that I can show results, and that is what we are after, aside from the fact that we all have to live and pay bills; and when you become properly enthused you will talk just as hard to show the patients why you wish to raise the contract for cleaning teeth as you often do to raise the price of a crown or your fee for a plate.

To save further labor and to give you detail, I am going to quote in its entirety a very good short paper on this subject (I know it is good, for I wrote it), read before the Chicago Odontographic Society in September.

The question, "How to treat superficial dental caries?" can be answered in one word. Prophylaxis.

The thoroughness of prophylaxis treatment can vary so greatly that what one might call prophylaxis another would not consider as such.

So I shall describe briefly the treatment I have followed which has controlled these cases in my practice.

Where the caries extends through the enamel and very near the gingival margin, I cut away the gingival margin freely, extending it Mesio-distally past the angles, rounding the remaining margin of the cavity, forming as nearly as possible a new enamel margin, then planing smooth the neck of the tooth and surface which has been affected by caries, then touching up all surfaces with round Scotch stones in the engine, following this with polishing wheels and pumice, finishing with wood points in porte-polisher for surfaces that cannot be touched with wheels.

The case just described might be considered as more than superficial caries, but I have followed this method successfully without recurrence of decay in extreme cases, and have not inserted a dozen cervical margin fillings in eight years' time.

Some will, no doubt, ask the question what do you do about the sensitiveness of the exposed dentine? My answer is prophylaxis, keeping these surfaces polished to a lustre with wood points so that rinsing would almost clean them, teaching the patient to massage the gums with an even bristle brush, carrying soap into the mouth to make a lather which will do away with the harshness of the brush on the gums and encourage the patient to do more brushing.

In cases where the caries has not extended through the enamel, but has only etched or roughened the gingival margin or caused the white chalky lines we so often see, I plane all surfaces smooth, remove all calcarious deposits from the necks of the teeth and follow with the now celebrated prophylaxis treatment, which I may say is preventive dentistry and should be called a Godsend to humanity.

The question was raised and caution thrown out by one of our members during the discussion of a paper on prophylaxis last winter regarding the danger of injuring the dental ligament in the use of instruments, and this extreme polishing of the necks of teeth in the prophylaxis treatment.

The question seemed a pertinent one, and well worth heeding, and I have given particular attention to this danger to see if damage were really done to these tissues, and I can say that I have not found

it to be true in any case but that the tissues improve, they become firm and even hardened, under this treatment, and therefore from my clinical experience the polishing cannot be too extreme or thoroughly followed out; at least one would have more physical endurance than I possess in order to do damage in this way.

(The following discussion of Dr. James's paper was read by Dr. Lester Bryant, Chicago, and is appended to the paper.)

It affords me great pleasure to be called upon to discuss this paper, as it is to me and to any dentist who is working along these lines, such an important subject.

There is very little that I can say in discussing this paper, as I am so heartily in accord with everything in it. Consequently I shall confine my remarks to points that have not been made in the paper. The essayist has dwelt mainly on one phase of the subject, namely, the polishing out of cervical cavities.

The essayist says that prophylaxis is one of the waves that sweep over the profession, but I can tell you, gentlemen, that it will not take the road to obscurity with the obsolete methods.

Did you ever stop to think how much damage is being done with a tooth brush, and how few people know how to use one intelligently? If not, you will find it an interesting study. Few people brush the gums, but spend what little time they do spend scouring away at the labial and buccal surfaces of the teeth with a hard brush. The result is that they are wearing grooves in the enamel and doing more damage to the dental ligament than we could do with all the prophylactic treatment we may be called upon to perform.

It is my practice to give every patient a demonstration in the use of a tooth brush. This may not be a very beautiful sight to the patient, but it is expressive none the less.

I have found that since I have been working and thinking along prophylactic lines, I have changed my ideas and methods considerably. For instance, when I am planning how I am going to construct a piece of bridge work one of the first requisites is the subsequent prophylaxis for this piece of work. Can the patient keep it clean? And can I get at the cervical margins of the abutments to polish them as though they were natural teeth?

I find, too, that I am more particular to have my fillings well

polished on the proximal surfaces. Also the fillings in the mouth that I have not inserted where I find overhanging margins.

ARE WE LIVING UP TO OUR POSSIBILITIES AS A PROFESSION?*

BY DR. ISAAC SUNDBERG, DECATUR, ILL.

I claim nothing new or original in this paper, but will simply aim to direct your minds for a few minutes to some of the more common, yet important aspects as they come to us in our daily duties.

The word profession has quite a broad meaning. It embraces our vocation or calling as a whole, not simply here in Decatur or Illinois, great as it is, but all over the world where dentistry is practiced today.

We must, however, not take quite so broad a field for our consideration this evening. Let us remember as its component parts, so is the whole, which places the responsibility at home.

We therefore need to consider ourselves, our Society, and each one personally. So let us not do like the prominent church member who, when listening to a discourse from the pulpit, turned to his neighbor in the next pew and whispered, "He means you."

We are not all alike, and it is well we differ, for through this diversity of thought and action progress is made possible. We see things from a different point of view.

A group of tourists may visit the same scene, a mountain or an adjoining valley, and no two will describe it the same.

One is interested in botany, hence sees nothing but the peculiar growth and formation of certain plants and flowers. Another is a geologist, the formation of the great rocks may be all that appeals to him. Sill a third an artist, who sees the grandeur of the whole scene against the background of a beautiful sunset. And so we might go on down the list.

We would find upon comparison how wonderfully vivid each one had described what he saw. Will anyone venture to say the

*Read before the Macon-Moultrie Society.

others were wholly at fault? I think not. Let us then be charitable one to another.

One of the common errors we fall into is to side in with thoughtless and unscrupulous patients, who berate the last dentist who served them. It is a temptation to fall into line and pass judgment on some operation that seems to us not like it should be, but before entering into the criticism let us pause a moment. How do we know under what circumstances that particular piece of work was performed? Neither do we know how long it may have been doing fairly good service. We find some people, whose memories are woefully poor when it comes to dental work. Some stretch their conscience in this, much as they do in avoiding the just payment of taxes.

When advised to come often, or at stated intervals, for a treatment or examination, years seem like weeks to them; and, on the other hand, if a filling falls out after years of service, they will declare with positiveness that it was inserted the week or month before.

You all recognize the class I am alluding to, but we are very thankful that this kind make up but a smaller proportion of those we are called on to serve.

Nothing can possibly be gained by "cutting the other fellow," our best patients are shocked at such signs of ill breeding and unkindness, it belittles us in their estimation, and lowers the calling of which we are a part, the reputation of which depends solely on the character of its individual members. Such conduct then is unmanly and decidedly unprofessional.

We are pleased to note a marked improvement for the better in this direction. The fact that the membership of our State society increased from less than three hundred in 1904 to fourteen hundred in 1906, shows that we are getting into line and standing closer together. The good work of our State society officers cannot be overestimated, as they labor along this line, but are we doing our part of the work—the work of educating the public up to a higher appreciation of dentistry, as one of the most noble and beneficent of all the professions? Do we realize that even yet the greater part of the people do not look to us as professional men? I am sure there are none of us but value very much the high estimation of his fellow citizens. The first law to attain this is self-respect. "He who would be respected, must first respect himself." This means living on a

high plane, moral and physical cleanliness, and the highest degree of honesty in dealing with those who entrust themselves to our care.

This means a great deal, yet I take it when we enter upon a life service so sacred we assume all this, and anything short of the best lowers the individual self-respect and degrades the profession to which we belong, and consequently we would not be living up to our possibilities. If one has not the ability or moral courage to live up to these ideals, I ask if our profession would not have been better off had such a one chosen some other vocation in life? The public has a right to expect us to be competent when we announce ourselves as ready to serve them.

We have no goods to sell or exhibit; they have no means of knowing before we perform a certain operation whether it is to be of the highest or lowest degree of skill. They must, therefore, trust our ability along mechanical lines, our judgment in the matter of diagnosis, and, the most important of all, our unqualified honor. Is it not along this course that we can and should constantly be on our guard against falling into indifference? We may not intend to be directly dishonest, yet that is practically what it amounts to if we knowingly dismiss a patient as finished before we have by hard work and thoughtfulness accomplished the very best that under the circumstances could be done, and given such advice as shall be a future warning and benefit. Anything short of this must throw a bad reflection on our profession, and we all know the reflex influence of our own progress and standing. We may realize our responsibility to those we serve, but let us not forget our indebtedness to the profession, especially to those noble leaders who have given so unsparingly of their talents, money, and time, the result of which has raised our calling from practically nothing to what we are today, so that we are, among a few at least, recognized as one of the learned professions.

We are proud that at the head of this list of great men stands a native of our own State. I refer with pleasure and pride to our honored Dr. G. V. Black. Bacon said this: "I hold every man a debtor to his profession, from which all men of course do seek to receive countenance and profit, so ought they to endeavor themselves by way of amends to be a help and ornament thereunto." So we should give as well as receive.

Some one will say we cannot all be leaders in science, me-

chanics, art, and literature. This is perfectly true, neither is it expected of us; still this does not excuse us from doing our full duty in the place we occupy. Would a victory at war ever be won if none would do their duty except a few who are chosen to be generals and captains? Is not the common soldier as essential and possibly more so, than the leaders?

Can we realize how little good dentistry would do today if the number were reduced to those few who stand head and shoulders over the rest of us? Such a picture should impress each one with his personal obligation, in carrying out the great responsibility of the profession as a whole. Because we were not given five talents, or even two, it is no reason we should bury the one that God gave us. So, after all, it remains with the rank and file of us to elevate our calling. The leaders can only direct; they cannot fill our places or do our work.

Many people even in this day do not look to us as a profession. They place our services on a level with a commercial transaction, and our skill with ordinary skilled laborers, many of whom can demand higher compensation than some of us get in fees. Why is this? I shall not attempt to answer this; simply venture a few suggestions. First of all, as was mentioned, we have evolved from a very small atom. We are still very young, not so many years ago the blacksmith and barber did all that seemed necessary, viz.: removed the offending tooth. Even now in some sections of our own country this is done, and the physician who holds that right in all States, exercises his privilege in a most destructive and cruel manner. Not all of them, of course, but an alarmingly large number are still densely ignorant in regard to the relation a healthy mouth bears to the general health.

As time went on we began to be spoken of as an off-shoot or branch of the medical profession, and later we came out declaring ourselves as an independent profession. Does the public as a whole recognize this position? We think not; it takes time to change customs and establish new conditions, and this is the slow process that dentistry is still passing through. We are entitled to the very highest esteem. What other calling requires a broader range of knowledge than ours? Must the dentist not be a skilled mechanic of the highest order? He must have a knowledge of the properties of a score of metals, also drugs with their effect on diseased and healthy tissues,

and his artistic tastes should be of no mean quality. Many other necessary qualities could be named that go to make up a well-rounded man in our profession. I know of no other calling that absolutely requires such diversified knowledge and good judgment, and with this our responsibility is great. Are not our patients' lives at stake often times? Then, too, the results of our efforts are far more definite than that of the physician and surgeon.

Who knows when calling a physician in case of illness whether he will recover or not? Does one know when going to the operating room of a surgeon if he will ever come out alive? Are either of these professional men blamed if the case goes against the patient? Not half as much as one of us would be if an amalgam filling falls out a year after it was inserted.

I believe it rests with each one of us to help bring about this much-needed change in the people's estimation of us as a profession. They must be taught to look up to us, to value our services, and to know that as much of the success of our operations depend on themselves as on us. "Doctor, do you guarantee your work?" Who has not been asked this ridiculous and unfair question some time in his experience? If the questioner is wholly void of reason and intelligence nothing can be done except to politely say no. Yet the writer believes that many who come to us with such a request can and should be talked to in a manner that will win them over to a full realization of what real honest dentistry means. We do not even need to allude to the man who at some time sowed the seed of such a false notion into the person's mind.

I am sure we are all agreed that we should be entitled to the highest public esteem. Do we each one make it a practice to never let an opportunity go by without saying something that shall influence some one to a higher appreciation of dental services, and give them a keener insight into the importance of constant care and frequent visits to our offices. The most appreciative and least fault-finding patients I ever had were those who came regularly to my office from two to four times a year, and in some cases oftener.

Do people generally realize what clean mouths and healthy teeth mean to their health? I think you will agree with me that they do not. How are they to learn this very important fact? We must tell them: it is our professional duty. The medical profession will not impart this knowledge; they are surprisingly ignorant or in-

different on this very essential point. Let me give one example of where we stand in the eyes of the public as with the physician.

An infant of six or seven months is suffering as a result of a tooth that is in the process of eruption. Does the mother call the family dentist? No, she does not even think of him. She calls the family physician, of course. Why? Because she does not know the dentist understands her baby's trouble. What happens? Often the child is doped instead of scientifically treated. Sometimes the child dies for lack of proper treatment at the critical moment. This is wrong. The intelligent dentist knows far more about the little one's trouble, and how to relieve it than the average physician does.

I am not advocating an encroachment beyond our field of action. I believe rather in working hand in hand with our brother physician. We should acknowledge our limitations, but we must also know our own ground. We must thoroughly understand the mouth, the diseases to which it is subject, the relation they bear to other organs, and the danger of neglect, especially the influence on the digestive organs. These facts we should intelligently explain, laying emphasis on the importance of cleanliness. Can we not impress on our patients that the old adage, "An ounce of prevention is worth a pound of cure," is very applicable in relation to our work?

The fact that many improvements are needful along all lines of education, increases the responsibility of each one today. Let us not shirk our obligations.

In this age of rush and get-rich-quick methods, are we not liable to fall into careless ways of doing serious and important things, that really should receive our most careful and painstaking attention?

The supposedly simple work of cleaning teeth; do we devote the time and intelligent energy to this operation that we should and at the same time instruct the patient as to the great importance and advantage of care along this line. Do we tell them how to use the brush, floss silk, etc., and explain why? How about the children's teeth—are parents instructed along this line? We all know the importance of this, but do we impart this knowledge to them? A large proportion of the mothers are still ignorant in this regard. Many of them do not know that the much abused first molar belongs to the permanent set.

We are glad to note the marked improvement along all lines of

advancement, but surely there is a great work for all of us to do. Children especially should have our most careful consideration. I would rather have the complete confidence of a child than any patient I know of, and they are willing to come to our offices several times a year if their confidence is gained and we have the co-operation of the parents.

In closing let me leave with you a thought which may help in giving a broader view of life, as we touch elbows with our fellow practitioners and citizens in this age of rush and commercialism.

"Look for goodness, look for gladness,
You will find them all the while;
If you bring a smiling visage
To the glass you meet a smile.
Do not look for wrong and evil,
You will find them if you do;
As you measure for your neighbor,
He will measure back to you."

PROCEEDINGS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting of the Odontological Society of Chicago was held at the Victoria Hotel, Chicago, on Tuesday evening, October 13, 1908, at 6:30 p. m.

Dr. Truman W. Brophy, the president of the society, occupied the chair.

Dr. L. L. Davis read a paper entitled, "Some Incurable Forms of Pyorrhoea Alevolaris," as follows:

DISCUSSION OF DR. DAVIS' PAPER.

Dr. J. G. Reid:

Mr. President, it would seem that the essayist has brought to our attention all of the forms of incurable pyorrhoea, and under that heading it would appear that there is not much left but a sacrifice of the teeth, because I have discovered that when this disease has progressed to the conditions described by the essayist, they are in a hopeless condition. It stands to reason that if the support of the teeth is gone by a process of necrosis and absorption of the alveolus, and there is noth-

ing left upon which to build for retention, extraction is the last resort, and the earlier that is done the better for the dentist and the patient. I have wasted a great deal of time in my endeavor to follow the enthusiasts who advise retaining the teeth. The opinions of the essayist constitute good dental practice. If one-half of the process has been necrosed and absorbed, we are up against a hard proposition in trying to save the other half for any great length of time. We might possibly carry these conditions along for a year or two comfortably, but the ultimate result, in my opinion, is the loss of the tooth. I believe that I have wasted as much time as anybody in trying to convince my patients of the importance of constant attention to the teeth, but they are negligent in the majority of cases in following out your instructions. If we could get the absolute and hearty co-operation of our patients I think in the majority of these cases we could prolong the usefulness of the tooth a number of years, but it seems impossible for me to convince my people of the great importance of the care of the teeth, and the care of this condition after we have put the teeth in proper shape for recovery.

During the last four or five years I have extracted a good many more teeth for pyorrhoea than was the case prior to that time. I do not regard this as a matter of laziness, because I have just as much interest in my people today as I had twenty-five years ago, but I do not seem to get results. It may be my fault, but be that as it may, I am convinced that we are carrying along too many crippled pyorrhoea teeth.

Dr. W. V. B. Ames:

It seems to me that Dr. Davis in his paper came about as near outlining a definite gospel as it has ever been my pleasure to listen to. I tried to follow him closely, and differ in places slightly, as I nearly always expect to differ with anybody who reads a paper on this subject, for the reason that the longer I practice dentistry and the more I observe of these cases, the more I become convinced that the nodular deposits, which are sometimes vesicular and knife-edged and very irritating, are more frequently caused by mal-occlusion and the resulting looseness, than are they the cause of the looseness and the general bad condition about the roots of the teeth. I hope I make myself plain, that the deposit of the calculus is the result of mal-occlusion and wrenching and the resulting looseness rather than the serumal calculus being the cause of the breaking down of the tissue

and the looseness. In making that statement I can not help but take issue to a slight extent with some expressions in the paper.

The main incurable cases of pyorrhoea which have come under my observation are cases where there is no use to attempt to cure the pyorrhoea, because the patient is going to die of diabetes or Bright's disease in a year or two.

Dr. George W. Cook:

The essayist has to my mind very clearly outlined certain conditions, and Dr. Ames has practically covered the points that I had in mind.

Pyorrhoea is a good deal like any surgical disease. It is always hard for the surgeon to make up his mind when he is going to remove an infected foot, and just where he is going to remove it. Some men look at things very differently, and especially diseased conditions of that kind. The co-operation of the patient must be considered in the extraction or the removal. While I believe in the main that the paper has outlined very clearly some well defined cases where we can not retain the teeth, still I think we would need to have an individual case before us, and pass upon that, as to whether or not we would remove that tooth, how many we would remove, and what we would do for the remaining teeth. That would be purely individual. Our knowledge of the pathology and of the cause of disease must also be determining factors.

Dr. Ames has said that the incurable cases were those of Bright's disease and diabetic cases. If a patient is going to live only a year or two, why not make him as comfortable as possible for that time? Let him die with as many teeth as possible. That would be my idea in these incurable cases. As I said before, it is an individual question, and belongs to individual skill. The same thing would be true of many surgical diseases. Pyorrhoea is purely a surgical disease in my mind, and must be treated as such. It is up to our individual notion and skill as to when and how we should treat to save those teeth. To establish a rule that we should say we could not save the teeth would be to my mind a rather skeptical proceeding. I think we are safe in saying that we are not going to retain teeth very long where there are deposits at the roots or apical end of the roots, and it does not matter very much whether they are the result of the loosening, or whether the loosening is the result of the deposits.

I think that the point made by Dr. Ames is sound. These

deposits do not come on the teeth until the teeth are in some way or other diseased. I do not believe that God is going to accumulate a lot of that stuff and carry it through the system, and then place it at the root of a tooth simply because it happens to be a tooth. Something else has to be the matter with that tooth before that deposit is going to come there. There is mal-occlusion or some irritation in the interproximal spaces, and general predisposition to that kind of disease before you have the deposit.

Regarding the question of deposits, I might say that I made some experiments on the conductivity of the blood, and I found that the salts of the blood went first to one pole, and then the other. Perhaps, to explain how such an experiment is carried on I may say that we have a "U" shaped glass tube. The positive and negative poles are placed in the salts that you want to examine, and determine by registration that is on the apparatus just what the conductivity is. The conductivity depends on the elements that are in the blood, hydrogen being a great conductor. As the acidity of the solution is reduced the conductivity of the solution is reduced. So I suspended the tooth in first one end, and then the other, and I found in every case that the inorganic substance in the blood was deposited on the tooth when placed at the negative pole, and when placed at the positive pole there was no deposit. In mal-occlusion we found more of these deposits; in other words, the root carries the deposits, and they are left there. You can also produce some deposit by irritation of any other kind. For instance, you tie a ligature around the neck of the tooth, and leave it there for two or three days, and you will find that deposits are taking place around that tooth. That is due to the fact that the irritation has caused an increased amount of blood supply to the part, and coming up against the side of the tooth osmoses out of the tissues against the tooth. The irritation that is produced by the movement of the tooth is one of the very factors in making that deposit. If you care to follow up these observations by putting a dental plug in between the teeth, and leaving it over night, sometimes you will find a certain amount of secretion. It is not, of course, deposited there hard enough, but you can find that there are inorganic salts, and if you take the stick out carefully you will find that by putting it in the solution of water you increase the conductivity of the solution by reason of washing the stick in the water.

I simply put that out as a suggestion along the line of why we get the deposits. Beer's method of treating any inflammatory condition by the use of the so-called hyperaemic treatment of disease of any kind is also a factor. If you increase the hyperaemia of the tissue you will also increase the amount of inorganic salts in that tissue. We have no circulation between the pulp outside and the peridental membrane outside, and consequently as the blood flows up against that you have simply osmotic pressure behind, which carries the inorganic salts through the tissue. It will not do that, in my opinion, until there is some irritation there. In my opinion malocclusion is a predisposing factor of pyorrhoea rather than an exciting cause. I believe that it is one of the most important influences in producing the earliest stages of pyorrhoea in the majority of cases. Dr. Carpenter's estimate of 75 per cent I believe is conservative. Until I heard Dr. Carpenter's paper on this subject I had not looked carefully to the occlusion of the teeth. That brought specifically to my mind the necessity of observing that one phase of it, and I am surprised to find what an important factor it is. I believe that we frequently get the exciting cause and the producing cause of the disease confused.

Dr. H. H. White, Indianapolis:

I enjoyed the paper, and agree with the author. I believe that pyorrhoea is purely local, and that success in treatment depends a great deal on thoroughness. Every deposit must be removed: I think at first it is hard to determine which teeth should be extracted for the reason that the deposits are different in nature. As Dr. Davis mentioned, in some cases there are scarcely any deposits, but I think in a great many cases the presence of calculus in large quantities inflames the tissues until the loosening of the tooth is due to inflammation, and not from the deposit, that is, altogether, which, if removed, the teeth tighten up a great deal more firmly than some that are not so loose. It is a pretty hard matter to determine sometimes, at first, which teeth to extract.

While my practice and experience have been limited, I have treated cases of pyorrhoea where the patients have been apparently cured, but the patients complained of the teeth not being of any service to them. The reason is that there is not enough tissue to hold and the tooth should have been extracted. I think a tooth of that

kind hinders the patient from masticating on the adjoining teeth, while if the tooth is removed they would get much better service.

Dr. Ames spoke of Bright's disease. I believe that pyorrhoea sometimes causes systemic disease of that nature. If the patient is afflicted with a disease of that kind, and has pyorrhoea, whether the pyorrhoea has been the cause of it or not, I believe that the patient will be benefited very materially by the treatment of the pyorrhoea.

I am very glad to be with you this evening. I have enjoyed the paper and the discussion, and thank you very kindly for giving me the invitation.

Dr. W. R. Parker, Brisbane, Australia:

Mr. President, I feel very highly honorly, indeed, to be present with you this evening. It is an honor that is unexpected, and I appreciate it. I know that my own society will appreciate my reception here. I feel that I am among friends.

I am a little bit diffident in attempting to discuss such a subject as pyorrhea, and in fact if I were asked to choose a subject that I would like a paper read on, or discussed this evening, I think I should have chosen pyorrhea. It is a subject that I may say I have spent a little time on. One of the speakers preceding me used the term "wasted." Now I think he should not have used that term, if he will pardon me, because I think any work we may do is not wasted, if we only do something to prove that there is no result coming from it. Then we will know it has been a failure in our case.

I may say that I have tried lots of things for pyorrhea, and I can say that I do not think I have effected any cures. In one case in which I was particularly interested a medical friend said he thought the organism was anarobic, and suggested the use of peroxid of hydrogen around the pockets of the affected teeth. After cleaning out the mouth of one of my patients I used it every day excepting Sunday for nearly four weeks, and I can safely say at the end of that time the patient was really worse than at the beginning. I have worked along other lines, getting a little better results. I am quite confident from my short experience that one can undertake treating pyorrhea too late, and then I do not think we are going to accomplish much. If we want to get a cure we must fix the teeth, and I have never seen much benefit unless about the middle stage of the disease the teeth are fixed. In a patient that I had about two months before I started on this trip I prescribed an astringent mouth wash, and had the

patient massage the gum freely. I must say that there was a decided improvement in the case, and the patient said it was much more comfortable to eat, but I do not consider the case cured.

Another point that I could never quite understand is the idea that in a tooth afflicted with pyorrhea the pulp should be removed. Say the pulp is there, and very little vitality in it, I wonder why it should be destroyed, because the best treatment seems to be to bring about a more healthy condition of the gums, and why should the pulp be removed?

Another thing that I have noticed several times in my practice is that pyorrhea seems to be occurring at a much younger age than we generally expect to find it. Some of my cases have been under twenty, and I was astonished to find teeth in such bad shape. I have noticed that people with very well developed teeth and arches, and absolutely no caries, patients with 30 or 32 teeth, will sometimes have pyorrhea developing. I have often thought that perhaps the fact that we do not live quite the same as we did a century ago might have had something to do with it. We know in the rural districts of Ireland the greater quantity of food is the potato. The same way, in the old days the Scotch people were so fond of the oatmeal. The point I wish to bring out in regard to the potato and the oatmeal is that they combine all the elements of our food in them. In these days there is so much refining done. In 99 per cent of the cases potatoes come to the table peeled. It is the same with wheat, for if they want white bread they have to take the inside of the grain, and leave out the husk. I believe that the outside is richer in salts than the inside. It has been claimed that we do not eat enough salt, and we all know that salt is a very valuable food. Is it because the salts are not being supplied that the system is at a loss to neutralize the acids, or perhaps because of the acids not being supplied there is a deposit of alkaline salts.

I wish to thank you very much for the pleasure it has given me to be with you, and I can assure you that if any of you gentlemen ever come to Australia, I am sure we will try to make your visit a pleasant and profitable one. We hope to hold the second Australian Dental Congress next November, and that would be a good time to come. You could come to Australia as easily as to Europe. I intend to be at the Congress myself, and I do hope that I will have the pleasure of seeing some of you gentlemen there.

DR. C. N. JOHNSON:

I want to add just a word to what Dr. Parker has said in regard to the second Australian Dental Congress. It was my honor to contribute an essay to the first Congress, and I know how anxious those men are that we do something for them at the second Congress. Some months ago I received a letter from Mr. Iliffe, the president of the Congress, in which he invited essayists from the United States, and I feel that we owe it to the profession in that country to cooperate and give them our cordial support in their undertaking. Their first Congress was carried through with brilliant success. The government took cognizance of the matter, and I believe printed the transactions. I hope the members of the Odontological Society of Chicago will send their greetings to the Odontological Society of Queensland, of which society Dr. Parker is a member, and we hope the cordial feelings that have always existed between us will be more than maintained.

Now, Mr. President, in regard to the essay this evening, I feel probably like many of the other practitioners here, that is, that I have frequently gone too far in attempting to save teeth that could not be saved. I have spent time on teeth that were hopeless, and yet, Mr. President, I have the conviction that that is not making a very serious mistake in the wrong direction, in view of the countless number of teeth that are lost in the name of pyorrhea that might well be saved. There are more teeth that are given up under the cowardly attitude of shirking a man's professional duty to his patient that might be saved than teeth that are attempted to be saved and finally lost, and I would respect a man more who made an honest effort to save a tooth that seemed hopeless, and did the best he could for his patient, even if he went down in defeat ultimately, than to see the members of the profession throw up their hands, and simply give up these cases that could well be managed and cured. There are many hopeless cases, and the essayist has pointed out to us tonight some conditions which he considered hopeless. There is one condition which has always seemed as hopeless to me as any, and probably more so, and that is a condition of loosening of the tooth without any deposit, without any pus, and without any apparent inflammation of the gum tissue whatever. In so many of these cases we will find that the gum tissue is well attached to the neck of the tooth, but there seems to be absorption of the alveolar process. Those are to

me the most hopeless cases we have. Another case that seems hopeless is when the ordinary process comes to a point where when the tooth is pressed down on the occlusal surface it goes down and comes back again, as if on a cushion. When that condition is reached I think we have a hopeless case.

Some of the speakers mentioned the fact that if one-half of the alveolar process had been absorbed around the root of the tooth, that it was practically a hopeless condition. If that tooth has not that cushion effect I would make an attempt to save it, even if the alveolar process was half gone, because we see many cases in which there has been a serious recession of the gum tissue and the alveolar process, where the tooth has not more than one-half of its original attachment, and still it would remain firm and serviceable for a long time. I would try to save a tooth of that kind. As Dr. Cook has said, this is a matter of individual judgment, and it is a matter largely of the patient's mental attitude towards the condition, whether they are anxious to save the tooth, or whether they are indifferent. If the patient is anxious to save the tooth we should do our best to save it. In every case we can at least make the mouth more hygienic than when it came to us. We can make the tissues more healthy, and we can contribute to the general health of the patient by clearing up these conditions. When the patient wants this done we should put our heart and soul in the work, and not throw up the case, and say that it can not be cured. I think constitutional influences do affect these cases in many instances. While regular treatment will improve the condition, I do feel that there are certain cases in which constitutional conditions have something to do with it. In those cases we are handicapped, but I do believe we can take every one of these conditions and make the mouth healthier.

Dr. E. R. Carpenter:

Mr. President, I quite agree with most, if not quite all, that the essayist has said. I believe it is normally a good procedure to lay down a general rule, though it be impossible to follow it in all conditions. It gives you a basis to work on. I cannot keep very closely to the text of the essayist's paper, but I can follow along the same lines, because within the last few years I have made a special study of cause and effect in these cases, and read a paper before this society during the past year on mal-occlusion of the teeth. I think some of you will call to mind that I made the statement that 50 per cent of

the pyorrhea cases were due to mal-occlusion. I have since come in contact with a number of writers who have found it to be higher, and as much as 75 per cent. My enthusiasm may be carrying me away, but I believe that 75 per cent is not too high an estimate.

I have worked out one or two little things, one especially that I think of, that may be of interest. In my paper I spoke of ligating the teeth that were loose, and had moved forward in their sockets, leaving a space for food to crowd between the teeth and form a pocket. I spoke of ligating before taking the impression. I have since discovered that I could take a ligature wire, such as Dr. Case and other orthodontists use, and ligate those teeth, and drag them, even if they were quite tight, from their contact point, and with that wire I could twist them back to good contact before taking the impression. I have had success in a number of those cases where the tooth was lost, and restoring that space with a small inlaid bridge. There are some cases that we all have where financially a bridge is impossible to the patient. Those cases can be controlled easily by the use of Dr. Case's regulating bands, with a bar soldered in between. I have seen several of these cases that have gone as long as three years now. You do not get occlusion of the tooth opposite, but you do conserve the integrity of that space. I believe it is one of the first duties of operators after they have recognized the pyorrhea condition, and have done all the local surgical work they can do, to restore something in the space of the tooth that is lost, be it bridge, plate or regulating fixture.

Dr. Parker spoke of the devitalizing of pulps in the treatment of pyorrhea. I do not know whether my understanding of the procedure is clear or not, but it has seemed to me that there is a very small foramen at the end of the root, especially at middle life, and there is more chance for a pernicious inflammation then of the pulp, which is detrimental to its connection with the peridental membrane, and it would be better to remove that pulp, the source of irritation.

It has been my observation where there is a pyorrheal condition not due to mal-occlusion from the loss of teeth that in the majority of cases I have observed the patient had abnormally long cusps.

Dr. Calvin S. Case:

Mr. President, I was very much interested in the essay of the evening, and realize that it shows a great deal of research.

Along the line of pyorrhea caused from mal-occlusion and ir-

regularities of the teeth perhaps it will be remembered that a number of years ago I presented a few cases involving a special feature of pyorrhea, and I want to call your attention to it again tonight, because it is directly in line with the paper. It is in those cases where the occlusion of the teeth gradually wearing off the masticating surfaces drives the lower jaw further forward, causing a crowding in of the lower incisor teeth, one upon the other, so that the interproximal tissues in many of these cases is completely cut off, causing pyorrhea, absorption of the gum, and so forth. The treatment which I advocate and follow in these cases is to extract one of the incisors that is most diseased, and close up the space by a bodily movement of the adjoining teeth. In the two cases that I showed at the former meeting I had extracted one central incisor, and in another, two of the central incisors. It has been my fortune to have a number of these cases come to me since, and while most of my practice lies among very young patients, it seems to me that dentists who are in the habit of examining older mouths, and watching that condition, should know that it is one of the great causes of this disease—I mean the crowding together of the lower front teeth by the wearing away of the grinding surfaces.

Removal of one of those teeth would perhaps cause the loss of all the incisors, but the proper closing up of that space, not merely by the tipping of the occlusal edges towards each other, but by the attachment of an appliance that would bodily move the teeth towards each other, could be done even after thirty years of age, and in that way giving proper room to the surrounding tissue to keep the teeth healthy. In one tooth that I am working on now, in a man over 35 years of age, the alveolar process had so absorbed that it was more than half the distance from the gingival margin to the apex of the tooth. This dragging down of the gum had also dragged other tissues away from the adjoining teeth, and by the removal of that, and the proper closing up of that space, forcing the tissues together, there seemed to be a building up of the gum that had been dragged down from the other teeth, and restoration of the alveolar process. In one case it was necessary to extract two central incisors. I took out one with my fingers, the other having already been removed. That space has been closed, and the gum around the adjoining teeth is nearly to its original position around the teeth, and the teeth are

really healthy. If this had not been done all of these teeth would have been lost by pyorrhea.

I would therefore advise that you examine the teeth of people older than 25 years and see if the pyorrhea or the ultimate loss of those teeth was not due to crowding of the teeth, which was due to the mal-occlusion of the teeth, thereby forcing them together.

Dr. Truman W. Brophy:

Regarding the paper of the evening, I want to say at the outset that the essayist has crystallized in his paper, it seems to me, the very substance of the whole field regarding the treatment of pyorrhea, that is to say, rather, its etiology and pathology. Little has been said about treatment.

A thought occurred to me while Dr. Ames was speaking, regarding these deposits. We have, of course, salivary calculus and then serumal calculus, and the latter deposit we find on necrotic bone. Many a sequestrum have I removed that has been some time held beneath the soft parts, upon which there were large deposits of serumal calculus. So far as clinical observation would indicate to me, without going through the process of microscopical examination, I would say that these deposits on the bone are precisely the same as that which we have on the cement of tooth roots, convincing me that the serumal deposit is not the cause of the inflammatory process, but the product of inflammation; in other words, the salivary calculus forming upon the exposed surface of the tooth root, and insinuating itself down between the neck of the tooth and the gum tissue, and extending between the peri-cementum and the tooth itself, will excite inflammation.

Mal-occlusion of the teeth is unquestionably one of the most potent causes of loosening, and with loosening inflammation and pus formation, pyorrhea alveolaris. Pus formation means destruction of the tissue. It may be regenerated.

One thought only regarding diagnosis, I thought Dr. Cook or Dr. Carpenter would speak of this, since both of these gentlemen have given the subject a great deal of thought. One gentleman stated that if one-half the alveolar process was lost about the root of the tooth he would regard the tooth as practically lost; that it would be a hopeless case, and one that would not promise very satisfactory results, the teeth would not be of very much service. How are you going to tell when the process is all gone? No one has told us about

that this evening. We have at our command a means by which we can tell certainly, and that is the skiagraph. Only today I had occasion to have a skiagraph made for a patient that had a suppurative condition about the first molar, a girl 15 or 16 years old. It had been going on for several months, and she did not get any better. What did the skiagraph show? It showed that the root of the tooth had not only been perforated in the preparation of it for filling, but there was a loss of the intervening bone tissue which made the retention of the tooth impossible for any considerable length of time. It was supported only by the mesial root, which had a pretty fair bony socket. There was an opening through the side of the root, and practically the tooth was lost.

The gentlemen who have discussed this paper declare that there are cases that are hopeless. How are you going to tell? The X-ray is the agent which, if used properly, will tell us to a certainty as to just what we can do, and what we can hope for in the preservation of the teeth. If a socket of the tooth is lost by an inflammatory process it is utter folly to try to save the tooth.

Dr. Parker put a very important matter before us when he spoke about rest. We have to talk about rest in these cases. We can not do much without it. Dr. Case is all the time putting teeth to rest after he moves them. Many a loosened tooth has a process of suppuration about it. Pyorrhea alveolaris—I do dislike that expression; it should be abolished after we all know what it means. When it comes on, the teeth to a certain extent become loose. Someone spoke of the teeth loosening without any deposits. I am satisfied from my observations by the use of electricity that many of these cases can be cured if you use means by which you can destroy the pathogenic micro-organisms.

Dr. Ames was the first member of the profession, so far as I know, who brought out and discussed enthusiastically the value of electrolysis, and told us what could be accomplished by it. Now, in Philadelphia, a physician who has been very prominent in electric therapeutics, has made use of the Roentgen ray in the treatment and cure of morbid conditions, incipient epithelioma, carcinoma, and so forth, has been treating pyorrhea alveolaris in conjunction with some of the best dentists down there. Dr. Fehler's name is known to the best members of the profession. There are cases of thickened membrane, chronic inflammation and absorption of the bone and loose

teeth upon the roots of which there are absolutely no deposits—these are the cases that would be amenable to the Roentgen ray treatment. Where there is a lowered general vitality of course the disease will progress more rapidly than if there is recuperative power to prevent the invasion of the disease. The general condition must be taken up.

Dr. Ames has spoken of Bright's disease and diabetes as conditions making the progress of the other disease more rapid. In my opinion it is a question whether those diseases more than any others would cause the rapid advance of pyorrhea, and whether the lowering of the constitution from anything would not allow the disease to progress more rapidly.

Dr. J. H. Wooley: Mr. President, I enjoyed the paper, but I would like to read it over again to be able to discuss it intelligently. I hope the essayist will pardon me for diverging from the thought of the paper, although it is in the same line. Dr. Brophy, it seems to me, has struck the keynote as regards diagnosis in what we consider the cause of pyorrhea. Now, I believe that the X-ray is going to play an important part in the diagnosis of many cases of pyorrhea. That thought causes me to recall some few cases that I have had where instead of pyorrhea being primarily the cause of the trouble the X-ray has revealed conditions that were not of a pyorrheaic origin. To shorten the time I will relate two cases. I had one case where a patient had reflex pains in the nerves of the face, extending to the neck, and the conditions of the gums would suggest pyorrhea, but the X-ray revealed in the first bicuspid of the right superior jaw what appeared to be an abscess on each side of the bicuspid root. That seemed to cause an area of inflammation akin to pyorrhea extending from the bicuspids to the molar. After treating those conditions I cured my case. The pain passed away. I had another case where in the jaw was a similar condition, seemingly of pyorrhea. The pulp did not seem to be dead in the first bicuspid. The tooth looked the same as the other, but I found an abscess at the distal end of the root, and I opened up that tooth and discovered pus coming from that abscess into the canal. Now that tooth had no soreness particularly. It was tender on pressure on the outside. I think I am right in saying that a blind abscess may occur without very much soreness of the tooth, and absorption may occur that will carry that pus away without producing those conditions that in other cases may occur where it is more violent. It seems to me that the X-ray will

enable us to relieve many cases that appear to be purely the cause of pyorrhea.

Dr. Davis, in closing the discussion, said:

As I said in my paper, the etiology, pathology and treatment of the disease do not enter into the discussion. There are very few instances where those topics have not occupied most of the time this evening. While I am somewhat disappointed at the discussion, yet I am very much gratified because a number of those who have discussed the paper have given to me ideas and factors that must be considered in the forming of conclusions as to the curability or incurability of the teeth in question.

In addition to those causes which I cited in my paper we have the physical condition of the patient, a very important factor. Another very important factor is the attitude of the patient towards saving the teeth. As the hour is getting late, I will simply say that while constitutional trouble may be the cause of the disease, yet in a great many cases constitutional trouble is the result of the disease.

AMERICAN DENTAL SOCIETY OF EUROPE, MEETING AT LONDON, 1908.

DISCUSSION OF DR. HOSLEY'S PAPER, "THE SUPREME IMPORTANCE OF ORAL HYGIENE."

Dr. N. S. Jenkins of Paris

Said there was no subject more important to dentists than the one which Dr. Hosley had brought forward. Oral sepsis was manifested in many ways. Simple dental caries, pyorrhea, stomatitis of every degree of intensity, tonsilitis, pharyngeal abscess, and numerous other correlated affections were all produced by pus-forming organisms bred in the mouth. Dr. Hosley had referred to the great amount of septic matter which often entered the stomach from the mouth. Fortunately those pathogenic organisms were largely destroyed by the action of the gastric juice, but it was only when its acidity was considerable, as it was one or two hours after taking food, that it was decidedly bactericidal. In the meantime the mucoso of the stomach was exposed to infection, and if at last septic gastritis occurred, the first indispensable step towards a cure was to obtain an abiding aseptic condition in the mouth. Dr. Hosley referred to the experi-

ments of Wadsworth upon the diplococcus pneumonae. Doubtless those experiments were made upon pneumonic sputum. In pure culture that organism was readily killed. A temperature of 50 degrees C. was sufficient to destroy it. But when protected by an albuminous coating, as in blood and sputum, the watery solutions of the disinfectants mentioned could have little germicidal power. Alcohol, however, and its adjuncts might be expected to be more effective. Dr. Hosley's observations agreed with those of Cook and others upon the deleterious effect of certain germicides upon the mucous tissues as they were generally used in the mouth. He had, however, upon another occasion mentioned that a properly combined disinfectant of alcohol and the aromatic series might be employed, not only without danger but to great advantage. As to his belief of a germicide no longer being necessary after antiseptic conditions had been obtained in the mouth, he would only remind him that it was necessary that the use of such a germicide should be fairly continuous. Micro-organisms were being constantly reproduced in the mouth, especially the staphylococci, the pneumococci, etc., with great rapidity, and germicidal treatment was necessitated more frequently than might at first be imagined. He had only praise for Dr. Hosley's most intelligent prophylastic treatment.

Dr. L. S. Bryan of Basel

Thought Dr. Jenkins had covered the ground of the discussion pretty well. The subject of hygiene was of course one of the first studies of the dental profession. the very groundwork of the profession. The filling of teeth and operations in the mouth were all towards producing the hygienic condition which was ideal. The members of the society who were chemists and who had gone into the thing theoretically and in the laboratory, might be able to give information which the ordinary practicing dentist could not obtain. Mention had been made of tuberculosis in connection with oral hygiene. It was the general opinion that tuberculosis was introduced into the system through the mouth, and it was very possible and probable that it was so introduced, although researches made with regard to the disease appeared to show there were many directions in which tuberculosis could enter the system. Tuberculosis of the lungs was not necessarily brought through the mouth or any other organs of the body. There might be tuberculosis of the glands, of the bones, of the hard or soft tissues of the mouth, but in the patients he had met in Davos

suffering from tuberculosis of the lungs he had never seen, during all his practice there, one from whose mouth he could obtain many tubercle bacilli. There might be tubercle bacilli in the fluids of the mouth after coughing or through the throwing out of the bacilli from the lungs in the saliva or in the sputum, but locally the bacteria was absent. The pus from abscesses was never found affected by tubercle bacilli. With regard to the use of nitrate of silver in oral surgery, in Madrid he read a paper extolling its virtues, but he probably went further then than he was justified in doing, because his experience of nitrate of silver since had not given him the results he expected. In fact, nitrate of silver applied to cavities of the mouth to produce oral hygiene was absolutely injurious if the nitric acid freed was not always washed out very carefully. The best success he had met with by the use of nitrate of silver was in its application to surfaces from which the nitrate was easily washed away. He would warn his friends from following the advice he gave in Madrid, and not to use nitrate of silver too closely without washing away the nitric acid which was freed.

Dr. W. J. Younger of Paris

Referred to the mention in the paper of Dr. Eugene S. Talbot of Chicago and of his work, and said he had read it as well as he could under the nervous condition it threw him into, and he considered it a pernicious work and a work to be burnt, because it was so misleading. It said, for instance, that teeth once loosened by pyorrhea could not be saved; but more than one-half of the cases he treated were cases of loose teeth from pyorrhea, and they became firm. He had a case of Dr. Talbot's who had developed pyorrhea in her mouth. One tooth had been already lost and the others were getting on that way. Four of those teeth Dr. Talbot had condemned, but he (Dr. Younger) saved those four and cured the rest. A man who allowed pyorrhea to be developed in a patient's mouth to the extent of the loss of the teeth ought not to be accepted as a teacher or authority on pyorrhea.

Dr. Hirschfeld of Paris

Thought it would be of benefit if Dr. Hosley would give a few practical hints of how he carried out his work in oral hygiene.

Dr. Harlan of New York

Noticed that one of the things advocated in the paper was the use of tincture of iodin and nitrate of silver at the same time. What

was the use of that? Nitrate of silver Ag, N O_3; iodin I; alcohol! The object of using nitrate of silver on a tooth primarily was to make an insoluble coating. What was the good of putting iodin upon that? Iodin was all right when it came in contact with the mucous membrane of the gum in the mouth, but it had no effect on a tooth except to stain it, and the stain should be got rid of with a little cyanide of potassium or a little ammonia, which was manufactured in the stomach almost instantly. A great deal of nonsense was talked about oral hygiene. As the late Professor Miller said, in less than twenty-seven minutes after one had completely removed the leptothri-racemosa it was growing on the tooth again. According to the most recent experiments, the best thing to do would be to take a dose of 30 or 35 per cent of alcohol every twenty-five minutes! Coming to the real point of the subject, his old friend, Dr. Younger, had said that a certain work on "Interstitial Gingivitis" was about the worst scientific production he had ever read. The first five pages misspelt nearly fifty of the names of the men who had studied the subject, and that showed that the author had nothing whatever to do with it. It must have been copied by somebody. He went up to the Dog Hospital at Chicago and looked at the teeth of the dogs, and was satisfied that nearly five-sixths of the teeth that had loosened, if they were only treated properly, would become firm again. What was the use of a tooth that had no antagonist? Everything in Nature had some object, and if it had not, it inevitably became lost. He did not believe very much in drugs, although he had written a good deal about them. He knew how useless much of that writing was. Whenever there was a condition that required a drug that was the time to use it, but just as soon as that condition disappeared the drug should be stopped. What was the use of grinding the end of a tooth that had to occlude with another if it was already doing good service? Drugs were good as an adjunct to the delicate and firm surgery that could only be acquired by long years of practice and by using instruments that were suitable to the hands of the operator. An instrument or an appliance not suited to a man's hand was of no value. One could administer all the lithiates and carbonates and drugs that came from the decompositions of coal-tar products, but they would not change anything in connection with the root of a tooth; but if the root of a tooth was denuded of all the substances deposited upon it and the surface was scraped or burnt or cleansed

and made fit for the reproduction of tissue, no matter how that was accomplished, something would be done which was of value, but first the teeth must be held in position so that they would not oscillate. Theory was one thing and practice another. Recently he was operating before the New Jersey State Dental Society, and half a dozen young men standing around said that if they could only use the instruments in the same way they could get along. He told them that if they had thirty years behind them perhaps they would. By the time a man was ready to die he may have attained some perfection with his eyes and with his fingers. One of the things to be remembered was, that if the patient's system could be kept clear of all noxious products, and local excrescences cleared away, and the patient taught habits of cleanliness, there need be no fear of disease. By cleanliness he did not mean disinfection. Nine-tenths of the men never disinfected the pockets round the roots of teeth at all.

Dr. George Cunningham of Cambridge

Thought the discussion had been taken up unduly with pathological conditions instead of oral hygiene. The paper was a very good one, but might have been better if divided up into sections. He gathered from Dr. Harlan's remarks that there was no room for the young dentist, but he thought there was plenty of room for them, at any rate in the treatment of children. He quite agreed with Dr. Harlan in his remarks as to the importance of drugs. The statement of the essayist that before a patient was put under gas the mouth should be cleaned to avoid the possibility of infection arising during the process of anesthesia was very interesting and quite new to himself. When he first went into a general hospital he suggested that before any surgical operation was performed in the mouth, the patient should go through the dental department of the hospital and the dentist should by mechanical means see that the mouth was made clean. Then such drugs could be used as were necessary and afterwards the patient might undergo the major operation. He believed there was at least one general hospital in London where that teaching had been more or less carried out. When he suggested that every medical student should be taught the importance of dental hygiene he was charged with overloading the curriculum of the medical students. Whatever the operation, no self-respecting scientific surgeon should consent to operate unless the patient had a clean mouth. He wished to endorse the essayist's remark that dental disease was a

dirt disease. It was for the dentist to teach the public how to remove that dirt and to place mechanical cleanliness above the use of drugs. Too much importance could not be laid upon the fact that "clean teeth do not decay." The other evening he had an opportunity of addressing some members of a Friendly Society, and he told them that the Friendly Societies of every country had a great power in their hands. They were a great body of intelligent working men spending their money for the benefit of the community, and yet as far as they were concerned dentistry did not apparently exist. He advocated that clean teeth should be demanded of all the applicants for membership, especially of the juveniles—first in the interest of the applicant himself, and secondly in the interests of the funds of the society. Dr. Rose had made experiments and had come to the conclusion that alcohol in a mouth wash was injurious to the mucous membrane. Some years ago he had the privilege of conducting an investigation on phosphorus jaw for the government, and one great difficulty was the adoption of oral hygiene. Fifteen years ago in a great match works there was a huge tank of mouth wash for the use of those who were working in departments where they were liable to the disease, but the girls not working in such departments were not entitled to use the tank. But examination showed that the liquid in the tank was not so effective as a normal salt solution, and a new mouth wash was devised, the only difficulty being to make the wash without the use of alcohol. With regard to nitrate of silver, he admired Dr. Bryan for his courageous withdrawal of what he had previously advocated. No doubt nitrate of silver was an excellent preparation for the dentist, but he ought to know how to use it. Every man who used nitrate of silver should have a bottle of common salt, and the moment the nitrate of silver was used should wash out the patient's mouth so as to neutralize the excess. Sir Frederick Treves had remarked that decayed teeth were mainly the cause of appendicitis. The absence of dental service in South Africa was greatly due to the fact that Sir Frederick Treves did not take that view quite soon enough. The value of dentistry was proved in the South African War and had arrested the attention of the country. He did not base the value of the care of the teeth on the prevention of appendicitis, but on its value to the whole of the human race.

Dr. Hosley

In reply, thought the best part of the whole thing had been the dis-

cussion. He had nothing further to say except to express his thanks and to state that he had been fully repaid for the trouble in writing the paper by the good discussion that it had brought out.

DISCUSSION OF DR. SCHAFFNER'S PAPER, "AN EASY METHOD OF FORMING AND ANCHORING HOLLOW CAST INLAYS, BY THE USE OF WHICH WE AVOID THE EXCESSIVE CUTTING OF CAVITY WALLS."

DR. K. M. O. SOLBRIG of Paris

Said that in general he was a great advocate of the solid gold inlay, but he was greatly interested in the paper and admired the patience Dr. Schaffner had shown in working out his system of hollow cast inlays and had no doubt he obtained most excellent results. Possibly it had taken longer to describe than to make the inlay.

DR. SCHAFFNER

Said that the work occupied from ten minutes to a quarter of an hour after the cavities were prepared.

DR. SOLBRIG

Said that to make a full gold inlay, putting in the mould and the wire, fixing it in the mouth, and the whole operation took longer than a quarter of an hour. In restoring the inlay an ingenious French confrere had advised putting a piece of sugar in the cavity of the right size, squeezing the warm wax over it, and taking the whole thing out and putting it in water when the sugar would melt out and leave the hollow space. He was afraid he did not quite thoroughly understand one point, as to how to apply the moldine. Moldine in the mouth was difficult to handle, and to give it exactly the shape shown in the diagrams to him would be a most difficult matter. To cover the soft moldine with wax and let the patient bite into it would appear to him to change the shape of the moldine and the wax, and the pushing in a long point would still more help to change the shape. He took a great interest in the work and would highly appreciate a demonstration on the subject by Dr. Schaffner.

DR. WILLIAM DUNN of Florence

Said that often through his professional career he had had to avail himself of Dr. Schaffner's advice and experience, and he thought the paper was a very interesting and important one. He also had a difficulty in connection with the moldine. He could understand that with the syringe Dr. Schaffner used, the moldine was sufficiently hard to allow the wax to go up, as the wax was quite soft, but he

should like to know what was the consistency of the moldine Dr. Schaffner used.

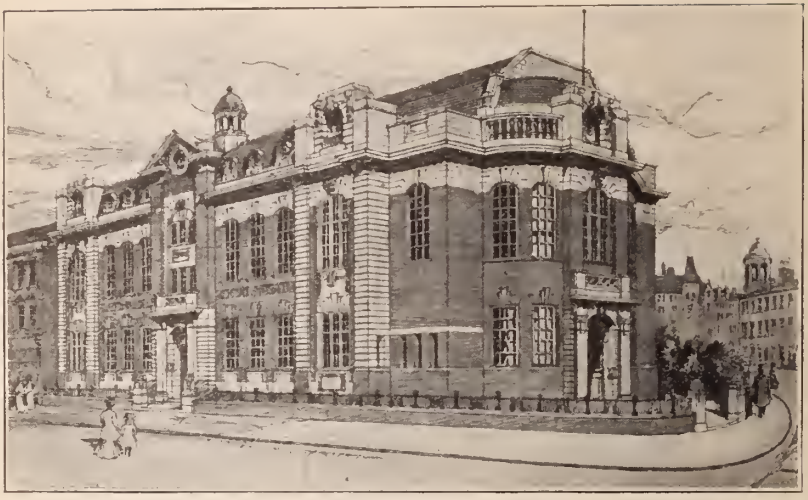
The President

Said the use of moldine followed on lines he had been working on for some time, but not applied to the mouth. The moldine method of making hollow cast inlays was carried out by his mechanics, and they did it very well. It was, in fact, discovered by his mechanic in looking around for something to use, and he hit on the plan of utilizing the moldine in the form it came from the S. S. White Company, and the results had been quite satisfactory.

Dr. Schaffner

Said moldine was pretty stiff and not easily displaced. If the weather was moist it had to be hardened with a little chalk or something. When the weather was very dry it had to be worked a little with the fingers to soften it. In the future he hoped to be able to present a little appliance to keep the moldine of a moderate consistency, nither too dry nor too wet. He suggested wrapping the moldine in silver paper and unwrapping the paper as the moldine was used, and for that it would be necessary to have the moldine in very small packets. He mixed his moldine with oil instead of glycerin and it kept very much longer. The bite was given at the moment the wax was freshly poured, just as it was beginning to set. If it was too soft it would very easily adhere to the occluding teeth and distorted the model. It was necessary to wait until it changed color somewhat and lost its translucency. With regard to the method of packing in the mould, he packed the moldine in to the desired height and then removed the rubber, which had been previously oiled, and that left the space required for the wax.

FOREIGN DENTAL COLLEGES.



New Dental Hospital, Liverpool, England.

Dental School of Paris, France. First class graduated 1881. Total number of graduates to January, 1909, 873.

FOREIGN DENTAL COLLEGES.

Institut Stomatologia Italiano, Milan, Italy.

Tokyo Dental College Tokyo, Japan. First class graduated 1890. Total number of graduates to January, 1909, 258.

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EDITORIAL.

THE TRAGEDY OF THE DENTAL PROFESSION.

In January, 1907, Dr. W. H. Taggart of Chicago read a paper before the Odontological Society of New York, and introduced to the profession the cast gold inlay. It created a furore which has seldom been witnessed and Dr. Taggart was heralded from one end of the land to the other as a benefactor to his profession and to the public. Orders were freely given him for the machine with which he did the work, but he was not quite satisfied with its mechanism and wished to perfect it further before placing it on the market. Delay succeeded delay, till the profession lost patience. Meanwhile other machines were devised to supply the demand, and the market was flooded. By the time Dr. Taggart's machine was ready for delivery in the latter part of 1907 there was little sale for it. A large part of the profession forgot that they were under any obligation to Dr. Taggart for introducing the method, and were content to use cheaper and—be it said—less effective machines.

Dr. Taggart was worn out physically, nervously and mentally, from his labors and experimentation to perfect the process, and was in no condition to accept gracefully the seeming neglect of the profession. He had obtained patents on his machine and on the process, and in July, 1908, he brought suit against a dentist for infringement of the process patent. Instantly the man who had been heralded as the benefactor of his profession was attacked most strenuously and condemned as its vampire. Today he practically feels himself ostracised by the profession with which he has been so closely asso-

ciated all his life, and this in face of the fact that from his point of view he is wholly unable to see wherein he has done wrong. If this is not tragedy we have never witnessed it.

In this brief recital of facts we have tried to state the situation without personal bias. There are many things that might be said on either side, but nothing that we can imagine which would relieve the situation from its profound pathos. Here is almost an entire profession enjoying the results of a process which everyone acknowledges to be a benefaction, and the man who introduced the process is left stranded financially, and in so brief a time from the day of his adulation he is practically an outcast, with none so poor as to do him honor.

We are not saying who is to blame for this, we are not laying the censure anywhere, but this much may be said in throwing light on the situation—that serious mistakes have been made on both sides.

It was a mistake for Dr. Taggart to keep the profession waiting so long for his machine. After the process had been demonstrated and its virtues so widely extolled, it was hardly human to expect the profession to wait nearly a whole year for the means of carrying it out. The temptation was very great to accept other machines which seemed to do the work reasonably well. Dr. Taggart's contention that he was unwilling to place his machine on the market till it was perfect was legitimate from the point of view of the enthusiastic inventor, but the enthusiasm of the inventor does not always fit into the practical demands of the public. It was also a mistake from a business consideration to put the machine at the price he did. It would have made more money for him at a lower price.

It was something worse than a mistake for the profession to refuse to buy the machine when it was finally marketed, even at the price that was asked. It was worth that much more than any other machine in the perfection of results attained by it, and it was surely due Dr. Taggart that he at least receive the support of the profession to the extent of using his machine in a process he had introduced. That was all he wanted, and it was not asking too much.

It was a mistake on Dr. Taggart's part not to answer correspondence or telegrams sent him by the profession asking for information regarding his machine. It is true he was working very hard—sometimes night and day—experimenting, but the profession

could not be supposed to know this, and much discontent was generated and ill-feeling developed through his apparent lack of courtesy. It would have been better to have had his letters acknowledged —any of his Chicago friends would gladly have done this for him— instead of practically ignoring them. But the genius of invention does not always fit a man to be a good manager of his own affairs.

The greatest mistake of all, as we view it, was in allowing his attorneys to bring suit. We are not passing an opinion on the justice or injustice of it, we are merely saying that so far as Dr. Taggart's ultimate happiness is concerned it was a serious blunder to bring suit on a process patent. Right or wrong, win or lose, Dr. Taggart's cordial relationship with the profession—a relationship which has been most precious to him in the past—will be jeopardized if this suit is pressed to a conclusion. His attorneys are not supposed to take this into consideration in advising him as to a course of procedure, but it is something which should be considered, and considered most carefully.

There are many men in the profession—good men and true— who are willing and anxious to do something in Dr. Taggart's behalf. He has more friends in dentistry than he thinks he has, and they are desirous of seeing him get his just deserts—something that he certainly has not obtained so far. They are willing to unite in any movement looking to this end, provided he and his attorneys will sanction it. But no such movement will ever be inaugurated so long as the present suit is pushed.

We have refrained from commenting on this case heretofore because of the apparent impossibility of doing any good by comment, and we are referring to it now only because it has impressed us more and more as being the one great tragedy of the dental profession.

THE EDITOR'S DESK.

A VACATION ON TIRES.

[Continued from the January DENTAL REVIEW.]

Alkali Pete met us at Toronto with a brass band and a delegation of bare headed girls. She patted Betsey affectionately as if

she had missed her more than she had any of the humans. It is strange how attached one becomes to a piece of machinery like that. We dropped Auntie off at Toronto to visit some friends and the next day Fritz, the Mater, the Collector and I started east over the noted Kingston Road toward Whitby, where we were to turn north to my old summer home at Blackwater—about 55 miles from Toronto. My injured thumb was sufficiently comfortable by this time to allow me to run the car again and I came nearly ruining my reputation as a chauffeur on that trip. It must be remembered that I was headed for my old home, where were associated some of the fondest memories of my life, and where a couple of elderly people were patiently waiting to see their boy come over the brow of the hill to the south. Besides this, the man at the wheel is never a very accurate judge of the pace he is going, and I am afraid I ran faster than I intended. In any event the Mater and the Collector were soon bobbing about in the tonneau like pop corn on a hot griddle, and I began to hear some pronounced protests from the dim and distant rear end of the car.

"I wish you'd slow up a little till I get my breath again. I lost it a mile or so back there. There goes my hat against the top—it will never be fit to put on again. Say, if you want anything left of us to tell the tale, you'll have to run slower. These roads are ——— there! I just know you smashed everything all to pieces that time." It seems that the Mater had been tossed somewhere between the upper deck and the starboard guard rail, and the Collector had been caught with her mouth full of orange in the act of laughing at her. As nearly as I could judge from the description Fitz gave, it was a bad mix up, but of course I saw nothing of what happened. The conscientious chauffeur will never take his gaze from the road in front of his car, no matter what the diversion is behind. I was not saying a word to anybody, but attending strictly to business, and I really had no idea of the speed I was going till Fritz turned with a grin to the occupants of the tonneau and said, "Oh, he's only got her up to thirty an hour." This, of course, was too fast for safety or comfort, and I slowed her down, but not before I was in disgrace with my passengers. The Mater wouldn't speak to me for nearly two minutes, but the Collector forgave me in a minute and a half by the watch. Which shows the greater pliability of youth.

I know of nothing more exhilirating or fascinating than running

an automobile, and if I ever get to be a millionaire—save the mark—I am straightway going to climb on the seat of an automobile and run it till I wear it out. And I shall take such excellent care of the car that it will wear a long time, too. I shall have my lungs full of fresh air for once in my life, and my vibrations will be tuned to the music of the spheres. I will—but I am dreaming. Who ever heard of a dentist becoming a millionaire?

It is said that a watched kettle never boils, and if the brow of the hill to the south of the old home could be compared to a kettle, certain it is that it was watched that day. But as with the kettle, the moment your back is turned something happens, and we were safely over the hill, down across the bridge and up into the back yard tooting the horn before we were discovered. And then such a commotion! Getting back to the old home is the one great event of the year, and is worth all the days of fatigue and trial and stress between. Neither of the old folks had ever ridden in an automobile before, and Betsey paid for herself many times over in the pleasure she gave while we were there. We toured the surrounding country quite extensively to the never-ending delight of all our passengers, and sometimes we had as many as nine in the car at once. Our greatest trouble was with frightened horses, and frightened people—the latter sometimes worse than the former. The farther we went into Canada the worse the horses seemed to get. I had an experience with one of them one day which I didn't get over very soon. We were spinning along over a beautiful road—the roads were mostly good—when we met a man and his wife driving a horse to a buggy. As was usually the case, they turned to the side of the road and both jumped out of the buggy, and the man took the horse by the bit. I saw he was a cripple, and when the horse began to act badly I jumped from the car to help him. The horse was a vicious brute, and the man had no control over him in the least. As I jumped to the side of the road the horse started straight toward me, the man utterly powerless to check him. I tried to dodge him, but my foot caught in my long automobile ulster and threw me down and the horse, man and buggy all ran over me. It was rather a unique experience for a moment, and I shall not attempt to describe just how I felt, but I was instantly on my feet again, and as the frenzied animal swerved around I managed to grab him by the bit and stop him. It prevented what would otherwise have been a disastrous runaway—the horse being of a

vicious nature and thoroughly crazed—and so I was well content, even though in going over me the animal struck my shin with his hoof and injured it so I did not get it healed for a couple of months. It was really an exciting experience—probably even more so for the members of the family, who sat in the car and saw me run over, than it was for myself. Events never seem to come singly, and we had not gone ten rods further till we met another buggy—this time with a woman and a small boy in it. They dodged to the side of the road and both jumped out—the woman taking the horse by the bit and the small boy taking to his heels. The folks tried to keep me in the car this time, but I saw a frightened woman trying to hold a frightened horse, and I forgot all about my game leg and jumped out. The woman was standing in front of the horse and rapidly losing control of him. She was just on the verge of letting him go—which would have meant certain injury to herself and a bad runaway—when I yelled to her to hang on another moment till I could reach her. I managed to land on the premises in time, and soon had the horse under control, but the poor woman was so badly shaken that she was almost afraid to drive away after the horse was completely quieted. The episodes were coming thick and fast, and I had a little of my ardor for motoring dampened on that trip.

But some of our horse experiences were amusing. One day we were running along slowly and very quietly when we saw ahead a man driving some cattle, and in the road near him a woman in a buggy going the same way we were. The woman was about four feet thick by four and a half feet long, and just comfortably filled the buggy seat. If the man had attempted to occupy the buggy with her he would have been obliged to sit on her lap—always provided, of course, that she had a lap, which I am inclined to doubt. She was leisurely sauntering along, apparently oblivious to any of the dangers of modern life, and we had to toot the horn several times before she heard it. When she turned and saw the automobile so close to her she threw up her hands and let out some of the most unearthly shrieks that ever came from a fat and terrified woman. She began to clamber pell-mell out of the buggy, scattering parcels and packages all about the road and yelling enough to wake the dead in another county. She threw the lines and left the horse to himself—which sage animal merely looked around in an indifferent way at the car and never deigned to move a peg. The hardest trial of the whole trip was to

keep a straight face at that moment, and if placed on the witness stand under oath I am afraid we could not swear that our faces were as solemn as the gravity of the situation—from the point of view of the dear old fat lady—would warrant. The only redeeming feature to her was that she must have lost flesh rapidly for a few moments.

I was on the program to attend the meeting of the Canadian Dental Association at Ottawa, and one morning we ran Betsey down to Myrtle Station on the C. P. R., where I took the train for Ottawa, while the rest of the party went to Toronto in the auto to tour around there while I was at the meeting. I now realized as I never had before the comfort of touring in an automobile. We had traveled day after day in Betsey for weeks, and had never experienced a moment's weariness, but the smoke and noise and dirt of the train had rendered me most miserable in a half hour from the time I boarded it. The country was surprisingly wild, rough and barren east of Myrtle, and I remarked to a fellow-passenger that I had never seen any part of Ontario so worthless as this. "Oh," said he, "this is nothing to what you will find further east. There is a place down the line here called Kaladar where the rocks are so large that they hide the houses from each other. Next door neighbors can yell to one another over the rocks and hold conversations in that way, but they cannot see each other."

I thought that this man was trying to take advantage of my ignorance of the locality and "drawing the long bow" when he told me that story, but I was surprised on reaching the place to find that what he had said was literally true—with one slight exception. There were no houses in Kaladar.

At Ottawa I was captured and entertained by my old time college classmate of twenty-seven years ago, Dr. S. S. Davidson, who had the good sense to get married and settle down in one of the most beautiful cities in Canada. Sam and I—it was quite impossible for me to call him "Dr. Davidson," even after all those twenty-seven years—had a most royal visit, and renewed our youth in memories of the days when we sat together in the lecture room and listened to learned dissertations on anatomy, physiology, chemistry, etc., which we have steadily been forgetting ever since. I can hear Sam to this day rolling out the good old college songs, such as "'Way Down on the Bingo Farm," "On the Old Ontario Strand" and other stirring selections, which ring in my ears as one of the pleasantest memories

of my college days. What would I not give in this year of grace 1909 to have gathered together around one table all the old boys of that class back in the early '80's who attended college at the corner of R...mond and—there I have actually forgotten the name of the other street; through the whirr of the years since then it has escaped me—in the city of Toronto, where were assembled some of the dearest fellows who ever entered the profession. The boys who are attending college today have little conception of the lasting character of the friendships they are forming. It requires the retrospect of the years to mellow college ties into their richest vintage, and if it be true that there is no wine like old wine, it is also true that there are no boys like old boys.

But I am drifting into reminiscence instead of writing of a vacation, which will never do.

(To be continued.)

BOOK REVIEWS.

A Text-Book of General Bacteriology. By Edwin O. Jordan, Ph. D., Professor Bacteriology in the University of Chicago and in Rush Medical College. Octavo of 557 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1908. Cloth; $3.00 net.

Professor Jordan has given us a very complete work on General Bacteriology, illustrated with 163 cuts and written in a very attractive style. It contains thirty-five chapters, dealing with as many subjects, and an appendix taking up infectious diseases of unknown causation. To any one interested in the subject this book will be of vital interest, and we commend it to the careful consideration of all students.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Preserving Borax:—Instead of laying your lump of borax down on its wet side, after soldering, place it wet side up and see how much less it will crumble.—*C. B. Plattenburg, Chicago.*

Beveling Margins for Inlays:—I think the cavity margins for inlays should be beveled about seventy degrees, rather than forty-five degrees, which we ordinarily bevel for gold fillings.—*W. G. Clark, Chicago.*

Filling Small Cavities With Foil:—If you are going to use cohesive gold entirely for a small cavity, fill it so that the filling will come out easily and cement it in afterwards. The tooth will last longer.—*J. S. Marsh, Chicago.*

Reducing Sensitive Dentin in Gingival Margin Caries:—After polishing off the decay at the gingival line, I paint the surface with chlorid of zinc, as I think it reduces the sensitiveness of the dentin. The deliquesced solution is used and repeated often.—*Sidney McCallin, Chicago.*

Preserving Teeth With Cement:—If cement is kept away from the margins and covered, there is no better filling material. When you protect cement you have a perfect filling. You may cover it with whatever material you think is best for the case.—*Harold H. Hayes, Chicago.*

Palliative Remedy in Infant Dentition:—I have found that a little ice teat, instead of a sugar teat, is beneficial. Take a little piece of ice about as large as a marble and put it in a piece of muslin. It cools the parts, lessens the hyperemia and inflammation, and in that way gives a great deal of relief. Antiseptics are a help.—*Harvey N. Jackson, Milwaukee, Wis.*

The Tongue as a Factor in Expanding the Arch: —Perhaps the size of the tongue has a great deal to do with expanding the arch, and I think you will find where there is a large tongue in the individual's mouth there is less liability to irregularity of the teeth than where the patient has a small tongue. That is not necessarily the case, but you will find it.—*W. C. Wendel, Milwaukee, Wis.*

Do Not Massage the Gums Before Removing Deposits:—It is hardly possible to do a worse thing than to massage the gums before removing the pyorrhea deposits. When the deposits have been carefully removed massage is of the greatest importance, but if massage is resorted to before the deposits are removed it only increases the irritation and destruction of the gum.—*W. J. Younger, Paris, France.*

Arrangement of Artificial Teeth by the Dentist:—The average workman at the bench cannot understand the requirements of the patient, and consequently the dentist who shirks the difficulty of antagonizing a set of teeth is depriving his patient of the results of his intelligence and best efforts. The dentist is just as much under obligation to do that as to insert the best filling.—*W. Mitchell, London, England.*

Treatment for Trifacial Neuralgia:—Many cases of trifacial neuralgia, when not complicated with organic troubles, are amenable to treatment. But there are obstinate cases which resist all therapeutical remedies. In such cases it is my opinion that the leucodescent or purple rays of light may afford permanent relief to patients so affected, as I have seen remarkable cures produced by the purple rays of light.—*F. S. Casper, Austin, Texas.*

Method of Capping a Pulp:—Wipe out the cavity carefully with warmed alcohol, followed with oil of cloves, and then cut a disk of pure gold 36 gauge, or one of gutta percha, just a little larger than the exposure. On this a small drop of thin cement is placed and set over the exposure, cement side toward the pulp. With a little pressure on one edge of the disk it is gently brought into contact with the tooth, care being taken not to cause pain by the pressure. After this is set, build up a cement filling high enough to bear the strain of the permanent filling.—*Edward S. Barber, Chicago.*

Care of Children in the Office:—I have made many mistakes in the care of children, having often made too prolonged operations, attempted to be too thorough with a little child instead of making the work temporary and gradually advancing in the line of work. I know I have made mistakes in that way, the child as a result dreading to come again, and in that case it takes a long time to overcome the dread and regain confidence.—*J. N. Crouse, Chicago.*

Preparation of a Lance When Used on Infants:—With reference to the use of a lance, wind it with a fine cord down to about the depth you wish to lance if you want to be real safe. It should be wound down to about say one-sixteenth of an inch from the point or edge. Ordinarily you will not want to lance deeper than that, but you should lance until you touch the tooth, and if you wind your lance in the way described it is safe.—*Harvey N. Jackson, Milwaukee, Wis.*

Heating Compressed Air:—I do not know of any apparatus for heating compressed air, except one which I have used for a great many years. It is simply a little aluminum tank, through which the current of air is allowed to pass through a passage heated by a gas flame. There is a handle which can be held in the hand and from which the gas jet can be controlled. Beneath is a tiny little gas jet which gives an equable temperature to the apparatus.—*Dr. Schaffner, Florence, Italy.*

Keeping the Arch Expanded:—I had a case wherein a little boy lost his central incisors from being struck with a baseball bat. I put bands on the laterals and temporary cuspids, with spurs running to lingual of first temporary molars, set a jack-screw and kept it spreading. I did not get as much room as I would have liked, but at least succeeded in keeping the arch from closing up, and thereby made a better looking lad of him when later I put in a bridge.—*F. H. Skinner, Chicago.*

Why Foreign Girls' Teeth Decay:—The fact that foreign girls formerly lived on coarse, rough food and worked largely out of doors, undoubtedly had a great deal to do with the reputed good condition

of their teeth before they came over; but when they come to this country, live on soft, finely ground, rich food, and work indoors all the time, their teeth decay rapidly, because they no longer have the natural cleaning from the coarse food and no artificial cleaning is given to take its place.—*L. H. Arnold, Chicago.*

Soldering Bridges:—In soldering bridges, the use of large pieces of solder should be avoided, as it not only causes air bubbles or pits, but the burning of the backing is often due to the practice, as the solder starting to flow at one end attracts the rest of it to that point, and if the other end happens to be at a lower temperature, but slightly melted to the backing, it will draw that along with it. Especially at the beginning of soldering cusps to facings, big pieces of solder should never be used. If the piece of solder touches the cusp and backing at the same time, and if the latter happens to be at a slightly higher temperature, it will very often pull the cusp down to the backing and thus distort the occlusion of the bridge.—*M. A. Gottlieb, New York, N. Y.*

Method for Replacing a Broken Facing on a Bridge:—Drill pins out of backing, making holes the same size as pins. Fit the new facing in usual way. Countersink the holes in the backing on the lingual side by drilling through about one-half the thickness of the backing with a round bur much larger than the size of the holes. Finish this countersink with an inverted cone bur, making slight undercut. Next, with a fine circular saw rotated by the engine, notch the pins on the facing in several places. Set facing with cement, being careful to keep cement from pins or in the holes of the backing. Carefully insert amalgam in the cavities in the backing around the pins and at a subsequent sitting grind off surplus and polish.—*R. L. Graber, Peoria, Ill.*

Operative Treatment for Loose Teeth:—First remove all irritating matters from the necks of the teeth and keep them polished a gleaming white. Second, wherever you find any bone has been destroyed, uncovering the porous root surface, with properly constructed planes remove all evidence of the porous layer, thus exposing the shining white layer just described. By so doing you remove the

culture bed, and with it the great bulk of objectionable bacteria. The instrument necessary for this operation should be a true plane, enabling you to cut a limited depth for the very important reason that you wish to avoid cutting through the thin hard layer, that you may avoid opening to infection the bone cells of the cementum. This operation is not so-called cleansing, but is surgery of a most delicate type. You simply skin the root surface, and your result is good just in proportion as you remove all of the porous root surface that has been uncovered by loss of alveolar bone.—*Thomas B. Hartzell, Minneapolis, Minn.*

Inlays Compared With Foil:—An inlay is made and cemented into the cavity *en masse,* and in order to secure perfection in the completed filling there must be perfection in each of a long series of delicate manipulations. From the shaping of the wax model to the final casting of the metal there are numerous opportunities for defective manipulation, and the defects may be so slight as not to be observed and yet be sufficient to invite early failure of the filling. Foil is built up pellet by pellet, the walls and margins of the cavity are constantly in view, and we note the progress of our work. Failure to place one pellet exactly where we wish may be corrected when the next pellet is added, and then, when completed, the cavity is filled with gold and not with part gold and part cment, as is the case with too many inlays.—*L. S. Tenney, Chicago.*

Treating Badly Decayed Deciduous Molars:—A shy little four-year-old was brought me a short time ago with both lower molars on each side badly decayed and all the pulps exposed, or nearly so. The little girl had been suffering intensely for weeks. Mastication was impaired and usually followed by paroxysms of pain. I simply washed out and wiped out all the cavities as thoroughly as I dared, applied soothing dressings and covered them with a paste of eugenol and oxide of zinc incorporated in cotton. This relieved the pain, and after a few days the same procedure followed, a little more thoroughly, and some instrumentation was then possible, the cotton and eugenic zinc oxide paste being now mixed thicker and applied with more pressure. The child is now just fairly comfortable and will be heard from in time, when the same treatment will

again follow, and so on until the pulps will go the way of all flesh, when they will receive the usual treatment—the pulp cavities filled and covered with something more durable.—*Charles B. Rohland, Alton, Ill.*

Treatment for Pyorrhea:—My method consists in the injection into the sockets of a warm liquefied paste consisting of bismuth subnitrate and vaseline. I first employed this method in a case of chronic alveolar abscess where the roots had previously been filled. Pus had been discharging for many years. The fistulous tract was injected with the paste, and after one injection the fistula closed and remained so, causing no further trouble. In a case of pyorrhea I first injected the bismuth paste into the pus pockets around every tooth involved, without removing any of the deposits. The next day I scaled the deposits and injected the pockets with the paste. Five days later I found the gum tissue in a slightly inflamed condition, but was unable to force any pus from the pockets, and the patient felt more comfortable. I then reinjected for two days in succession, after which I did not see the case for one month, when I made a careful examination and found the tissue in a healthy condition, although the teeth were still slightly loose, but most of them firmer in their sockets. Since then I have continued the use of this treatment in many cases, and the results have been beyond my expectations.—*Rudolph Beck, Chicago.*

MEMORANDA.

SAUNDERS' BOOKS.

The W. B. Saunders Company of Philadelphia have issued a catalogue of medical and surgical works which is sufficiently attractive to deserve mention. A copy will be mailed to any practitioner on request.

DELTA SIGMA DELTA.

Seattle Auxiliary announces the annual Supreme Chapter meeting of Delta Sigma Delta Fraternity in Seattle on July 21, 22, 23, 1909. July 24 will be Delta Sigma Delta day at the Alaska-Yukon-Pacific Exposition.

C. F. Fiset, Historian.

AMERICAN DENTAL SOCIETY OF EUROPE.

The thirty-sixth annual meeting of the American Dental Society of Europe will be held in Wiesbaden, Germany, on April 9, 10 and 12, 1909. An interesting program is already assured. A most cordial invitation is extended to members of the profession to be present.

T. G. Patterson, Hon. Secretary,
2 Quai des Eaux Vives, Geneva, Switzerland.

MINNESOTA STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the board for the examination of applicants for license to practice dentistry in Minnesota will be held at the Dental Department of the State University in Minneapolis, beginning on March 9, 1909, at 9 o'clock a. m.

All applications must be in the hands of the secretary by March 1, 1909. For further information address the secretary.

DR. GEO. S. TODD, Secretary,
Lake City, Minn.

ST. LOUIS SOCIETY OF DENTAL SCIENCE.

The St. Louis Society of Dental Science at the December meeting elected the following officers: W. E. Brown, president; Clarence O. Simpson, vice-president; G. E. Hourn, secretary; C. S. Dunham, treasurer; J. B. Winkelmeyer, curator; executive committee, E. E. Haverstick, G. H. Westhoff, E. J. Lenzen, Burton Lee Thorpe and J. B. Winkelmeyer; advisory council, G. A. Bowman, A. H. Fuller, D. O. M. Le Cron, Richard Summa, W. L. Whipple, H. T. Cassel and E. P. Dameron.

G. E. HOURN, Secretary,
725 Metropolitan Building, St. Louis, Mo.

INSTITUTE OF DENTAL PEDAGOGICS.

The following officers were elected during the sixteenth annual meeting of the Institute of Dental Pedagogics, held in the Planters' Hotel, St. Louis, December 30, 1908, to January 1, 1909: President, Ellison Hillyer, Brooklyn, N. Y.; vice-president, John Q. Byram, Indianapolis, Ind.; secretary-treasurer, B. E. Lischer, St. Louis, Mo.; member executive board, D. H. Squire, Buffalo, N. Y.; member commission on text-books, H. E. Friesell, Pittsburg, Pa. Next place of meeting, Toronto, Canada, December 26 to 30,

B. E. LISCHER,
Secretary-Treasurer.

ALUMNI ASSOCIATION OF ST. LOUIS DENTAL COLLEGE.

The Alumni Association of the St. Louis Dental College (formerly Marion-Sims) will hold its annual clinic at the college building, Grand avenue and Caroline street, between May 20 and May 25, 1909. An excellent program is being prepared. Special attention is being given to the clinical program. All ethical members of the profession are cordially invited to be present. Program and exact date to be published in later issues of this journal.

DR. S. T. MCMILLEN, President.
DR. JOHN B. O'BRIEN, 5761a Etzel Ave.,
Chairman Publicity Committee.

COMPLIMENTARY BANQUET.

The dental profession of Cleveland, Ohio, will give a complimentary dinner to one of its most honored members, Dr. C. R. Butler, on March 11, 1909, at 7 o'clock p. m., at the Hollenden hotel, in commemoration of the completion of fifty-one years of dental practice by the doctor. This will be a democratic affair, to which all ethical dentists are invited. The price per plate will be within the reach of all. Those desiring a place at the banquet will kindly notify the secretary at least ten days before.

Dr. S. B. DEWEY, Secretary,
Lennox Building, Cleveland. Ohio.

UNIVERSITY OF BUFFALO DENTAL ALUMNI ASSOCIATION.

The tenth annual meeting and clinic of the Alumni Association of the Dental Department of the University of Buffalo will be held on Friday and Saturday, February 19 and 20, 1909, in the Dental building. An excellent program is being prepared. All graduates and ethical practitioners are invited to attend and participate in the meeting.

HARRY F. TANNER, President.
ABRAM HOFFMAN, Ch. Executive Com.
GEORGE B. MITCHELL, Secretary.
483 Main Street, Buffalo, N. Y.

15887

STATE OF MINNESOTA. SUPREME COURT.
OCTOBER TERM, A. D. 1908.
No. 42.

State of Minnesota, Respondent,
v.
Ernest R. Taylor, Appellant.

A person who is licensed to practice medicine and surgery under the statutes of the State cannot by virtue thereof practice dentistry without securing a license as a dentist as required by chapter 117, General Laws 1907.

Order affirmed. ELLIOTT, J.

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The twenty-seventh annual meeting of the National Association of Dental Examiners will be held at the Hotel Chamberlain, Old Point Comfort, Va., first session opening at 10 o'clock a. m., Monday, August 2, and continuing the 3d and 4th.

The result of the mail vote by the committee to ascertain the consensus of opinion as to place and date, from October 19 to the present date, was 91 votes for Old Point Comfort, the first three days of August; 13 for Birmingham in March; 7 for Birmingham in July. The president has therefore selected Old Point Comfort.

The rates will be, American plan, $3 per day without bath, $4 per day with bath. Large and commodious meeting rooms will be furnished free. Railroad and steamship rates will be furnished at a later date.

CHARLES A. MEEKER, D. D. S., Secretary.

THIS IS A RARITY.

In behalf of the Southern Illinois Dental Association, Dr. A. W. Rue, the secretary, writes from his home in Alton to the Advocate as follows:

"I want to thank you in behalf of the Southern Illinois Dental Association for the courteous and dignified manner in which your paper handled the convention at Greenville. You certainly were very good to us and made it so pleasant for all that every man who was fortunate enough to attend will always think of the Greenville meet with much pleasure."

It is true that the Advocate covered the Dental Association meeting thoroughly, as it does all news. It is also true that this bright little gem of appreciation from Dr. Rue is a rarity in a newspaper office. Most organizations, most men, taken it for granted, when a newspaper says something nice about them, and the newspaper has become accustomed to expect no thanks. But when an organization of professional men, who stand at the head of their chosen work, think it worth while to express their appreciation to a newspaper, after the manner of Dr. Rue's letter, it is certainly refreshing to the members of the staff which day after day is searching for the news, thinking

of no plaudits, expecting none, but content in the thought of a duty well performed, at least performed to the best of their ability.—*The Greenville Advocate.*

RECENT PATENTS OF INTEREST TO DENTISTS.

904,601. Artificial tooth. F. D. Case, Kansas City, Mo.
904,990. Dental broach and holder. C. R. Powers, Princeton, Wis.
905,535. Dental appliance. E. E. Holmes, Indianapolis, Ind.
905,447. Attachment for barbers' chairs and the like. J. Menz, Islip, N. Y.
905,369. Disinfector for dentists' cuspidors. H. P. Roberts, Boston, Mass.
905,479. Hinge for dental articulators. R. Sykora, Boston, Mass.
906,214. Machine for boxing toothpicks. C. C. Freeman, Dixfield, Maine.
905,886. Tooth brush. J. H. Kinney, Rockaway, N. J.
907,003. Dental instrument. R. T. Burnley, Atlanta, Ga.
906,869. Dental tool holder. C. B. Gehringer, Philadelphia, Pa.
906,911. Tooth crown or plate and swaging device therefor. P. B. McCullough, Philadelphia, Pa.
906,977. Suction device for dental plates. G. S. Whittaker, Gloversville, N. Y.
907,326. Artificial tooth. L. E. Evslin, Peoria, Ill.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

NATIONAL DENTAL ASSOCIATION.

The thirteenth annual session of the National Dental Association will be held in Birmingham, Ala., March 30 and 31 and April 1 and 2 next.

Dr. James McManus of Hartford, Conn., Dr. E. C. Kirk of Philadelphia, Pa., and Dr. L. G. Noel of Nashville, Tenn., will present essays at the general session.

The following program of the sections is announced:

SECTION I.

Dr. Martin S. Dewey of Kansas Ctiy, Mo.—A paper on "The Development of the Face."

Dr. C. J. Grieves of Baltimore, Md.—A paper on "The Belconine of Certain Metals in the Mouth."

Dr. H. H. Johnson, Macon, Ga.—"Crown and Bridge Work."

SECTION II.

Dr. Herbert L. Wheeler of New York City—A paper on "Dental Education."

Dr. W. T. Jackman of Cleveland, Ohio—"The Elimination of Fear in the Practice of Dentistry."

Dr. J. R. Callahan of Cincinnati, Ohio—On "Operative Dentistry."

Dr. S. D. Ruggles of Portsmouth, Ohio—On "Nomenclature."

Dr. G. S. Vann, Gadsden, Ala.—"Dental Literature."

SECTION III.

Dr. A. H. Thompson of Topeka, Kan.—A paper on "Comparative Anatomy."

A complete list of the sections, with a full list of clinics, railway rates, etc., will be announced in the next issue of this journal.

All preparations for the meeting are well advanced and a large attendance is assured.

THE

DENTAL REVIEW.

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SOME PRINCIPLES OF RETENTION.*

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In a letter to the Alumni Society of the Angle School at their last meeting, Dr. Norman W. Kingsley said: "The success of orthodontia as a science and an art now lies in the retainer." We all know that to be perfectly true. The success of all our orthodontic operations must depend upon the efficiency of the retainer which we employ. I do not believe that any proficient universal retainer will ever be devised, nor do I think such an appliance would be at all desirable. But I do believe that, now we are certain regarding the treatment in all cases, the proper retaining principles will be recognized and understood by all who devote themselves to the study and practice of this most important branch of medical science.

We have advanced very rapidly and perfectly in regard to the correct diagnosis, the treatment, the causes of the malocclusions and the appliances which are best qualified to do the work of correction. But have we also studied out the best principles to be used in retaining the teeth? Have our retainers been proficient? De we, after we have obtained beautiful results in treatment, find that we are able to keep this result and, by the coaxing aid of the retainer, see the teeth settle into still finer occlusion? Or do we find that we are not able to hold what we have gained, and that there is taking place, or has taken place, a relapse, and with great heartaches we realize that the working appliance must again be adjusted, and all because the retaining device failed to do what was expected of it. This has happened often in the past, and it probably happens nowadays also to a

*Read before the American Dental Society of Europe, London, August 3, 1908.

great degree. But I am sure that if the principles which are required in a retainer are carefully studied out before the work of retention is attempted you will find that you will make more scientific appliances, and that your cases relapse less often.

Regulating appliances have been perfected to a very fine degree. It seems to me that nearly all thought and energy have been given to the treatment. Of course many forms of retention have been used, but in the past few have been perfectly successful, especially those employed in retaining cases belonging to Class II of malocclusions.

The retaining appliance must be the complement of the working appliance. We have been given the proper basis for classifying all classes of malocclusion. We have been given the means for correctly diagnosing all cases. We have been given appliances with which it is possible to do beautiful, perfect work. All that being true, we are in possession of the secrets of retention—we have only to hold what we have obtained, being sure that Nature will respond and carry on the work of maintaining the balance after the retainer has done its work. Given the proper diagnosis and treatment we have only to construct an appliance which will be the complement of the corrective appliance. Dr. Angle says: "As the tendency of the teeth that have been moved into occlusion is to return to their former malpositions, the principle to be considered by the designer of a retaining device is to antagonize the movements of the teeth only in the direction of their tendencies." This will be understood by one who has made retention a study to mean not only the teeth but the muscles and the bones involved in the correction also, for if one considers the teeth alone he will get results which are far from perfect. But if the muscles and the bones are given due consideration, and the appliance gives them the proper support, the result must be good, if there be no neglect on the part of the patient. Therefore, it is very necessary to have a comprehensive knowledge of the tissues upon which we are working, and the functions and characteristics of each. We must know how to correctly diagnose all cases and what the correct treatment should be. We must know the requirements of facial balance, and this in every case must be a special study. For, only when the best harmony is obtained, both as to normal occlusion and the proportions of the face, will the teeth respond to and obey the retainer. Most especially is this true in Class II cases. If we

have made a wrong diagnosis and have followed wrong treatment we cannot expect to get fine or permanent results.

The different types of malocclusion present different problems for retention even as they do for treatment, but the same principles will hold good and be efficient in all cases. It will only be necessary to modify the appliance to suit the needs of each particular case. The cases belonging to Class II are the most difficult to retain and if you are successful in retaining these cases you need have little worry regarding the retention of the other cases. The same principles, exactly, can be used. In Class II we have as the cause of the malocculsion mouth-breathing, necessitated by nasal stenosis. This has caused the muscles and the bones to develop into an abnormal form. Let it be distinctly understood that the tissues are not underdeveloped, as some have thought, but that there is abnormality only as regards the form. Some claim that the mandible is really underdeveloped and that sometimes, in fact very often, the maxilla is overdeveloped. It is, however, becoming more and more realized and admitted that the abnormality is in the form and not in the size of the mandible and maxilla. Therefore the treatment is becoming more rational and consequently the retention will be more scientific and efficient. I had the pleasure of presenting my theory on the development of Class II cases at the last meeting of this society, so it is not necessary to mention here.*

You will readily see that when the bones and the muscles have abnormally developed and then have been re-formed and made their normal shape that they must be kept in this new position for a long time—until Nature has re-established them. In order to accomplish this we must employ a force, of the strength required, that will act constantly, and for Class II cases there is only one force that will meet all requirements, and that is the intermaxillary force, or that supplied by the rubber ligature. This applies to the older patients much more than it does to the young children. With them we do not find the relapsing tendency nearly so strong as when the tissues are well developed and stronger, and then it will not often be necessary to use the rubber ligature. We will find many cases, however, in which the rubber will be a great aid in helping to keep the mouth closed when the child is asleep. When the teeth are apart,

*"Changes Incident to Correcting Distal Occlusions of the Lower Arch." DENTAL REVIEW, Nov., 1907.

as you will readily see, there can be no effect from the device known as the spur and plane or from the double spur appliance. But no matter in what position the teeth are, there is always exerted a gentle pulling power, if the rubber ligature is used, which will maintain and support the muscles and bones in their new position and so the teeth settle more beautifully into normal occulsion.

The teeth are never held firmly together excepting during mastication. Normally they are only resting against each other or they are slightly apart. This being the case we must have a constant force exerted. In treating and retaining cases of both Class I and Class III we will very often find that we must use intermaxillary force. One might say always for Class III. This principle was used by me to retain a very difficult case of that class where the malocclusion was unusual, the lower arch being mesial to the upper the width of two bicuspid teeth. This case was retained two years ago and the results are very satisfactory. The use of the rubbers has been discontinued now for some time, and the retention removed, the occlusion of the teeth holding them in a good position.

The requirements of retention differ with the different cases, with the different ages, with the different sizes and strengths of the patients. All these things must be considered when devising the retaining appliance. Much will depend upon the thoroughness with which patients masticate their food. And it devolves upon you to make them understand the importance of this function, not only for the proper settling of the cusps of the teeth but for the better nourishment of the whole body. Too much stress cannot be laid on this subject, and the parents must co-operate and see that your instructions are carried out. Only by using the teeth as they should be used—and they should perform good, hard work for the body—can we expect to have well-formed arches and well-formed, harmonious faces.

Before removing the working or regulating appliances it is advisable to overtreat the case, i. e., to make the movements that we desire in excess of what we wish or need. Then we can allow of slight settling when the retainer is adjusted upon the teeth. If the movements have been too far it will counterbalance the natural tendency toward relapse. Let the working appliance rest quietly in place for a few days, or even weeks if possible, so as to give the teeth a chance to lose their soreness and also so that they will settle

into firmer occlusion. This will be found to be a great benefit and when the retaining work is undertaken it will be found that the work can be done much easier, more quickly and the adaptation of the bands to the teeth will be much nicer. The patient will have very little discomfort during the retaining work if that is done. Another advantage is that when the working appliance is removed the teeth may be given a very thorough prophylactic treatment and if they are sore this cannot be so well done.

THE FORCES USED IN MOVING TEETH.

The forces used and the movements obtained are as follows:

1. Rotation.
2. Expansion and contraction.
3. Mesio-distal.
4. Depression.
5. Elevation.*

To retain these movements we must employ forces as follows:

(a) 1. Reciprocal.
2. Firm teeth.
3. Intermaxillary.
4. Occlusal.

They would be applied as follows:

To retain rotations—Reciprocal force; firm teeth; occlusal force.

To retain expansions (contractions)—Reciprocal and occlusal forces.

To retain mesio-distal movements—Intermaxillary and occlusal forces.

To retain depressions—Firm teeth, and occlusal forces.

To retain elevations—Firm teeth, and intermaxillary forces.

Those are the various movements to be retained and the means of retaining each. It will depend upon what is wanted of the appliance what combination we make. Nearly all appliances are combinations of forces so arranged that we make one to do the work of several were they all separate. The retainer must be as simple as possible. It must be made of material which will be strong, cleanly and aesthetic. One must know, from the condition of the teeth and the gums, what metal to employ. We cannot make use of any one metal in all cases and have our work as we wish it to be. But we

*Angle "Malocclusions of the Teeth."
a. Angle—Malocclusions of the Teeth.

must select that material which fills the requirements of the case. The appliance must also be constructed so that the teeth may be easily and well cleaned by the patient.

SOME RETAINERS.

Figs. 1, 2, 3 show different views of the staple and hook retainer. If nicely applied you will find this to be a most efficient appliance.

Bands are made for the lateral incisors, on the labial and lingual

Fig. 1.

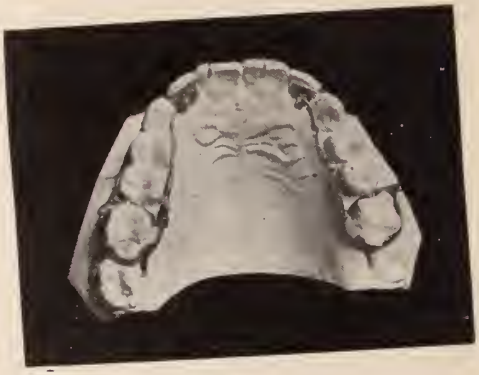

Fig. 2.

surfaces of which are soldered small staples. The molar band has soldered to the mesial side of the buccal surface a spur which, when the teeth are in occlusion, passes down outside of and behind the spur on the lower molar band. This is clearly shown in Fig. 1. This upper spur acting as it does upon the lower molar holds any expansion

that may have been made. On the lingual side of the molar band, or on the end of the screw, is soldered a wire which now passes forward, past the bicuspids and the cuspid, and, the end bent into the form of a hook, engages a staple on the lingual surface of the lateral incisor band. This wire connecting the molar and lateral serves three purposes, viz., support for the molar, expansion of the cuspid, bicuspids and molar, and support and retraction of the lateral and the teeth next, or the central incisors. The two staples on the labial surfaces are connected by a wire, the ends of which are bent into the form of hooks. This wire has soldered to it over the central incisors two short pieces of wire which, when the wire is in place, are bent over the ends of the centrals. These hooks over the ends support the centrals and keep the anterior teeth even. Small spurs may also

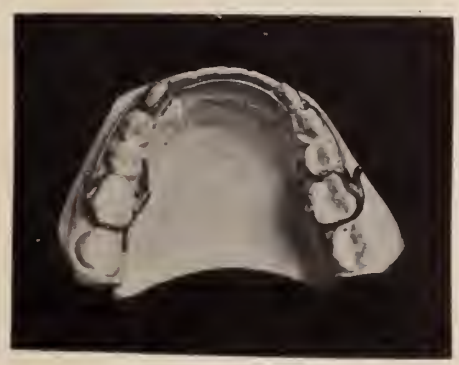

Fig. 3.

be soldered to the lateral bands is we desire inter-maxillary force during retention, the rubber going from this hook to a small hook on the lower molar band.

On the lower cuspids bands are fitted and staples are soldered to the labial surfaces (as per illustration, Fig. 3). The cuspid bands are connected on the lingual surfaces by a wire which rests against all the incisors and extends past the cuspids and rests against the lingual surface of the bicuspid. A wire is soldered to the molar band, and this passes forward and the end, in the form of a hook, engages the staple on the cuspid band. A spur is soldered to the molar band which, when the teeth are together, occludes with the spur on the upper molar band. Another small spur should be soldered

on the distal side of the lingual surface of the molar band, it being just long enough to project onto the second molar. This will steady the first molar and prevent it from expanding, which is sometimes liable to occur. The wire from the molar to the cuspid staple may be arranged a little different also and with good results. The wire may be soldered to the end of the screw of the molar band and the staple on the cuspid will then be placed on the lingual surface of the band. Then the wire crossing the incisors will end at the center of the cuspid band.

This is a very good appliance, especially for those patients who can be seen often during the retention period. For patients seen sel-

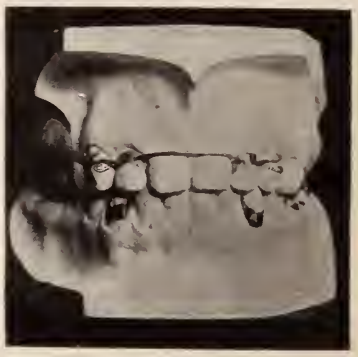

Fig. 4.

The hooks over cuspids may be placed as shown by dotted line. This will in many cases be better as the line of the pull from the soldered joint on the lateral band to the hook on the lower molar band will then be straighter and therefore less liable to displace the lateral incisor.

dom during retention it will perhaps be better to use an appliance which is solid, that is, all in one piece from molar to molar. Such an appliance is the inner arch retainer. See Fgs. 4, 5, 6, 7.

INNER ARCH RETAINER.

These retainers are very reliable and will nearly always do what we ask of them. The inner wire is soldered to the ends of the molar bands, the arch resting against the teeth as it passes around from molar to molar. On the lower bands are made for the cuspids which have small spurs soldered on their lingual surfaces. These are bent over the arch and serve a double purpose of retaining any rotations

and also to keep the arch steady. For the mesio-distal retention we will use very small double-spurs on the molar bands. These spurs will be of No. 18 clasp-metal or 20% iridio-platinum, and they will be quite short. This is shown in Figs. 4 and 5. Another small spur will be soldered to the molar band just below the double-spur, this for the attachment of the rubber ligature, which will then pass forward and upward to a spur or hook on the lateral band.

Bands are made for the upper lateral incisors which are connected on the labial surface by a wire crossing the centrals and which is attached by solder or by means of hooks and staples. On the distal side of the labial surface of the lateral band is soldered a small hook, this being, as before mentioned, for the rubber ligature

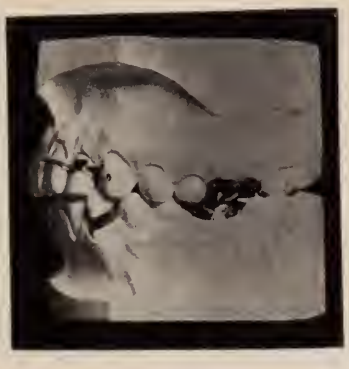

Fig. 5.

which will pass to the hook on the lower molar band. With this appliance it is not necessary to use the hooks going over the central incisors, as they are kept in their positions by the outside wire and the inner arch. The inner arch is used for the upper the same as it is for the lower, and is attached in front by small spurs being soldered on the lingual surface of the lateral bands and these are bent over the arch. The double-spur appliance will be found to be all that is required in retaining the teeth of young patients, although in many cases the rubber will be found a great help in keeping the mouth closed at night. With the older patients the rubber ligature as an aid in retention will be found to be indespensable. But to insure success in retention your cases must have proper treatment. Otherwise you are working uphill. First, right diagnosis, then good treatment, and last and not least, good, simple, scientific retention.

These retainers you may modify so that they can be successfully used in all cases. In constructing them be sure that you use the proper sizes of wire in the different places. Be sure that the bands all fit well, and then be sure that they are well cemented to the teeth.

I am sure that if you carefully study the principles embodied in these retainers that you will be able to make modifications to suit any and all classes of cases of malocclusion.

Occasionally we find that it is good to use a rubber plate to retain expansion, especially if there are teeth missing and we can temporarily so supply them. For this purpose they are very good, but I do not think they have any advantage over the inner arch to retain the

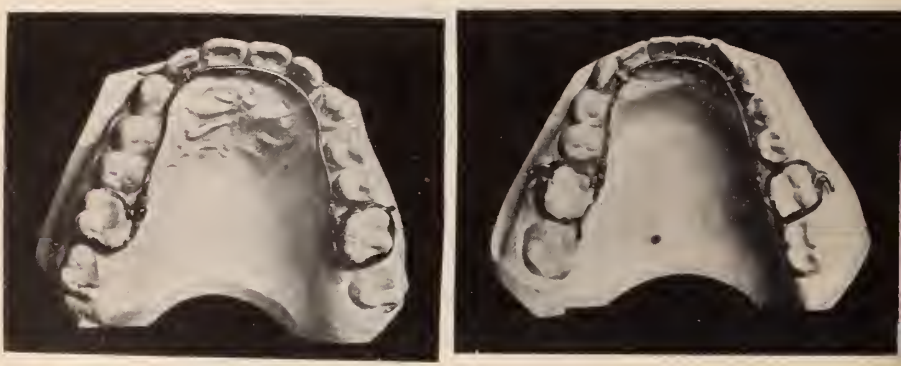

Fig 6.

expansion. I think that the fixed appliance possesses great advantages over the plate, and for many reasons.

One other point I wish to mention before I close and that is regarding the necessity of having the respiration perfectly normal. No matter what appliance you use for retention; no matter how efficient its principles and how well adapted to the needs of the case, it cannot and will not do its proper work nor will the teeth remain where we place them unless normal, nasal breathing is firmly established. Nasal breathing is one of the most important requirements for good health and you must see to it that the nose, the post-nasal cavity and the throat are in a normal condition. It will be extremely beneficial if, after the nose is restored to a condition which allows of free breathing, we insist on the patient spraying, or having sprayed, the nose

and throat each day. For this a mild antiseptic solution may be employed, and if it is well done each day the patient will not only breath much better but he will be troubled very little with the common ailments of mankind. Colds and throat troubles will be rare, and nasal breathing will, therefore, not be disturbed. Then our retaining appliances will do better work and the results will be nearer what we would like to have them.

TUBERCULOSIS IN ITS RELATION TO DENTISTRY.*

BY W. F. KELSEY, D. D. S., MARSEILLES.

That disease in general, and tuberculosis in particular, has a marked influence upon nutrition of the human tissues is a fact too well known to warrant discussion; that a certain correlation exists between a vigorous constitution and a perfect dentition is patent to the most casual observer; but the assertion that the progress of disease and even a predisposition to tuberculosis can be diagnosed by a careful inspection of the teeth, would be received with a shrug of incredulity by a vast majority even of the members of the medical and dental professions, yet no experienced dental surgeon has failed to remark the persistency of dental caries or the feeble density of the teeth in tuberculous subjects, especially with those in early life. The softness, or imperfect calcification of the teeth is the natural sequence of a faulty nutrition. The entire osseous system is lacking in lime salts. 1. According to Dr. Ferrier, this characteristic is frequently so pronounced that the specific gravity of the body is materially lowered, whilst the person so affected shows a correspondingly greater facility in maintaining himself upon the surface, when in water. He further states that the assimilation, or elimination of these elements produce fluctuations in the density of the tissues which coincide very closely with the progress of the disease, and nowhere are these changes so readily studied as in the mouth.

An aggravation of the symptoms of the malady is closely followed by an extension of dental caries and vice versa, an improvement in the state of the health is succeeded by a correspondingly favorable change in the condition of the dental organs. In a normal

*Read at the Meeting of the American Dental Society of Europe, in London, August, 1908.

1. La guèrison de la Tuberculose.

subject this hardening of the tissues continues, until, in advanced life it becomes a serious inconvenience, the teeth being more readily attacked by pyorrhoea, whilst the bones are more easily fractured and the blood vessels become less resisting. If a defective nutrition produces unresisting dental organs, it is equally true that, conversely, a defective dentition is a nursery for all manner of pathogenic organisms, which disturb digestion and aggravate the morbid conditions that were the original cause of the trouble. Even a healthy mouth is a hotbed of bacterial flora; then what a field for microscopic investigation must be presented by that of a phthisical patient. 2. Miller estimated that a typical unhealthy mouth which he examined contained upwards of a thousand millions of cultural bacteria. With every mouthful of food swallowed, myriads of these germs are carried into the already inflamed alimentary canal. The gastric juice being unequal to the task of annihilating this vast army of invaders, in whose ranks are enrolled, micrococci, staphylococci, pneumococci and even the baccillae of Koch, a secondary infection naturally ensues that aggravates all the morbid symptoms which were the original characteristics of the disease.

3. Dr. Dodd says: "Whatever may be said of the septic infection taking place through the mouth and teeth, there is no doubt as to the existence of secondary anemia, associated with lowered vitality and great foulness of the whole alimentary tract, resulting directly from buccal infection." Aside from teeth of feeble resistance, annoying ulcerations of the tongue, of tuberculous origin are not infrequently met with. A distinctive feature of these ulcerations is that they are surrounded by yellowish dots, easily mistaken for follicular orifices, though in reality they are but minute abscesses which gradually coalesce with the principal ulcer. They are of slow development, partaking in this respect of the characteristics of tuberculosis itself. Except for the greyish surface and yellowish spots, one might readily mistake them for syphilitic chancres though unlike the latter they are rarely the cause of glandular swelling. 4. Though at times so sensitive that contact with any foreign substance, even with food when eating, causes severe suffering, they cicatrize readily. A recurrence of the trouble is, however, always to be apprehended. Tuberculosis

2. "Micro-organisms of the Human Mouth."
3. "Transactions of the Odontological Society of Great Britain."
4. "Dieulafoy;" Pathologie Interne, Vol. III.

is a most serious complication in diseases of the antrum and lesions of the periosteum due to this cause are even more serious in their consequences. The first symptoms of periosteal trouble are a soreness of the parts, followed by a more or less abundant suppuration about the necks of the teeth, or perchance at the orifice of an external fistula; in these cases the most intelligent treatment will not always prevent necrosis of a considerable portion of the alveolus and may cause the entire loss of one of the maxillae, the inferior being the more frequently affected. In diagnosing tuberculosis physicians are too prone to seek for indications of the disease in heredity, the general appearance of the patient, the fluctuations of the temperature, emaciation, nocturnal perspiration, the hectic flush, or in chemical reaction upon colored baccilli, losing sight of the state of the mouth and administering remedies which seriously aggravate the already existing local conditions. The state of the mouth in many of these cases is discouraging, indeed. Decay is attacking the teeth on every side, the breath is fetid, the pain of sensitive dentin, exposed pulps and abscesses, interferes with mastication, renders refreshing sleep impossible and contribute greatly to aggravate the unfavorable symptoms of the malady. The demand for intelligent intervention on the part of the dental surgeon is imperative. So much is required that the operator scarcely knows where to begin. Naturally, the first concern is the relief of pain; that accomplished, the next step is to combat the fetidity of the mouth with permanganate of potash, thymol, or some equivalent antiseptic. Incurable roots should be removed if no contra-indications exist. Bi-carbonate of soda may be useful in neutralizing the acidity of the secretions and nitrate of silver in arresting incipient caries, especially at the gingival border and upon the labial surfaces of the teeth. Needless to say that a most careful cleansing of the mouth and teeth should be undertaken, in fact nothing should be neglected which will tend to counteract the unsanitary conditions of the mouth and at the same time restore the normal functions of mastication. Filling materials should be chosen adapted to these special conditions. Gutta-percha is a most useful material when not too directly exposed to attrition. Gold crowns and inlays are of the greatest utility in many cases, though amalgam is, perhaps, preferable to malleted gold fillings and oxy-phosphates should only be used as a last resort. Good judgment should be exercised in the choice of prosthetic work, when such

work is required, though no general rule can be laid down, as each case presents its own special peculiarities. Above all the necessity of observing certain hygienic rules should be impressed upon the mind of the patient with the greatest insistance. Our professional relations with the public place us in a particularly favorable position for inculcating these rules, without in any way trespassing upon the prerogatives of the medical practitioner. Too much stress cannot be placed upon the necessity of frequently brushing the teeth with alkaline tooth powders and antiseptic lotions. Rubbing the teeth with a napkin is particularly to be recommended. Regular visits to the dentist should be insisted upon. All that tends to fortify the general health will have a correspondingly beneficial effect upon the dentition. A generous diet, sunlight, exercise, and above all the pure air of the mountain and sea. A cold and dry climate is better than a warm and damp one. Open windows at 20° below zero are more favorable to the health than closed ones at 80° above.

One should insist upon the desirability of choosing food that contains a large percentage of lime salts, and which at the same time will fortify the teeth by the effort of mastication. Ferrier maintains that not only can the bones and teeth be hardened by diet, but the calcification extends to the other tissues and contributes materially to the cicatrization of the tubercles. Oatmeal, stale or toasted bread rice and eggs with calcareous or mineral water, or even lime water can be prescribed. It is equally important to indicate what should not be eaten or drank. Honey, sweets, vinegar, rich sauces, acid fruits, cider and even milk in considerable quantities should be avoided. Aside from the danger of the milk having been taken from tubercuIous cows, its direct effects upon the teeth resulting from fermentation is very pernicious—lactic acid, for some not very well defined reason, seems to have a special influence in neutralizing lime salts in the system—the result being a softening of the osseous tissues and a greater susceptibility to dental caries. 5. Metchnikoff states that old people can greatly prolong life by the daily absorption of considerable quantities of butter milk, koumis or artificially soured milk. His theory is, however, that the inoffensive lactic acid bacilli destroy in a measure the harmful microbes which infest the alimentary canal and by their toxic action produce a chronic poisoning of the system that materially abridges the normal duration of human life.

5. "Etudes Optimistique."

Many of our patients are children in school, whose parents, heedless of the loss of appetite, frequent cephalalgia and general debility, of which they complain, point with pride to their standing in the class and persuade themselves that a few weeks' outing at the end of the term will restore their waning health and prepare them for the following session. The seeds of consumption are often sown in the schoolroom, whose overcrowding, improper ventilation and generally defective sanitary conditions too often combine the exact requirements for their speedy propagation. Children should be taught the importance of having their own pens, pencils and books and be warned against the pernicious habit of sharing a cake or apple with a schoolmate, without taking the precaution to carefully separate the portion to be presented. It is our manifest duty to warn thoughtless parents that education is of secondary importance when a child shows a tendency to pulmonary complaints; that the only rational course to pursue is to remove it from the crowded schoolroom, abandon all thoughts of competitive examinations and seek in sunlight and the open air the strength that may warrant the resumption of study at a later date. Whilst operating on tuberculous patients we incur a certain risk of infection that should not be ignored, as the baccilli of Koch is invariably present and at any unforseen moment we are liable to be innoculated with the poison. Fortunately the majority of mankind is more or less refractory to the virus and with due attention to antisepsis the danger, if not entirely averted, can at least be reduced to a strict minimum.

DENTINAL ANESTHESIA BY INTRAGINGIVAL INJECTIONS.*

BY DR. FLORESTAN AGUILAR, OF MADRID, SPAIN.

I deem it an honor to have this opportunity of presenting to you the results of my experience with a method of producing insensibility of the dental plup, by which, without the encumbrances, difficulties, and uncertainties attached to other systems of obtaining anesthesia of the pulp (such as pressure anaesthesia, cataphoresis,

*This paper was read at the meeting of the American Dental Society of Europe, in Rome, Easter, 1907, but was not handed in for publication till the meeting in London, 1908.

local obtundents, etc.), we can rapidly and totally suppress the sensibility of the dental tissues without endangering their vitality.

The method consists simply in the combination of adrenalin chlorid with benesol, for injecting with a hypodermic syringe in the gum, in a similar way as that employed for producing local anesthesia in the extraction of teeth.

The components of the anesthetic mixture are:

Benesol	8 parts
Adrenalin chlorid, 1 per cent solution	2 "

Benesol is composed of per 100 parts:

Clorhydrate of cocain	1
Eucain beta	1
Caffein	1
Nitrate of amyl	3
Eucalyptol	5
Phenol	5
Distilled water	84

Of this preparation the dose 40 centigrammes is employed with the addition of 10 centigrams (two drops) of 1 per cent solution of adrenalin chlorid; therefore none of the components of the mixture is employed in a dose that by any means could be considered toxic.

Cocain, as you will see by analyzing the formula, enters into the composition of each dose to the amount of less than ½ centigram. The application of this drug by simple injection in the gum, in the way that we shall later explain, gives by result a profound anesthesia of the dentin and the pulp, so deep that we can procced in many cases to the extirpation of the plup without discomfort to the patient.

To what is due the extraordinary anesthetic power of this compound I canot truly say, because although three of its components are anesthetics, in the resulting mixture we obtain a dynamic effect not corresponding to an addition of the specific power of each of them, but more, as if the anesthetic energy of one were multiplied by that of the other. Can we say that the conjunction of these elements modifles the conditions of some one of them or that all is due to the action of the adrenalin?

Each one of the different ingredients which enter into the composition of benesol, has a function to perform. Eucain and cocain are used for their specific anesthetic power, by which they act on the

sensitive nervous elements as curare does on the motor ones, acting first on the peripheral extremities and then on the central parts; but as such medicaments besides their local action could produce general toxic effects, it is important to observe that in the above formula they are used in so minute a dosage, that each 50 centigrammes of benesol (which is the dose used for dentinal anesthesia) contains only ½ centigram of eucain and cocain, an amount which is well below the usual normal dose of these alkaloids, and that besides, they are associated with stimulants like caffein and of amyl, which have an action antagonistic to that of the first alkaloids and would suffice to serve as antidotes for any toxic action.

Adrenalin chlorid in the solution of 1 per 5,000, and in the dose employed (two drops) is harmless to the system, and yet it really acts as a powerful vaso constrictor producing ischemia and, therefor by preventing the cocain solution from entering the circulatory system, increase its specific action in the protoplasm and augments its anesthetic power. We might compare its action to that of the elastic ligature that surgeons place at the root of a finger when cocain is to be injected. We might say that adrenalin serves as a vascular ligature.

The phenol being an antiseptic prevents the development of fungus in the solution and also increases the anesthetic power of the cocain.

Technique. To obtain the best results it is important to follow a good technique in injecting the drug. I use a strong syringe of 1 gramme capacity, provided with a long bayonet-shaped neck, which permits easy access to any part of the mouth and a constant view of the point of injection. The needle is of steel of very fine calibre and well sharpened. I find these needles superior to the platinum-iridium ones, because being equal in calibre of the tube, they are thinner and sharper.

I charge the syringe with ½ gramme of the anesthetic (the contents of an ampoule), which I slowly inject in two or four punctures on the gum labially and lingually at the approximate height of the apex of the root of the tooth to be operated upon, and at a depth as near the periosteum as possible. The gum then acquires a whitish appearance and complete insensibility of the dentin and the pulp ensues, this anesthesia lasting from 15 to 40 minutes, and some times much longer.

The patient is surprised at the feeling of insensibility that he experiences on and around the tooth upon an area that, when operating on the upper front teeth sometimes extends to the base of nose and lip.

It is important not to be too impatient to operate, until the anesthesia has reached its maximum, which is slower to appear than that of the gums when using the ordinary cocain solution employed for the extraction of teeth.

During the period of anesthesia, all kinds of operations can be performed on the tooth without discomfort to the patient and after a time that varies from 15 minutes to one hour or more, sensibility commences to reappear without any other symptoms, local or general, disagreeable to the patient.

As you will see by the cases that are tabulated in the statistics that I bring to you, I have most successfully employed this method in excavating sensitive cavities (superficial or deep), for extirpating pulps (inflamed or not), for cutting live teeth in crown work, and in one word, for all those operations upon sensitive teeth which ordinarily are so much dreaded by the patient, and I may say by the operator.

In the cases of pulp extirpation it is really surprising how satisfactorily it acts and how much time can be saved by it. The operation is performed not only without much pain, but in some instances without hemorrhage, permitting the extraction of the pulp as a whitish filament and the immediate root filling without other cares than the natural aseptic precautions to be taken to prevent infection from the broaches and instruments employed.

Of the efficacy of this method I can testify by personal experience, having had a lower molar treated by it, and may add employing in my practice this as the exclusive method of pulp extirpation, I have not needed to use arsenic in the last three months for tooth devitalization.

When the anesthesia is employed as a dentinal obtudent in cavity preparation it is equally reliable even in the cases of the most highly sensitive cervical cavities in nervous patients, where otherwise the mere touch of an instrument would provoke intense pain.

This procedure of local anesthesia I have employed during the last sixteen months in 216 cases, of which I have kept careful notes and feel perfectly satisfied with the results obtained.

To illustrate its advantages permit me to cite the conditions of one of the first cases in which I had occasion to test it.

It is patient No. 2 of my statistics, a man, 28 years of age, from a country town, with acute odontalgia produced by the exposed pulp of a lower second molar. The patient, highly sensitive and impressionable is in a state of prostration from the sufferings he has been enduring the previous nights. After an injection of ½ gram of the anesthetic I apply the cofferdam and wait six minutes, then open the cavity, extract with the pulp, fill the root with cotton and iodoform and the cavity with guttapercha and dismiss the patient, who is enchanted to see not only that the pain has ceased but that he can drink hot and cold and bite upon the teeth, which he could not do fifteen minutes before.

This afternoon I will have the honor of giving a clinic before you and then you will in detail more fully appreciate the advantages of this method, as these notes are written only as an introduction to that clinical demonstration and as a means of eliciting your opinions on this system of dentinal anesthesia.

RETENTION OF REGULATED TEETH.*

BY S. W. FAHRNEY, D. D. S., CHICAGO.

Mr. President, fellow members of the Northern Illinois Dental Society and others of the dental profession: When Dr. Culver requested me to read a paper before this society he did not specify the particular branch of orthopedic dentistry he wished me to talk about, and when questioned a little, he informed me that anything good about the regulation of teeth would be acceptable.

After thinking of the vast amount of work I might cover, which would come under such a heading, I will admit my mind was somewhat confused while making the selection of some part of the subject to put before you today.

In this age of great advancement in dentistry, the dental orthopedic branch has not been slighted and as a result we have a number of different methods for regulating teeth and each system has its followers who are willing at all times to say that the system they use is the best. Allow me to say that from practical experience I,

*Read before the Northern Illinois Dental Society, October, 1908.

too, have certain rather set ideas in regard to the proper ways of regulating teeth and for the past eight years I earnestly taught those ideas to the students of the Chicago College of Dental Surgery and have endeavored to show them the superiority of the methods I advocate for the correction of facial and oral deformities.

It is not my intention to continue along those lines of teaching today, and although my views on the selection of regulating appliances remain the same, my advice to any dentist wishing to regulate teeth, is to employ the method he can use to the best advantage and which will give the best results.

The regulation or straightening of a tooth may be done in many ways. For example the rotation or turning of a tooth around its central axis may be accomplished by the use of an elastic force such as we derive from common sewing twist or rubber bands—by the spring force from a rotating lever, or by the force from a screw or screws which may be applied in numerous ways. Sometimes the operator will get better results on the particular case under treatment by using one of the methods mentioned, while on another case of similar character the same course of treatment would terminate in a failure. Therefore, gentlemen, I say it makes little or no difference, so far as the movement of the teeth is concerned, how the work is done when perfect results are obtained.

Again I say, regulate teeth in the manner your prefer and in this paper I will raise no objection to any method you may use, but please remember that the battle is only half over when you have merely straightened the teeth and put them in their proper positions. The question then arises: How can they be retained in their regulated positions?

Some of the text books of the present day teach principally the regulation of teeth, treating retention as a minor detail and in this way dentists inexperienced in the art are led to believe retention comes naturally after the teeth are once straightened. But after a few cases have been regulated and the teeth fail to remain in their proper positions due to faulty retainers, if any have been used whatever, it is not surprising that the operator becomes disgusted with the art. Nor is it to be wondered at if the patient and his or her friends have less confidence in the dentist at the end of the work.

It is due almost entirely to the unsatisfactory results of faulty retention that the operation of straightening teeth is so commonly

discredited among the laity. In my earlier experience in this special line of work I often found it a very trying task to convince some prospective patient that his or her teeth could be regulated and retained. Especially was it difficult if the person was the proud possessor of a friend or relative who had been through the trying ordeal of having the teeth straightened, only to have them settle to their former positions. At present it is much easier, thanks to the more modern methods of making retainers, to deal with the people who think the work cannot be made permanent, for by referring them to former patients who have had teeth properly regulated and successfully retained, their doubts are soon removed.

I wish to speak of some of the most important points to be remembered about the retention of teeth and I will also briefly describe some retaining appliances which generally give perfect satisfaction if properly constructed and applied.

There are some cases which even a perfect retainer will not hold, and they are generally the inherited irregularities. Dr. Norman W. Kingsley once said: "In inherited cases of extreme character which have been delayed until at or near maturity, we can never feel certain that the original tendency to malposition, so long unbroken, will not reassert itself at any time that we abandon retaining fixtures."

One thing of the greatest importance in the retention of teeth is good occlusions, but even perfect occlusion sometimes fails to overcome the force of the tissues pulling the teeth to their former positions, and a retaining appliance in such a case must be worn long enough to allow Nature to relieve the drawn condition of the fibrous structure surrounding the roots of the teeth. If the teeth have been hard to move it is due to the fibres being very strong and consequently the retainer must be proportionally strong to withstand the pull of those fibres.

Teeth that have been moved very slowly are easily retained, and the artificial retainer does not necessarily need to be so strong, as Nature has had a chance to change the tension of the fibres and build retaining bone structure around the roots of the teeth. For this reason I am a firm believer in the slow regulation of teeth.

A retaining appliance should be one that is not only strong enough to withstand the tendency of the teeth to return to their former positions, but should hold the teeth firmly during mastication. It should not be unsightly and should not be allowed to remain on

the teeth for any length of time uncemented, on account of the liability to cause decay. And last, but not lease, it must be so constructed that it will cause no irritation of the soft tissues surrounding the teeth.

Allow me now to briefly describe one of Dr. C. S. Case's retaining appliances which is generally used with perfect results. This appliance, like all of the regulating appliances used by Dr. Case, is specially made for the case under treatment.

An appliance for retaining the six upper or six lower teeth is made as follows: With some German silver banding material of No. 40 gauge, the four incisors are measured, with the seams on the labial, and having the incisal edges of the bands about even with the incisal edges of the teeth. The cuspids are measured with 36 or 37-gauge B. & W. gold bands which have the labial surfaces cut to the curve of the gum line. The seams of the two cuspid bands are placed on the lingual. After being properly burnished all of the bands are soldered with 20k. gold solder. They are then placed on the teeth, carefully burnished to position and an impression taken with some fine investment material. The bands are removed, placed in the impression and a model is made with investment plaster.

In separating the impression from the model great care should be taken in preserving the lingual portion of the impression, which is later used for making a die and counter die for swaging a lingual reinforcement plate of No. 28-gauge clasp metal.

On the labial small pieces of the B. & W. gold banding material are carefully burnished to fit to the narrow bands over the interproximal spaces. The model is then carefully dried, and is placed with the labial surfaces of the teeth pointing upward and dry borax is fused in the interproximal spaces so that the small reinforcements can be soldered to position. This is done by using No. 18-karat gold solder, some of which is drawn through the interproximal to the lingual surfaces.

The lingual clasp-metal reinforcement is swaged and is trimmed to conform to the size and shape of the lingual surfaces of the six bands. It is soldered to position with 16-karat gold solder, enough of which is used to make the appliance perfectly rigid, so that it will withstand all tendency of the teeth to return to their original mal-positions.

The appliance is carefully filed and polished on the lingual and labial surfaces, after which the labial portion of each of the incisor bands between the reinforcements is cut away and the reinforcements trimmed as neatly as possible. Great care should be used to retain a sufficient amount of the small reinforced labial portion of the band to grasp the tooth firmly and hold it as permanently as would be possible with a complete band.

A great deal of difficulty may sometimes be experienced by the operator when forcing the retaining appliance to position the first time. The trouble in such instances is generally due to the bands being trimmed too narrow in the interproximal space. By allowing them to remain wide in this location, the bands can be more easily started to position and if the retainer is properly made it will often snap to place.

Generally a retaining appliance of this kind is allowed to be worn on the teeth uncemented for a few days and then removed. After being repolished and the teeth properly cleaned the appliance can then be cemented to position. The cement will hold for an indefinite period, generally from six to nine months, and very often longer.

The great advantages of using such an appliance as I have just described can be easily appreciated. The teeth are held firmly, the appliance is not unsightly and if properly cemented will not cause decay, and last but not least it requires no attention while being worn, with the possible exception of examining it every month or two to determine the condition of the cement. If the cement has loosened at any portion and fallen away, causing a pocket to be formed where food could lodge and cause decay, the appliance should be removed and recemented, providing the teeth appear too loose in their sockets.

As before stated there are numerous attachments which may be added to the appliance described and these must be selected according to the demands of the case under treatment. I will mention and briefly describe some of the most frequently used variations of the six band retainer for the anterior teeth.

After the correction of a case of irregularity in which the anterior teeth were originally in a protuded position with wide interproximal spaces, it is necessary to retain the six anterior teeth in proper relation to each other and also hold them from returning to their protruded positions. This can easily be accomplished by solder-

ing small round tubes on the disto-lingual portion of the six-band retainer and in these tubes are attached small pull jacks which pass through tubes on the lingual of first molar bands. The pull jacks have nuts at the distal end of the molar tubes and these nuts can be tightened sufficiently to hold the buccal teeth close together, while preventing the anterior teeth from returning to their protruded positions.

In a great number of cases in which the intermaxillary force has been applied in the correction of the irregularity, it is necessary to construct the retaining appliances so that the same force may be exerted at any time if the teeth included in the retainers show signs of moving in a body to their former positions. A couple of small hooks soldered to the disto-labial surfaces of the cuspid bands will hold the intermaxillary rubbers, which will prevent the teeth of that arch from moving forward, providing the rubber ligatures are attached to bands on some of the back teeth of the opposing arch.

The retention of an open bite mal-occlusion that has been corrected is sometimes very difficult to retain. By putting a six-band retainer on the upper and lower anterior teeth and soldering small wires, pointing rootwise, to the reinforcements on the labial of the two retainers, small direct intermaxillary rubbers can be used when necessary to keep the teeth in good relation.

One of the hardest tasks is the proper retention of a tooth that has been moved bodily to its proper position, and is a task that until recent years has bothered the brains of the best operators. The bodily movement of a tooth, being entirely different from the inclination or tipping of the crown of a tooth to its proper alignment in the arch, required a retaining appliance which is built stronger and somewhat different from the ordinary retainers.

Suppose for instance that the operation before the dentist requires that the upper anterior teeth be moved bodily forward, in order that not only the proper relation of the upper and lower anterior teeth be gained, but the upper lip placed in its proper relation to the other features of the face. The forcing of the anterior teeth bodily forward is a task that requires a very strong regulating appliance and the retainer must likewise be exceedingly strong. The bands are put on the six anterior teeth in the same manner as previously described, but those on the incisor teeth should be wider, covering the whole of the lingual surface of each tooth and on the labial they are so trimmed that the small reinforcements are placed very near the

incisal edge. With the exception of making the clasp metal reinforcements for the lingual surface of the bands much wider than for the ordinary retainer, this appliance is constructed in about the same manner as the ordinary six-band retainer.

After the lingual reinforcement has been soldered to position, a couple tubes of 13 or 14-gauge are soldered on the lingual of the cuspid bands in such a way that they will be near the first bicuspid and will point to open tubes which are soldered on the lingual of the first molar bands. In each tube, which should be about ½-inch long, is soft soldered a rigid wire that is threaded and has a nut on it which can be screwed against the mesial end of the molar tube when the appliance is placed on the teeth.

At the time the six-band appliance with the two rigid wires attached to the lingual is cemented to position, the two wires should not be pointing directly to the tubes on the molars, but should be bent in such a way that they will point more to the occlusal of the molars. After the cement has thoroughly hardened under all bands the wires can then be sprung into the open tubes, and by so doing the force applied will be sufficient to keep the roots of the anterior teeth from tipping backward to their original places. By tightening the nuts in front of the molar tubes the incisal zone of the anterior teeth can be kept from retruding.

The above are only a few forms of retainers used to overcome the tendency of regulated teeth to return to their former positions. It is always imperative that regulated teeth be retained and for this reason I wish to impress on the members of the profession the importance of selecting a form of retainer, for the case under treatment, that will not be a retainer in name only.

WHAT ABOUT PORCELAIN.*

BY W. T. REEVES, D. D. S., CHICAGO, ILL.

The September meeting of the Chicago-Odontographic Society was devoted to what was styled an "Operative Dentistry Quiz." A dozen subjects were responded to by as many different men in short papers. The query "What material holds first place in the treatment of dental caries?" was responded to by two well known men—one of

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whom advocates gold foil as the one and only king of filling materials, and early in his paper made the statement: "Today you won't find a man anywhere who has the temerity to advocate porcelain as a filling material." This quotation is from memory, as the paper has not been printed nor access to the manuscript been possible. A large part of the paper was devoted to the traducing of both porcelain and gold inlay, stating that they were the worst effort that had ever been made at saving teeth. Either he was trying to work a colossal bluff or was densely ignorant on the subject he was writing about. So when the chairman of your program committee asked me to present to this meeting a paper on porcelain, the writer felt that there was one at least who had the temerity to advocate porcelain and to claim it to be the king of filling materials.

Porcelain has taken a back seat at dental meetings, both in the papers and the clinics (but in that respect only). The cast gold inlay has the stage and is a winner. Why? Because it is possible to obtain absolute adptation of inlay to cavity, and that is the secret of success in inlay work. Cavity preparation for cast gold inlays should be the same as for porcelain, but whatever the cavity preparation it is possible to make a wax inlay and reproduce it by the cast method and have absolute adaptation, while if an attempt was made to make a porcelain inlay for that cavity it would result in failure because the cavity was not prepared on correct principles for inlay work. A great majority of the dentists who essayed to do porcelain inlays did so without any instructions in principles or any knowledge of the work other than what they gained by seeing an inlay made at a clinic and it is no wonder that failure was the result. An incident happened in the office a few weeks ago that illustrates this point. A prominent man on "automobile row" who married a patient of mine, came to me for dental work—he had in his mouth a dozen or fifteen porcelain fillings and a half dozen porcelain fillings were placed for him, some in the molars and some in the lower teeth. He is a thorough mechanic, understanding mechanics from A to Z; he was very much interested in all the work that was done for him and asked very intelligent and pointed questions about the technique of the work. Nothing had been said about the other fillings he had in his teeth, but on the completion of what we had undertaken previous to his going east to the automobile shows, he made a very complimentary remark about the work and referred to his other fillings. I purposely ignored

the latter part of his remark and spoke in a way that was not disparaging of the other fillings, when he said: "That is very nice of you, Dr. Reeves, to turn it off that way; but I know the other man and how he did his work and I know now he is a dub and don't know the first principles of inlay work." This ignorance of principle governing inlay work, gentlemen, is the greatest obstacle to the advancement of porcelain today. There have been too many who have attempted the work without knowing the first principles governing cavity preparation for porcelain, and without any knowledge of how to handle porcelain bodies or fuse them. Is it any wonder that there have been failures? The greatest wonder is that porcelain won out at all, for it has had the hardest fight to obtain recognition of any material or practice that has been brought to dentistry. Even the ultra-conservative men acknowledge today "that porcelain has come to stay," "that it has its place in dentistry where indicated," "that when used with judgment it will prove a blessing to humanity and to the dentist," etc., etc., and then go on to say "but let me sound a note of warning, don't be carried away by the enthusiast, for if you follow him, dire results and awful calamities will be your portion."

Let me take up and analyze and give you the true status of what some of these ultra-conservative men have to say about porcelain. Your essayist well remembers how he was jumped on, hooted, derided and admonished in the discussion on the first paper he ever wrote, which was read before the Chicago Dental Society, eight or ten years ago, but, gentlemen, when you make statements based on actual clinical experience not of one or two years, but of five to seven years experience, you need not be afraid of the outcome. Those statements stand today, and they acknowledge today that porcelain has a place in dentistry *when indicated.*

Quoting from articles that have appeared in four of our dental journals during the past year, three prominent Chicago men and one from Iowa.

First:

"One of the most recent developments emanating from the ingenuity of dentists is the introduction of inlay work. This has brought about quite a revolution in many offices in the methods to be employed for saving decayed teeth, and while its definite status as a permanent method of practice has not yet been sufficiently established, yet it has demonstrated beyond doubt that within certain lim-

itations it is capable of great service to our patients. It has become so much a part of modern practice that no one can afford to ignore it, and yet with this as with every other innovation there are enthusiasts who go so far in its advocacy and its use as to jeopardize its reputation by their utter lack of conservatism. Inlay work had demonstrated possibilities that cannot be ignored, and if used under its indications and with discriminating judgment it fills a niche in our armamentarium for the preservation of the natural teeth which has never been so satisfactorily filled before by any method at our command. All honor to the men in the profession who have labored to place this work on an established basis. While there is still room for perfecting the technique and simplifying the methods, the fundamental idea of inlay work has been so thoroughly engrafted as to make it an important factor in our every-day practice.

"But it is well for us to pause at the present stage of our inlay enthusiasm and to consider somewhat carefully the probable future of this kind of work. That it has come to stay there can be no manner of doubt. The patients will decide that matter for us whether we will or not, but the thing for us to do is, more calmly than some of us are doing today, to face the real practicability of the inlay as to its permanence and also in comparison with other methods of filling teeth. At the risk of being considered too conservative by many who are firm in their conviction that the inlay is the panacea for all the ills of dentistry, I must affirm that the status of the inlay is not yet established.

"It takes more than a few years to establish the fact of permanence—though the limitations of a process may often be learned in a brief period. In this connection be it said that it did not require many years to demonstrate the fact that porcelain inlays had certain limitations which were inherent in the material itself and which were not sufficiently taken into account by their enthusiastic advocates."

Another one says:

"In offering some criticism on the inlay I wish to be understood as deploring not the judicious use of this method, but its abuse. That the inlay has its place in dentistry no man will dispute; that it has a very great field of usefulness cannot be denied; but it is a fact which, in my opinion, is deplorable and alarming, that we find among our number men who urge, in the most positive manner, the

practically universal use of the inlay to the exclusion of all other methods.

"It is still more a deplorable fact that those men who hold such extreme views regarding the use of the inlay are, for the most part, men of influence, men whose opinions carry great weight. We must not forget that now and then there arises a genius for certain work. Successful as they may be themselves, they are not safe men to follow, and when I see the rapidly growing tendency to abandon the use of the mallet, I deem it my duty, with what litle influence I may have, to sound a note of warning to the younger men of our profession who are more liable to be misled than those of larger experiences.

"And I further maintain that the only safe place for the inlay is in those extreme cases of contour and restoration where perfection with any material is all but beyond the reach of human skill."

Another one says:

"The advent of inlays has without doubt given the profession another and very valuable method of saving teeth from the ravages of decay. That the inlay has come to stay is beyond question. That it is the best filling when it is indicated all will concede, but that what is known as the inlay is indicated and should be used in all places and under all circumstances I doubt, and I flatter myself that I have good company in this opinion."

For such men, men who are not willing to pay the price of study and experiment in mastering an acknowledged good thing, I have only the most profound pity.

The very fact that a thing is hard to master should be an incentive to spur us on to a determination to overcome it. Gold is a hard material to use if you do not rightly use it, but having studied the laws governing its use, and having made yourself master of a technique in accordance with those laws, it becomes one of the most tractable servants, and produces results that are the most permanent that we are able to produce with any material.

The great argument that is made by the inlay man is that the time necessary to make a gold filling is so great that it is too great a strain upon the patient and is not sufficiently remunerative to the dentist. It is too true that most men spend too much time over a gold filling, wearing themselves and their patients to a frazzle and are consequently not able to get a price that is adequate for the time and energy expended; but these things ought not to be. I scarcely ever

keep a patient in my chair over one hour for the largest gold filling, and I have frequently made fillings of gold in cavities in molars and bicuspids in half an hour, and can produce the goods upon demand.

To the last I would turn his argument upon himself and say that if he would devote the same time and energy to mastering the principles of inlay work that he has devoted to mastering gold, that in a year's time there would be very few gold fillings he would be putting in. Gentlemen, did you ever stop to think what is meant by "where indicated" and "with judgment?" The most of the writings you read and the discussion along these lines is simply "playing to the galleries" or "making grand-stand plays." They want to be popular with the great majority, who when they read or hear these things, pat themselves on the back and say, why if Dr. A. says so and so, why I can't be very far out of the way, he ought to know. He does know, but he is afraid it might hurt his prestige in a line of work he had developed in and made a name. Gentlemen, this "where indicated" and "with judgment" means Dr. A. can successfully put in inlays in a certain limited class of cavities, and with him, that is where they are indicated, and anything more complicated or extensive is beyond his ability and to him that class is in the danger zone, and he thinks every one would be "using judgment" where they confine themselves to his classification. Dr. B. has been at it a little longer and made a few more inlays than Dr. A., consequently his manipulative ability is greater through more practice and he can make some of those inlays that were complicated to Dr. A. B.'s horizon is a little beyond A.'s and his "where indicated" and "with judgment" takes in a larger scope of cavities than A.'s. Now Dr. C., on seeing some inlay work becomes interested, and going into the laboratory makes up some dummy inlays and carries the work along until he becomes fascinated, then experimenting and studying he discovers some of the principles and works out some of the problems and as the years roll by his manipulative ability increases and he is using inlays more and more extensively, and each success stimulates to further effort, and to him "where indicated" and "with judgment" means a more extensive range of cavities. Now, gentlemen, who think you, is the best capable of advising you, Dr., A., B. or C. Now it means nothing more nor nothing less with them or with you, than "where indicated" or "with judgment" means what each one of us can perform successfully.

Now another phase of this conservative preaching about abandoning "old friends for new," "monuments that have stood for fifty to seventy-five years and testify to the saving qualities of gold," "loss of manipulation ability through the abandoning of the plugger and mallet."

We will suppose that you are at a convention of traction experts. What would you think if a man should get up in that meeting composed of men who were doing things, who were intensely alive, and to whom electricity and all its possibilities are realities, and tell them to not go back on old friends? That electric currents sometimes grounded, etc., etc.—that the mule cars of our fathers always got there, they were a little slow and tedious at times, but, oh! how reliable. Or if you were attending a meeting of architects and there was a majority of the meeting that could not accept the new departure of steel construction and reinforced concrete, but pointed back to the middle ages to the buildings that took years to build and had stood for centuries—monuments to the architects and the builders of that time. You, as an outsider, would have the judgment to side with the men that were advocating the new. You could see the possibilities and the broadening of the horizon in both fields. Why cannot you do that in your own chosen profession? Gentlemen, I am not afraid to reaffirm that "Porcelain is only limited by the limitations of the operator." I want to give you something to think about. It is a pretty poor excuse to say that this one or that one is a genius in certain lines of work. He can accomplish results, but the great majority can't, so I won't try. Better say what one man can do I can do. So it would be with everyone if they would only put in the time and energy necessary to accomplish that result. "Genius is nothing but the capacity for infinite detail." What do you think of the advice that it is not safe to follow a successful man? Of all the absurdities, that is about the limit, that it is not safe to follow a successful man! And how about this, that the extensive cavities that will not hold a gold or amalgam filling can be saved with an inlay and crowning avoided? Did it ever occur to you that if an inlay will do good services in these desperate cases, that it might do as well or even better in something more simple?

And yet these conservative men that are making "grand stand plays" are making these absurd statements right along, and you are taking them for gospel truth. It is the man that can do things

that really amounts to anything, and is the one you ought to follow. We have the talker with us always and hear him upon all occasions, and they are the ones you should be cautioned against following. If you are in need of dental services in your own mouth who do you go to—the doer or the talker? You go to the doer. Why? You know who can deliver the goods. Why don't you use the same discriminating judgment when it comes to the shaping of the policies of your practice, and follow the doer instead of the talker?

Gold inlays by the cast method are going to do a great deal for porcelain. By this method, taking the pains necessary at each step, they are going to accomplish adaptation, something they never did with porcelain or the gold inlay by the matrix method, and when they have cemented a well adapted inlay into a cavity they are going to get results they never dreamed of. Already a prominent dentist of Brooklyn has written an article on cavity preparation for cast gold inlay. He has been a porcelain inlay man (Jenkins method) for the last dozen years, but it remained for the adaptation he secured from a cast inlay to open his eyes to the fact that it was something different than the growing and box formation or mechanical retention features that so many have tried to load down porcelain inlays with. That was wanted. He is progressing towards the truth, but has only half realized the possibilities of a rationally scientific cavity preparation for inlays.

Another thing gold cast inlays is going to do for the profession—it is going to bring to each one a realization of a truth through personal experience, and a truth learned that way will stick, and no one will be able to convince you that that success is not indicated in a similar place, and the more you pile such cases up the more places you will find that inlays are indicated, and as you gain this knowledge through personal experience you will not be satisfied until you have acquired the ability to handle porcelain just as successfully as you have the cast gold inlay. I have passed around some models and impressions to illustrate some of the places you can use porcelain to restore lost tooth substances.

And now I want to bring out a few points in favor of the porcelain inlay that the gold inlay does not possess, quoting in part from a paper read before the Michigan State Dental Society.

Harmony of Color: Here there is no comparison as to the quali-

ties of the two materials. Porcelain can be made to duplicate all the varied shades of the teeth, so that at a conversational range a restoration of porcelain cannot be detected. Gold is a contrasting color, and its glitter can be seen as far, and often farther, than other features about the face can be distinguished. That gold is tolerated at all in the mouth is one of the strange things, when you come to think of it. It is through indifference largely that gold is tolerated. The American people have become accustomed to seeing gold in the mouths of the majority of their fellows, and constant association brings indifference and tolerance. Some will say that patients like the looks of gold, that they want it, that they want something that looks like money, something to show for the money they have spent to fix their teeth. Contrasting colors would not be tolerated in the restoration of any other lost organ. Suppose a pronounced blonde with blue eyes lost one of them, and a glass substitute had to be inserted—suppose that person was a great admirer of black eyes and insisted that the glass substituted be a black eye—why, such a restoration would look like ———, yes, that is what it would look like, and restoring lost tooth substance with gold looks about the same. The gentle, refined people are fast finding out that something can be used instead of gold and that it will preserve the teeth, and they are demanding that kind of filling. This condition— the people demanding porcelain fillings and forcing the dentist to take up porcelain—is what is going to bring porcelain into general use.

Compatability: Porcelain possesses to a very high degree the quality of compatibility to live tooth. Gold does not possess that quality at all.

Immunity: All materials used for filling the teeth are immune to caries, but porcelain is the only material that brings immunity to adjoining tooth surfaces. The area of tooth surface that is replaced by glazed porcelain brings that per cent of immunity to adjoining tooth surfaces; glazed porcelain will not collect or retain any gelatinous plaques or deposits; all other surfaces, be it tooth, gold or what not, will retain these gelatinous plaques and deposits, and consequently endanger approximate teeth and adjoining tooth surfaces. Approximating teeth that have one of the surfaces replaced with glazed porcelain are protected just 50 per cent from caries, or, in other words, the glazed porcelain brings 50 per cent of immunity to the approximate tooth surface.

And last, but not least, in fact I may say the most important of all, is the material aid porcelain brings in the work of preventive dentistry called prophylaxis. Where any lost tooth substance is to be replaced porcelain is the ideal material with which to make such restoration, for it will do more than any other material in bringing about the ideal prophylactic condition so much desired, and those who are becoming porcelain workers and have entered through the prophylaxis doorway are likely to become the most enthusiastic porcelain men of all.

And now I want to give you a few points as to why the profession should take up porcelain for filling teeth. And to make the prediction that within two or three years porcelain will be back to its old place, and that with renewed power.

First. Do you know any porcelain enthusiast who has mastered the technique and made porcelain a servant but what is successful? Do you know of anyone who has mastered the technique and can use porcelain successfully who is losing practice? On the other hand, do you not know that they are increasing their practice? At the recent Illinois state meeting there were three porcelain men and three who did not use porcelain, at a table dinner. The conversation turned to porcelain, and the question was asked, "Would you advise me to take up porcelain fillings?" The most conservative porcelain man in Chicago replied, "Porcelain has doubled my practice." That is a conservative estimate of what it has done for those who have gone into porcelain. If it will do that for others, it will do as much for you.

Do not let the cement question frighten you. It is a "bugaboo" raised by those who are afraid to go into porcelain. It is true that nothing is stronger than its weakest point, and that cement is called the weak point of inlay work, but with its weak point it is stronger than all that has gone before. Today I think no more about having to reset a porcelain filling than you do when you have to reset a crown or bridge. I will cite the most extreme case of resetting in my practice. Patient A, twenty-two porcelain fillings—Work began June 1, 1899; thirteen resettings, confined to five or six fillings. A year ago I told her that I would not blame her if she was discouraged with porcelain fillings, and if she wanted to we would put in gold. Her reply was, "I don't want anything but porcelain if I am where it is possible to have porcelain put in. It is not half the bother to me that it was to have my gold fillings decay and have to be refilled."

On the other hand, Patient B—and this is only an average case, for many patients never have a filling to be reset—forty-three porcelain fillings put in in January, February and March, 1901; three to reset and only three new cavities in that mouth since that time. How is that for prophylaxis?

You can do more work with porcelain in a given time than you can with gold. Taking the work as it comes in your practice day in and day out, large and small fillings, when you have progressed to the point that you do 50 per cent. in porcelain and 50 per cent in gold you will have gained a technique skill that will enable you to do the porcelain fillings as rapidly as you can do the gold, and when you have passed beyond that per cent. up to 75 or 90 per cent of the work with porcelain, you will be able to save at least 25 per cent in time; or put it the other way, do about 33 1-3 per cent more work. At a very conservative estimate, you can on the average get 25 per cent better fees for porcelain than you would for the same work in gold. Now, this is nothing but a simple matter of cold figures, and if you will put them down and see what it means to you at the end of the year, I think you will decide that it is up to you to get into porcelain.

What would an increase of one-third in the output usually mean? Longer hours or harder work. But in using porcelain and gaining this increased output means just the opposite, for the demand on nervous energy and physical strength is so greatly lessened for both operator and patient that work becomes almost a pleasure, and when work ceases to be a drudgery you enter upon it with all your faculties at their best, and you work to ideals with a fervor and zest that brings its own reward.

POST GRADUATE STUDY.

BY ARTHUR D. BLACK, B. S. M. D., D. D. S.

The Illinois State Dental Society today occupies an enviable position before the dental profession of the country; it enjoys the reputation of being the best organized and most progressive society of its kind. The profession was startled a few years ago when our membership jumped from less than three hundred to more than

*Read before the Northern Illinois Dental Society, October, 1908.

twelve hundred in a single year, and many thought it to be a spasmodic increase that would soon settle back to near the former number. As one, two, three and four years have passed with a constant increase in both membership and interest, other states have come to recognize the real progress we have been making, and almost every state society in the union has discussed the adoption of the "Illinois plan," and many have already reorganized. The September issue of the *Dental Cosmos* contains an editorial in which the following statement is made: "Illinois has practically solved the problem existing between her state society and its subordinate societies, and by so doing has not only developed the largest state dental society in the world, but one which is a power to be reckoned with in all legislative, educational and political affairs affecting the dental profession of that state." There is hardly a dental journal in the country which has not made some favorable comment on the work accomplished in Illinois. As a result, our society is being watched by the profession of the country. Our organization is complete and well established; the system is good and businesslike, and the interest of the members is splendid, so that it has come to be a big machine which almost runs itself.

Now that we are well organized and have proven that we can maintain our membership, what is this organization to do for the profession and people of Illinois? It has already established good fellowship on a basis not known in other states, it has impressed the earnestness and progressiveness of the dental profession on the people, on the members of the medical profession and on our political friends. These have been a part of the reorganization process. We are now ready for the first time to take up the real serious business for which our society exists—to give the people of Illinois better dental service. This means that we must take up in a better way than heretofore the elimination of illegal practitioners, the furtherance of all things which will give our licensed practitioners opportunities to give better service, and give the public a better understanding of our work and teach them to do better their own part in the care and watchfulness of their teeth.

While the society is working along all of these lines and expects to make some progress in all during the present year, it has selected for its principal task the establishment of a post graduate course of study, and for this purpose has adopted a plan which is attracting

quite as much attention throughout the country as did the work of reorganization, and promises to be of even greater value in its effect on the advancement of dentistry. That which recommends this course most is its practicability—the fact that it will place the literature of dentistry in such form that the man who is not inclined to be much of a bookworm can, as occasion demands, find quickly information on any point that may come up in his daily practice. It is believed that the working out of this plan and the use of it by the profession will count for much in the measure of success attained by each practitioner. I refer to that success which means happiness because of the character of the practice established, because of the standing of the individual in his community, because of the financial return. When a man reaches the later years of his life, he should get enjoyment from money which he has earned, he should get contentment from the position which he and his family occupy as helpers in the community, but his greatest happiness should come from the knowledge of things done to benefit mankind.

To attain the greatest measure of success, a dentist should employ every means within his reach to give his patients better service. This should include a good office equipment and never-ending search for more knowledge and better methods. When a dentist who graduated twenty-five years ago visits one of our modern dental schools, he marvels at the present equipment and wonderful advantages offered as compared with the schools of his day, yet we all know that the new graduate of today has most to learn after he begins practice; in fact, his first case will often present something entirely new to him. And almost every day will bring some new thing to the man who keeps his eyes open, but it should be remembered that most of these things which are new to him, are not really new, but have been seen and written about often by others. It is the most natural thing for one who encounters a condition of which he knows little, to seek light on the subject, that he may give proper treatment and be wiser the next time a similar case presents. Now we come to the important subject which I wish to present, a plan by which the dentist can find information on any question that may come up in his daily practice.

At the present time it is almost impossible for one who is so disposed, to get accurate information from our literature. It so happens that we have only a limited number of reliable books on dental

subjects, most of our literature being published in journal form and therefore quickly lost because of its inaccessibility. As the literature of dentistry stands today, even the man who has a large library of our best journals, can make little use of them for the reason that it is very difficult to find articles on a particular subject when he wishes them. This is, I believe, the principal reason why more dentists have not kept their journals and do not refer to those which they have kept. A journal is read more or less carefully when it is received, much as is a newspaper, then it is gone.

The post-graduate course, which is being inaugurated by the Illinois State Dental Society, will, as prepatory work, do three things for the members of the society throughout the state.

First. All articles in selected dental journals will be classified according to subjects. A card will be written for each article and the cards will be sorted into groups for each subject. For example, the cards for all articles on alveolar abscess and its treatment will be in one group; the cards for all articles on gold inlays in another; for gold fillings in another; crowns in another, etc.

Second. The articles will be read by selected men, and the most important points in each will be noted. Cards on various subjects to be studied during the coming year have been assigned to different members of the committees. Each man is expected to read the articles on certain subjects and make notations of any valuable or important points. The reports of the various members of these committees will then be combined and published in the form of a series of questions on each subject, with a memorandum of the places where answers to each question may be found in the journals.

Third. Dental libraries are being established in about forty cities throughout the state, so that the journals used for the course will be accessible to most of the members. Two circulating libraries will also be established for the convenience of other members.

For the planning and management of this course, a committee of three was appointed by the state society. This committee decided to confine its work for the present to certain branches of operative dentistry, prosthetic dentistry, dental pathology, and materia medica and therapeutics. In dental pathology, the eiology of dental caries will be taken up first; in operative dentistry, the prophylactic treatment of caries, to be followed later by cavity preparation and filling; in materia medica and therapeutics, the therapeutic treat-

ment of dental caries, mouth washes and tooth powders, and prescription writing will be considered first; in prosthetic dentistry, the shrinkage and expansion of plaster, the taking of impressions and bites will be presented first, followed by studies of occlusion, occluding frames, etc.

Certain dental journals, the COSMOS, REVIEW, DIGEST, ITEMS OF INTEREST, and the transactions of the state society, each of these for the years 1903-1907 inclusive, have been selected for use this winter by the committee. Sub-committees have been appointed to read the articles in these journals on the subjects mentioned. Each committee will make up a list of questions, answers to which may be found in the journals mentioned, and after each question will be notations indicating where answers may be found. It is the intention that these committees will select the important points in the various articles, so that a dentist who wishes to look up a particular thing will be directed to it at once and can often get the views of several writers on that point without having to read any superfluous matter or even be bothered to look in an index to locate an article on the subject.

To state all of this more briefly in another way, I might say that the dental literature in a few selected journals for the past five years will be classified, read, digested, the valuable parts of each article noted, and the volume and page number of each important statement placed after a question which it answers. It should be understood that a very limited portion of the field of dentistry and only a little of our literature can be covered during the first year, but it is the hope that this work may be carried on year after year, gradually including more subjects and more journals. If this can be done, it will enable any member having the lists published by the committee, to immediately locate the views of a number of writers on any point on which he wishes information.

Let me give an illustration of the practicability of this plan and its value to a dentist in his daily practice. Since I began writing this paper, a dentist who had used too much pressure in forcing carbolic acid through a root canal in the treatment of an abscess, causing some necrosis of the bone, and who had been sued for malpractice, came to me for a suggestion as to how he might fight the case. He was told that he should be able to show that a number of dental authorities recommended the forcing of carbolic acid through the root canal in the treatment of abscesses and that he was follow-

ing their teaching, and I was able at once to refer him to dozens of articles on alveolar abscess, giving him the volume and page number of each, that he might look for his evidence.

So far I have only spoken of the use of this course in those cases in which the individual wished to look up some special thing. The greatest use of this course should be a broader one. It will offer to the dental practitioner a systematic course of selected reading on each subject presented by the committee, enabling him to get at the essential points in a large number of articles in the least possible time. One can thus carry on a definite course of post-graduate study at home.

In view of the fact that many dentists have not formed the habit of studying the literature by careful reading, it is probable that for the present the greatest good to the greatest number will come from the use of this course by our component societies. The arrangement of the course in the question form is especially favorable for this, as it enables a program committee to arrange for the presentation of a subject in a variety of ways. The committee may select a certain subject to occupy one session of a meeting, and they may ask one member to write a paper and others to discuss it. The essayist can then select whatever questions he wishes to discuss and should be able to get the material for his paper from the references to those questions as compiled by the post-graduate course committee. The men who are to discuss it have the same opportunity.

The program committee may choose another plan. They may select ten or more questions on one subject and assign each of these questions to a different member, asking that he look up the answers to the particular question assigned to him. In this way a number may take part in the program, the work of preparation is light for each, and yet the whole will constitute a valuable and interesting presentation of the subject. This plan commends itself for the reason that it enables the member who would refuse to write a paper to do his share in the program with credit to himself, and this several times repeated, should develop the ability to present a more comprehensive writing covering an entire subject. The man who is willing, in the beginning, to do a little, should soon develop habits of study and thought and expression which will place him on the active list in the progressive work of the profession. This should also develop the power to think and watch carefully while operating and to note

those things occurring in his practice which will be of interest to others.

DISCUSSION OF DR. BLACK'S PAPER BY DR. M. L. HANAFORD, OF ROCKFORD.

Dr. Black's paper relates chiefly to the work of the Illinois State Dental Society, its reorganization on broader lines and the proposed course of study designed primarily to systematize the work of the component societies. The state society has been, for many years, one of the most important post-graduate schools in the country, having developed some of the greatest teachers known to dentistry. Some men are natural students. No power on earth can keep them from study; neither poverty nor disease nor hunger nor lack of time can stop them. It is not for gain nor fame that they dig, but just for the love of it. They are "born so," like the man with the black skin. But most of us are not so—we get into ruts, and after a while the rut seems to us to be the great highway, and we swell up in our own conceit—but in just a little while the great procession moves on, and we wake up to find ourselves left far behind.

Societies and courses of study, like the one under discussion, are calculated to raise the ability of the *average man;* and after all it is the average dentist who does the dental work of the world.

A born student doesn't need societies, but you and I do.

I visited the office of a country dentist the other day. He invited me into his operating room. He was doing a common operation in an antiquated way. Asked if he attended certain socities, he answered, "No, he never had, but had been invited many times." There he was, a man of thirty or thereabouts, and absolutely a "back number."

Another young dentist, resident of a large eastern city, in conversation with me, located Dr. Conzett of Dubuque in Chicago, and Dr. Carr, maker of pyorrhea instruments in New York City. Where had that man been for the last five years? What kind of dentist do you want to be? It doesn't matter whether you live in a large city or a country village. The so-called "country dentist" needs to be, and may be, just as capable as the city man.

G. V. Black worked and studied harder when he lived in Jacksonville and had no reputation outside his own state than he does now, when he is known as the foremost teacher in the dental world.

It is up to you and me to "get busy" and do something besides pull teeth and make rubber plates.

I believe the proposed course of study under discussion is the grandest step forward ever taken by a dental society; but whether it helps the average man to a higher plane of knowledge, will depend on the man himself. You can't make the horse drink, though you may lead him to water.

This course of study must be taken hold of with enthusiasm and persistence by component societies and individuals, and then it will be an immense power for good.

If you lack enthusiasm, attend the meetings of the state society, and you'll get some.

REPORT OF NORTHERN ILLINOIS DENTAL SOCIETY CLINIC.

BY DR. GEORGE T. BANZET.

1. Dr. Roach—Hollow cast gold inlay, showing advantages of hollow gold inlay, using suction (wax-carver) for hollowing out the wax.

2. Dr. Reeves obtunding sensitive dentin by compressed air. The mental suggestion of cold air. Dr. Carl, patient, pronounced it a success. Dr. Place performed the operation, which was very successful.

3. Dr. Austin James demonstrated prophylaxis and using planing instruments for smoothing etched and roughened enamel at gingival margins. It was a very interesting clinic.

4. Dr. R. B. Munn—Rapid and accurate process of making crowns, using metalline and commercial disks; excellent and a great boon for country dentists.

5. Dr. Bryant—Tricks in casting attachments and retaining appliances for crowns, bridges and plates, not to be surpassed.

6. Dr. Skinner—Extracting with Acestoria. The teeth were successfully and painlessly removed and the patient overjoyed.

7. Dr. Downs—Cast gold invisible attachments for dummies, using Steele facing. The last lateral attached to the cuspid.

8. Dr. Ames—Silicious cements. Berylite, can be jeopardized by improper mixing, a thin mix shows expansion, a thick stiff mix

shows shrinkage with bad margins. Dr. Ames says not to use vaseline on instruments or filling under any circumstances.

9. Dr. C. L. Snyder— Ascher's artificial enamel, labial cavity, two very excellent fillings.

10. Dr. Place—Ascher's enamel, not using the rubber dam, labial cavity in cuspid.

11. Dr. R. C. Brophy demonstrated acolite for root restorations. Cast gold inlays with his Elgin vacuum machine; extremely practical.

12. Dr. E. H. Allen—Extraction, under nitrous oxide; fourteen teeth were removed at one administration and the patient smiled sweetly as she left the clinic.

13. Dr. Arthur E. Matteson demonstrated electric furnace, using pyrometrix cones as a comparison in fusing porcelain. Literature will be forwarded upon request.

14. Dr. Edmund Noyes—Root canal filling, using Hill's stopping and eucalyptol extract, made by Sander & Son, of Australia, procurable at Sargents'. Dries canals with alcohol, hot air and warm instruments.

THE FIRST PERMANENT MOLAR FROM THE VIEWPOINT OF ORTHODONTIA.*

BY LLOYD S. LOURIE, D. D. S., CHICAGO, ILL.

The first permanent molar has long been the mainstay for anchorage in Orthodontia and, at present is relied upon more generally than ever before. In fact, the loss of this tooth greatly complicates the mechanical difficulties of any extensive treatment. But there are more important considerations of the first molar from the viewpoint of orthodontia, which are of vital interest to the dental profession in general, namely its functions in the development of the permanent dentition.

As I am not attempting to give anything original, I take the liberty of quoting two of our foremost authorities on orthodontia. On page 17 "Malocclusion of the Teeth," Dr. Angle says: "According to Nature's plan of the human denture all of the teeth are essential, yet in function and influence some are of greater importance

*Read before the Chicago-Odontographic Society, December, 1908.

than others, the most important of all being the first permanent molars. They are the largest of the teeth and the firmest in their attachment, which, together with their location in the arches, makes them the most important of the teeth in the function of mastication. By the lengths of their crowns they also determine the extent of the separation of the jaws and length of bite, and in this, as well as in many other ways, are factors in the artistic proportions of the face. Being the first permanent teeth to take their positions in the arches, they exercise great control over the positions which the other teeth anterior and posterior to them shall occupy as they erupt at their respective periods and take their respective positions in the arches. As they are already developed and firmly attached in the alveolar process when the other teeth appear, the latter are built into the dental apparatus around them, as it were. They are not only the most constant in the time of taking their positions, but by far the most constant in taking their *normal* positions." For the above reasons, Dr. Angle has made the first permanent molars the basis for his classification of malocclusion, which is the only one in general use.

Dr. Case, while not accepting this classification does agree that the first molar is the logical basis for diagnosis. Page 129 "Dental Orthopedia," Dr. Case says: "He (Dr. Angle) places the occlusal relations of the first permanent molars as the real guide posts in diagnosis for determining the general relations of occlusion. This should meet with the hearty approbation of all experienced orthodontists. First. Because the occlusal relations of the first permanent molars are usually in distinct evidence when other teeth which might be used as guides have not erupted, or are in decided malalignment. Second. The first permanent molars are the true basis of their respective dental arches, the relative antero-posterior positions of which are largely influenced by the relative mesio-distal positions which these teeth assume in the jaws. Third. With a very large proportion of all human beings—and especially those to whom there have occurred no abnormal disturbances in secondary dentition—the occlusion of the teeth is that which we have learned to recognize as typically normal, while the sizes and general positions in Caucasian races are in comparative harmony with the physiognomies in which they are placed, so that we have always before us a fairly perfect type of normal occlusion and esthetic dento-facial relations. Fourth.

It being true that the relative mesio-distal positions of buccal teeth are dependent upon those of the first permanent molars, in connection with the fact that the first permanent molars are often subjected to early influences—such as the premature loss of deciduous teeth, etc.—which causes them to shift their otherwise normal positions in the arch, we are led at once to the importance of preserving or establishing *early* the normality of these natural piers to the future arches, in order that normal occlusion, natural esthetic dento-facial relations and permanency of retention be attained in the correction of irregularities."

A few photographs of actual conditions will probably best emphasize the necessity for more careful consideration of the first molar as a factor in the development in the permanent dentition.

Case 1.

Figs. 1, 2, 3, case 1, age 5, shows the deciduous arches, in abnormal mesio-distal relation. Also the result of two weeks treatment, and the consequent normal occlusion of the first permanent molars when they erupted.

Figs. 4 and 5, case 2, age 6. A similar case a little farther advanced, in which, from lack of treatment, the first permanent molars are erupting in the same abnormal relations as the deciduous molars. Immediate adjustment of the molars is demanded to insure the best development and avoid complications. In fact with another year's delay and the eruption of the permanent incisors this case rapidly became worse, as shown in the next photograph.

Figs. 6 and 7, case 3, age 8. Isn't it perfectly clear that the first permanent molar is already badly crippled just at the time when it should do most of the child's masticating during the change from the deciduous to the permanent dentition? And with such perversion of function at a critical time, who can estimate the bad

Fig. 4. Fig. 5.
Case 2.

Fig. 6. Fig. 7. Fig. 8.
Case 3. Case 4.

effects on the development of adjacent structures, to say nothing of the general health of the individual. Also isn't it perfectly clear that the other teeth in that arch cannot erupt in normal positions?

Fig. 8, case 4, age 8. The next case shows the same tooth in a similar mal-position, but from a cause even more remote, the first deciduous molar having been lost instead of the second.

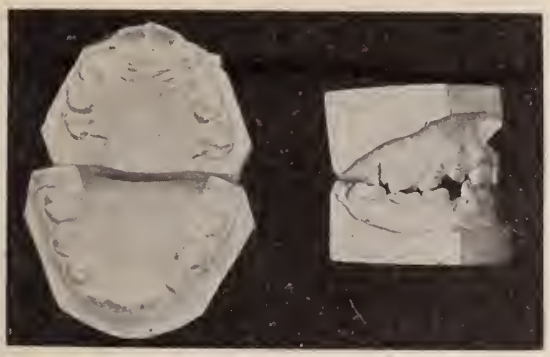


Fig. 9. Fig. 10.

Case 5.

Figs. 9 and 10, case 5, age 8½. This is rather an unusual condition, but will emphasize the necessity of careful supervision of the eruption of the permanent molars even though the deciduous ones may have been in normal occlusion. This tooth was not only in mesial occlusion, but also in lingual occlusion, and rotated.

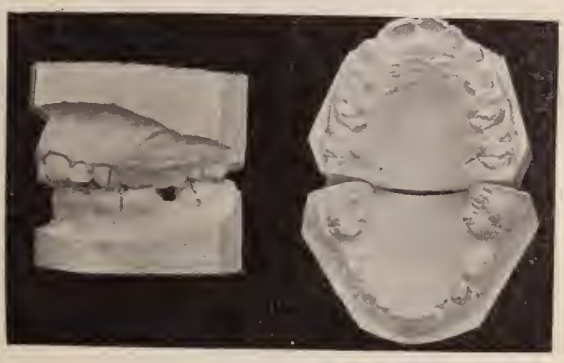


Fig. 11. Fig. 12.

Case 6.

Figs. 11 and 12, case 6, age 8. This case shows a tipping and rotation of the lower first permanent molars due to the loss of deciduous molars. Also rotation of upper molars through occlusion with rotated lower.

Figs. 13, 14 and 15, case 7, age 9. Both upper and the lower left molar are badly rotated, and the mesio-distal relation of the

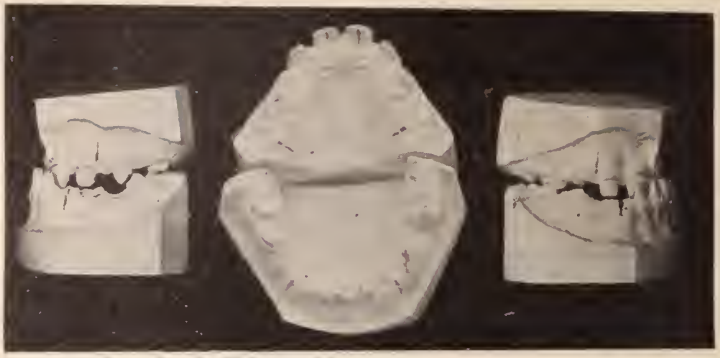
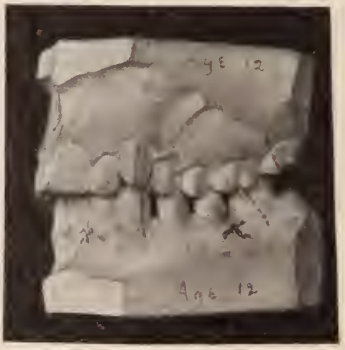


Fig. 13. Fig. 15. Fig. 14.
Case 7.

uppers and lowers is far from what it should be, though the rotation makes it appear elss serious than it really is. Mastication here is practically impossible, and the probable effects of such conditions on the various phases of development are so apparent that comment is unnecessary.

The harm that results from the loss of first permanent molars, either from extraction or decay, has been so much commented upon lately that but three cases will be shown to call them to mind.



Case 8—Fig. 16.

Fig. 16, case 8, shows a variety of results from the loss of the first molar; such as tipping and rotation of the second molar, spacing and rotation of the bicuspids, and contraction of the opposing

arch as well as the one from which the tooth was lost. Similar effects are produced, to a less degree, by the loss of tooth structure in the first molars through decay and improperly contoured filling. Loss of proximal contour allows tipping of the adjoining teeth, while loss of cusps or imperfect restoration of them affect the occlusal relations with the teeth in the opposing arch.

Many points of importance have doubtless been omitted in this paper, and others imperfectly explained for lack of time, but I shall be satisfied if it has in any way emphasized the necessity of guiding the first molar in its eruption, maintaining its normal position and contour, and replacing it as fully as possible when it is impossible to save it.

DEVELOPMENT AND PULP TREATMENT OF THE FIRST PERMANENT MOLAR.*

BY F. B. NOYES, D. D. S., CHICAGO, ILL.

The whole evening might have been spent on the importance of the first molar, but that is not my topic tonight, and I may only touch upon it. I feel like saying that the orthodontist is a student of the relation of the teeth to the development of the face; the dentist is a student of the diseases to which the oral cavity is liable, and that the importance of the first molar in the development of the face has only begun to be realized. I believe that Drs. Cope and Osborne have suggested, or at least implied, if they have not directly stated, that in evolution the great development of the mammalia was possible because they inherited from their reptilian and amphibian ancestors a tooth which was capable of great evolutionary specialization. In the development of first a three-cusp molar, and then a more highly specialized molar from it, that this class of animals was at once placed far in advance of all other animals. The lower first molar is, in some respects, the most highly specialized tooth. Not only to man, but to the animals, the first molar has become the most important tooth, or at least one of the most important, and it seems to me that Nature has in some ways, shown special precaution in the arrangement of the conditions which surround the development of it.

*Delivered before the Chicago Odontographic Society, December, 1908.

The first molar differs from all the other permanent teeth in some rather important respects. The first molar is the only permanent tooth that arises directly from the dental laminae. The origin of the tooth germ for the first permanent molar is exactly like the origin of the tooth germ for all the temporary teeth. All of the permanent teeth which are to succeed temporary teeth arise by buds from the enamel organs of the preceding temporary teeth, the tooth germs for the second and third molars are given off respectively from the enamel organ of the first and second. The first molar is the only one of the permanent teeth which is developed directly from the dental laminae in exactly the same way as the temporary molars. It begins at a very early period in comparison with other permanent teeth. A little before the time that the tooth germ for the ten temporary teeth is completed, the enamel organ of the first permanent molar begins, perceptibly in advance of the tooth germs of the teeth which are to replace the temporary ones. The first permanent molar has a tip of calcification of dentin and enamel as early as the fourth month of foetal life, about the time the calcification has fairly started in the temporary teeth, and the crown is calcified to the extent of practically the whole occlusal surface at birth, so that the mesio-distal diameter of the first molar is determined by that time, and the calcification of the crown is very nearly completed in the first year after birth.

In these connections it seems to me that Nature has provided special precautions in the calcification of the first molar. Under natural conditions the first molar would be formed, and its crown calcified before the individual was thrown into the world to provide for itself, and while it was still provided with food by its parent. Now, under the more highly civilized modern conditions, these very provisions of Nature which attended the development of the crown of the first permanent molar have become sources of danger, and with the very great increase in the proportion of artificial food for infants the first year of life has become a period in which very naturally extreme difficulties of nutrition occur, and these difficulties of nutrition occur very much more largely with infants artificially fed than with those fed naturally. Any disturbance which seriously affects the nutrition of the infant will probably more or less seriously affect the perfection of the formation and calcification of the crown of the first permanent molar. The first permanent

molar, then, under modern conditions, instead of being more perfectly guarded, is to a certain extent more liable to injury from imperfect development of portions of its crown than some of the other permanent teeth. During the period in which the infant is fed from natural sources the dangers of infectious diseases are very much less, as it derives from the secretions of the mother a certain degree of immunity, and the first molar should be perfectly formed, and its crown calcified before the individual is in danger from such diseases as measles and scarlet fever and other germ diseases; so that these contagious diseases which are especially liable to arrest development, and which very naturally affect the incisors, bicuspids and cuspids, are less likely to affect the first molar. This immunity is, however, not present in artificially fed infants. These provisions of Nature seem to me to be rather important, and to point out to us the importance of this particular tooth.

Now practically we find the first molar more liable to decay than any other tooth, especially the lower, and because the first molar takes its position in the arch without having to display any preceding tooth, coming in behind the complete dentition, almost without any disturbance to the individual, it arrives in position, or partly in position, without the parents' notice, and is assumed to be a temporary toooth. The child hasn't lost any teeth; it is supposed to be a "baby tooth," and is more or less neglected. The child is often brought to the dentist with this tooth seriously damaged. This is partly the fault of the dentist, because it is our duty as dentists not to wait until the patients come to us, but to see that the children do come before the first permanent molar has taken its complete position.

In the slides which I shall exhibit I want to follow the development of the first permanent molars from the period of infancy to the completion of the tooth. The photograph of the skull at birth does not show the first permanent molar well. It is very difficult to get around far enough to show that tooth in the upper arch, but you can see the size of the crypt which the lower first permanent molar occupies at this time.

The next one is the skull of a child less than a year old, showing the incisors erupting, with the temporary molars still in their crypts.

The next one is about a year old. Both incisors are in position,

and one molar starting to erupt, and you can see the extent of the calcification of the crown of the first permanent molar and the formation of the root of the temporary molar.

The next slide is about a year and a half. You see the entire crown is formed as far as the gingival line. Notice the size of the crypt in which it lies, and its relation to the crypt of the second temporary molar.

This skull has just lost the lower central incisors. The first permanent molars are in full occlusion, and the roots are not more than half developed, so that the first permanent molar takes its place in the arch in full occlusion, when its roots are not more than half grown. If the crown decays to such an extent that the pulp is lost, these roots will never be completed, and usual treatment of these roots would be impossible. Caries may get a pretty rapid start, and we often find decay in occlusal surfaces practically before half the crown is out of the gum.

In this next slide, between seven and eight years old, all the temporary incisors in the upper arch are gone. The root of the first permanent molar is not nearly complete, and about one-third of its length, having been formed. Certainly by that time many have seen pulps in the first permanent molars exposed and lost, and in that condition the filling of the root canal would be impossible. It often happens that while the pulp may be exposed, or nearly exposed in the first molar in this condition, that careful treatment of the pulp will preserve it for three or four, or five or six years, at least until it will complete the root, leaving the tooth in a condition to be serviceable for the rest of the patient's life. Even if the tooth is preserved until the patient is twenty-five or thirty years of age, it will have been preserved during the period in which it is instrumental in the development of the face. If we take out that tooth we at once lose a portion of the forces which are to lead to the development of the bone, and consequently to the development of the face.

The next slide shows the completion of the roots of the first permanent molar in a patient of ten or eleven years. The time for the completion of the roots of the molars necessarily varies, like all other figures, but very seldom under nine years, and often running into ten or eleven we will find the end of that root with a wide, open end, and up to twelve or even fourteen the root treatment of the first permanent molar is very uncertain.

I think nothing more need be said on the development of the first molar. The things I would like to emphasize are in the first place, to prevent caries, and secondly the possibility of the preservation of the pulps of badly decayed first molars until the roots can be completed. Often when the pulp is so seriously congested or infected that its ultimate loss is certain a portion of the pulp may be still kept in a sufficiently healthy condition to complete the calcification of the root, before the loss of that pulp is absolutely necessary.

THE FIRST PERMANENT MOLAR. FILLING PREVIOUS TO FULL DEVELOPMENT AND AFTERWARDS.*

C. N. JOHNSON, M. A., L. D. S., D. D. S., CHICAGO, ILL.

The importance of preserving the first permanent molar has been sufficiently emphasized by the previous essayists, and yet I cannot allow the occasion to pass without the remark that I deem this to be one of the most vital questions bearing on our duties to patients at present before the profession. If then the preservation of this tooth is so important we should study carefully the best means of attaining the end, and it is to a brief consideration of this phase of the subject that I invite your attention.

The chief problem in saving these teeth is to get the patient early enough in life and watch the teeth at intervals from the time they are erupted. Every practitioner should therefore make it a point to so educate the parents of children—particularly the mothers—that the teeth are examined by the dentist at stated periods even before the permanent teeth begin to appear. If this is done there need never be any doubt about the preservation of the tooth under consideration. In cases of great susceptibility to decay, and where there are extensive developmental defects in the teeth such as deep fissures, etc., it is well to take preventative measures against decay on the earliest appearance of the occlusal surface through the gums. The period elapsing between the first appearance of the tooth and its growth to full occlusion with its opposing tooth in the other jaw is a hazardous one in these susceptible cases. Frequently we find deep cavities in the occlusal surfaces before the tooth has attained its full

*Read before the Chicago-Odontographic Society, December, 1908.

growth. This can largely be prevented if we take the precaution to protect the occlusal surface immediately on its appearance by washing the enamel with alcohol, drying out the fissures and forcing oxyphosphate of zinc or oxyphosphate of copper into them, covering the entire occlusal surface out to the marginal ridges with the cement. As soon as the teeth grow to full occlusion the friction of food in mastication minimizes the danger of decay except in the deep fissures, and these may be kept filled with cement for years if necessary till the period of immunity approaches. After an extended practice in this procedure and a close observation of its results I am convinced that it is a most important preventive measure and one which the profession would do well to follow.

In case the patient is brought to the dentist only after cavities have formed, the best means of checking the decay is often a question to puzzle the conscientious operator. The selection of the filling material must be based upon the necessities of the case rather than upon the individual preference of the practitioner. In every operation for filling it should be the aim to make the work as permanent as possible. This increases respect for dental service and leads to a higher appreciation of its value; but this high ideal must never be sought at the expense of the fortitude of the child. To insert a beautiful and lasting gold foil filling in the molar of a child of ten years of age and by so doing develop such a dread of the dental chair that it is a nightmare to him ever after, is not good practice.

Please remember that it is more difficult to insert a good foil filling at this early age than it is later in life, even aside from the question of stamina on the patient's part. In children the jaws tire more quickly during operations and there is the constant tendency for the mouth to drop shut. The roots of the teeth are not fully developed and the apical ends are missing, leaving a pulpy mass of tissue with a relatively thick pericemental membrane to support the tooth. A tooth in this condition renders the blow of the mallet in condensing gold partially ineffective, to say nothing of the pain and possible injury to the tissues. The insertion of gold foil then in any appreciable bulk in the molar of a child is generally contra-indicated.

In fact in many young children the proper preparation of the cavity for the insertion of metal fillings of any kind is out of the question. The only procedure possible is to effect a removal of the carious tissue as adroitly as may be and insert cement or gutta-

percha. But these cases must be carefully watched and more permanent operations made as soon as the condition of the child and the tooth will permit it.

In those instances—all too frequent—where decay has been allowed to go on extensively and large cavities have occurred before the patient is brought to the dentist, the very best and most practical means of saving these teeth is by the use of the gold inlay. This method has come to the profession as a benefaction in these particular cases where so much is demanded of a filling and where there are so many obstacles in the way of performing a perfect piece of work by ordinary filling methods. The gold inlay properly applied will obviate the necessity of crowning these teeth in many instances, and this is a distinct advantage when we consider the possibility of gum irritation by the edges of bands on crowns.

While the condition of the pulps of these teeth is being discussed in another paper this evening, it might seem appropriate for me in passing to urge upon dentists the great necessity for preserving the pulps alive if possible till the formation of the roots is complete. The loss of the pulp while the roots are still imperfectly formed so jeopardizes the future usefulness of the tooth that it should be considered a vital matter, and the offhand destruction of pulps so frequently resorted to should be discountenanced.

To sum up: Prevent decay in these molars if possible by closely watching them and protecting them. If decay occurs stop it at the earliest moment. Employ permanent procedures if practicable, but in any event stop the decay and watch the case. In badly broken down cases use gold inlays in preference to crowns. Save the pulps alive if possible, but even if pulps are lost never give up a first permanent molar while there is a fighting chance to save it.

PROCEEDINGS OF SOCIETIES.

AMERICAN DENTAL SOCIETY OF EUROPE, MEETING AT LONDON, AUGUST, 1908.

DISCUSSION OF DR. LAW'S PAPER, "SOME PRINCIPLES OF RETENTION."

MR. A. C. LOCKETT, London,

Complimented Dr. Law very highly on his paper and his beautiful slides and models. The question of retention, Angle's classification, Class 1, was comparatively easy, inasmuch as it resolved itself into a

matter of lateral expansion and rotation. The great difficulty experienced in Great Britain was to see the patients periodically and as regularly as one would like to see them. He had had a very great deal of difficulty in retaining his Class 2 cases, but wherever he had had fair play in the matter of seeing the patients things had been simplified considerably. Dr. Law's method of retaining Class 2 cases by using a small rubber ligature as an auxiliary was a very good one, inasmuch as it assisted in keeping the mouth closed, which was a very important point not only from the point of view of the teeth and the jaws but of the muscles. The forces that were really responsible for distal occlusion were most emphatically the depressors of the lower jaw brought about by the open mouth, nasal stenosis necessitating the open mouth. The use of a rubber ligature enabled to muscles to get into normal working condition. Dr. Law had said that in most of the Class 2 cases the jaws were not underdeveloped or over-developed. He himself thought they were certainly abnormally developed in both cases, because in the upper jaw there was a very marked protrusion, lateral pressure from the muscles resulting in the anterior teeth going forward in the direction of least resistance. In the lower jaw as the result of the depressions of the hyoid bone the angle of the jaw was most decidedly altered. He quite agreed that the matter of retention was the most serious the dentist had to deal with; it necessitated a great deal of thought and time in the treatment of each case, not only in the adjustment and making of them, but in the careful watching of the cases from time to time to see that they were really settled in their proper positions and that the muscular forces might have fair play.

Dr. George Northcroft, London,

Said it had seldom been his lot to see such delicate appliances used for orthodontia work as those shown by Dr. Law and in the future he should certainly endeavor to copy a great deal of what he had seen. The idea of retention by intermaxillary force was quite a new one to him and he thought the theory was sound. A paper that brought up so many points required very careful study before any definite pronouncement could be made upon it. One thing he noticed in the models shown was that in the case of retention by intermaxillary direction the hooks in the region of the upper cuspids seemed to be a little too far forward and had the effect of bringing pressure to bear on the upper premolars. That, he thought, was

somewhat dangerous if the rubber retention was to be maintained for any length of time. He also felt that he was perhaps a little precipitate in saying that the jaws were never under-developed but only irregular in outline, the arch remaining the same length and always being normal. Most dentists knew of those conditions where a second premolar was squeezed out of the arch, and it seemed to him in a case of that kind there must be under-development of the bone of the jaw and the jaw itself had to be enlarged.

Dr. W. A. Spring, Dresden,

Said the essayist explained that one part of the inferior maxillary bone had to be moved and great care had to be taken that the other part should keep its correct position in the fossae, but he had not made clear how that was done.

Dr. Law

Said the main thing in treating Class 2 in his experience was never to have the condyle out of its position in the treatment. A great many practitioners and patients had told him that in the treatment of Class 2 they got the arch the shape they wished and made the patient bite forward, and in a great many cases the patient had been told to bite comfortably forward and ligatures were used too heavy for the patients to bite distally. Four or five ligatures had been used on the side when a half of one was all that was necessary to start with, especially when treating patients 7 to 9 years old. In treating a case fifteen or sixteen one ligature might be used, but never more than one under any consideration whatever. He believed that was the secret. The treatment of Class 2 was always to keep the condyles in their original and proper place and use extremely light ligatures. The depression of the anterior teeth was accomplished by the different springs given to the arches, and as the springs came forward and the condyles remained distal the bone must become re-formed, and the teeth when they came into normal occlusion had no distal bite forward, because they had never had any forward bite.

CHICAGO-ODONTOGRAPHIC SOCIETY.

The regular monthly meeting of the Chicago-Odontographic Society was held on Tuesday evening, December 15, 1908, at 7:45 p. m., in the Chicago Public Library Building.

The president of the society, Dr. Fred W. Gethro, occupied the chair.

The program of the evening consisted of a symposium on the "First Permanent Molar," presented in three papers, as follows:

"From the Viewpoint of Orthodontia," by Dr. Lloyd S. Lourie.

"Development and Pulp Treatment," by Dr. F. B. Noyes.

"Filling Previous to Full Development and Afterwards," by Dr. C. N. Johnson.

DISCUSSION.

DR. EDMUND NOYES:

Mr. President: Forty years ago last spring, I read the first paper before the Chicago Dental Society that I ever read, and it was about the first permanent molar. I am not going to tell you what it was, for I have forgotten, except one thing which I am not ashamed of. It was a time, if you remember, when the first permanent molar was very generally sacrificed, and when we had a celebrated dentist in Chicago who took out the first molar for a large proportion of his young patients. I am rather glad to be able to say that the principal purpose in view in my paper was a plea for the preservation of the first permanent molar to the fullest extent that it was possible to preserve it.

DR. G. V. BLACK:

Mr. President, there is so much to be said on this question and the other questions raised this evening that it is difficult to know what to say. We have the view of the orthodontist, which is always the more conservative view regarding these particular teeth, and necessarily so, from the position which he occupies, for this tooth if by far the most important tooth in the development of the features, and to lose it is always to lose that prominence of the features that would have been present if the development had been normal and which is so essential to the full facial expression.

Now, I want to bring this thought prominently to you. There is a period that we will properly term the childhood period of the permanent teeth, and the necessities during that period should be well known by every parent in the country, for it is this period that is so very dangerous to the development of the teeth, and to the development of the features, and thus to the success of the person in life. For this reason we should direct the whole energy of our pro-

fession to the teaching of the necessities of this period. This childhood period, and the development of the permanent teeth, so far as our management is concerned, begins at the time they first appear through the gums, and continues until the roots are completed. I mean to say that it continues until the apical foramen has been narrowed to such an extent that we may make a good, safe root filling, which is seldom earlier than 12 or 14 years, although many teeth are filled earlier, and last for a time. This makes it especially important that the childhood period, and the necessities of it should be made well known in our community. I have to send children to the extracting room every day because of the ignorance of the parents. It makes me heart-sick to do it because I know the injury that is being done to those children, but if we cannot do our best, we must do our next best.

I have made many fillings in first molars with gold filling at 8 years of age, and the result showed that I did the best thing. We cannot do that with every child. We must discriminate carefully, and we must not undertake to make a gold filling unless the conditions are such that we can do it well, and without breaking down the fortitude of the child. Preserve the child's courage always, but when the conditions are such that we can make a gold filling we should not hestitate to make it, if the child is 8 or 14, for it is the best thing. When you cannot do that do the best you can with a temporary operation.

Dr. J. H. Woolley:

Mr. President, I am very glad to see the devotion of those who have spoken tonight in the way of saving the first permanent molar. If we would follow the dental literature of the past as regards the treatment, and the removal of the first molar, we would see that it is fallacious, and many bad results have we discovered.

I recall writing a paper twenty-five years ago for the Chicago Dental Society on the first permanent molar. I wrote that paper with great fear, because I was advocating the saving of the first permanent molar, and at that time it was not as popular an idea as it is today. If anyone would follow the literature he would be very readily convinced as to why the first molar should be preserved. One very logical reason is that it keeps the jaw in position while the teeth are developing.

Now, I would like to have the trend of thought expressed as

regards the treatment of the first permanent molar when the tooth has become so decayed that the pulp is exposed, and particularly at the time when the roots are not fully developed, for if an attempt is made to destroy that pulp it is fraught with danger, and if the pulp had been killed by a slow process, and removed thoroughly from the canal the difficulty in filling is such that being extended beyond the end of the root it is liable to produce inflammation and finally loss of the tooth. What we want to get at is the best treatment and the preservation of that pulp in its early stages. I think those who have had experience in these cases should make some suggestions to us young men of the profession. I would like to hear something from Dr. Hinkins, because I think he has had quite an extensive practice among children.

Dr. L. L. Burroughs:

Mr. President, I was asked to discuss this question from an orthodontist's standpoint. The paper takes up the matter as fully as can be expected in the time given.

There are two points I wish to refer to. Both authorities quoted tonight agree that all the teeth are necessary to the esthetic appearance of the face. Why not start our treatment early, and get the development so far as we can into normal paths? The jaw can be moulded into any shape whatever. If we start early we can keep the teeth in their normal relations. It is impossible for nature after it has once got behind in development to catch up. A great many have advised waiting until nature has done it. If nature has got behind, can you expect her to catch up at all, or is she going to fall farther behind? I think you will find that is the case in most instances. With the assistance of an orthodontist in the start these cases can be brought into a normal condition of development.

Both of these authorities also agree that the relation of the first permanent molar had to do with the relation of the rest of the teeth as they develop. I want to say also that the relation of the permanent molars themselves is dependent on the development of the deciduous teeth, and it is just as important to watch them as it is to watch the first permanent molars themselves.

I have a few statistics that I want to give you, and you may draw your own conclusions. Dr. Lourie stated that in forty-five cases in his office, where the first molar was extracted there were nine uppers and thirty-six lowers. I have taken the trouble to get the

statistics of an extracting specialist, and have found that of the three permanent molars that are extracted the proportion is 212 uppers to 58 lowers. The first permanent lower molar is extracted in relation to the upper 39 to 9. That tooth is extracted, and allows the other two teeth to come into their positions without any interruption, but the other first molar is retained in most cases, and the third molar gives trouble.

I want also to say that in 284 extractions of the third molar I found five uppers with normal shape in every respect, and the balance were either deformed in root or crown or both. In the lower three molars the crown in 500 cases was normal in form, but the roots were deformed.

There is one thing that I wish to take exception to in the paper, to the effect that first molars are most constant in taking their normal position. I cannot agree with that at all. In the majority of the cases we treat the firsts are not in their normal relation. In almost all of the lowers, they are either too far lingually or too far distally. It is the bicuspids, incisors and molars that are out of position, and the bicuspids come down more nearly in the natural position than the first molars.

Dr. T. L. Grisamore:

Mr. President, Ladies and Gentlemen. I think I will be safe in saying there is more injury done to the permanent dentition through the loss of the first permanent molars than any other teeth in the denture and this danger is multiplied if the deciduous teeth have been prematurely lost. If such is the case there is a time when the distance between the jaws is dependent entirely upon the first permanent molar and it standing alone.

Now if these teeth be lost through any cause we have a closing of the jaws which prevents a full development of the remaining permanent posterior teeth and as a result the dento-facial area will have the appearance of an edentulous individual.

Again if these teeth be missing, as Dr. Lourie has pointed, out the principal support for anchorage for the correction of any mal-alignment or this close bite mal-occlusion is gone.

If the lower first molar be lost we will often have a distal movement of all the teeth anterior to the space and if there exists a complete denture above, the lower lip will come in contact with the cutting edge of the upper incisors the labio-mental condition which

might easily be taken for a protruded upper instead of a retruded lower upon slight observation.

When the upper first molars are lost and all the teeth are present in the lower denture, we often have a condition which is harder to cope with and one in which far more injury is done to the teeth than in the loss of the lowers. When the teeth anterior to the space drift distally, if there is an over bite as there usually is, in these cases, the lingual plate of upper incisors comes in contact with the labial plate of the lower, causing a destruction of tooth structure in such a manner as to make it almost impossible to be replaced.

As soon as possible after these teeth are lost, especially in young individuals, we should either hold the space by inserting an artifical tooth or we should close the space by means of some device which will not only tip the teeth bringing the occlusal part of the crowns in contact leaving as shaped space and poor occlusion but should be corrected by some device which will move the roots as well as the crowns and something with which the force can be applied in such a manner as to cause the greater amount of movement in second molar if we see there is a tendency for the teeth anterior to the space to drift distally as if we wish to hold them in their present position.

Dr. Arthur D. Black:

Mr. President, I would just like to say a word on one phase of this subject. It may answer the doctor's question, as to what can be done with these first permanent molars in which decay has reached the pulp, and the pulp is yet alive. Suppose a patient eight or nine years old presents with a decay which has extended to the pulp. This is the age at which we have the best opportunity to cap the pulp, and it is almost the only time that we are justified in doing so. I refer to a case in which we make an actual exposure of the pulp, and then put some kind of capping over that exposure. If the capping causes a little irritation it would naturally result in an excessive amount of blood in the pulp, but there is slight danger of strangulation of the pulp at the apical end, as there would be if the same thing were done when the apical foramen had been fully formed. We have in such cases the best opportunity to cap the pulp, and make that capping successful, on account of the fact that apical opening is as large as the root and the circulation is free. In the treatment of such cases I would say that we ought to always remove every bit of carious dentin. I believe that in every case in which we do not do so, the

pulp will die as a result of the toxins which will be thrown into it from carious dentin. We stand a better chance to save the pulp if we remove all the decay, and then make a capping. The reason we are justified in taking that chance is on account of the condition of the apical end of the root.

There is one other thing that I want to mention, from the standpoint of orthodontia. We are today regulating teeth much earlier in the life of the patient than was the custom a few years ago. This necessitates placing bands on the first permanent molars, and the placing of those bands under conditions which are not the best. There are two cases which have come to me recently of lower molars, with buccal and mesial decay purely as a result of regulating bands. I know that it was on account of the bands for the reason that the line of decay has extended around the angle of the teeth from the buccal to the mesial surface, a condition we do not find under ordinary conditions. We cannot be too watchful to be sure that we have cement under the bands to protect the enamel from injury.

Dr. F. B. Noyes:

I want to say a word more in regard to the capping of pulps in the first permanent molars. I don't think I said what I really wanted to. The doctor emphasized the fact that you can have a better chance in pulp capping in the first permanent molar than anywhere else. I simply want to make that stronger. If I had some microscopic slides of pulps here I could show you that pulp tissue is different. In these pulps of young first molars before the roots are formed, there is a great number of cellular elements, which constitute a more energetic tissue than after the root canals have been completed. It is more the character and quality of tissue in other places of the body. It has more vital resistance, and has more vitality than it has in a later period, when its vital functions have stopped. As a biological problem, we have every reason to believe that if we can put the tissue in a biological and functional condition, it will not only retain its vitality, but recover from a certain degree of inflammation. You would not expect the subcutaneous tissue to get over an inflammation if you left a rotten splinter of wood in it, or other irritant, and you would not, therefore, expect the pulp tissue to recover from this inflammatory condition, if we leave an irritant in the shape of decomposed dentin contining micro-organisms. On the other hand, if you take out any irritant from that tissue and leave clean dentin, and

then cover that tissue over after washing it out with a mild, non-irritating, antiseptic that will help to relieve any infected condition that may be in the actual pulp tissue, and then simply leaving the tissue clean, and cover it over in such a way that it will be perfectly protected, we would expect the tissue to continue to carry on its vital action in a normal way.

I certainly believe that if these cases are treated with clear, consistent, logical appreciation of the biological conditions, that we can preserve the health of the pulps exposed in first molars, and not only get the completion of the root, but have that exposure covered over be fairly normal dentin, in a normal manner, in the further development of the tooth.

Dr. J. P. Buckley:

Mr. President, there are many in this audience who appreciate the biologic aspect of this question, as explained by Dr. Noyes, but I think the thing uppermost in our minds is that we would like to know what that non-irritating substance is with which Dr. Noyes caps the pulp, and I would like to have him tell us the agent he employs in that pulp-capping process.

Dr. F. B. Noyes:

I can tell you what I would do. In the first treatment of a case presenting decomposition of dentin, so that the actual pulp tissue was exposed, it is almost invariably possible to operate under the rubber dam, and to remove first, all of the carious material with round bladed, spoon-shaped instruments that will not jam into the pulp, but will run over it, and not injure it. After every particle of softened dentin has been removed from that cavity, wash it with tepid water, or normal salt solution. Place the saliva ejector in the rubber dam and allow the stream to flow through the cavity and be carried away by the ejector. Wash out the whole cavity with a thorough irrigation, and if the pulp has been inflamed, and aching, I believe it is better to give it a temporizing treatment, and in doing that I would use either oil of cloves or one, two, three. This is done by moistening a little pellet of cotton with oil of cloves, so that the fibre is full of it, and laying it over the pulp. Warm a piece of Hill's stopping and flatten it out like a wafer between the thumb and finger. It should be large enough to lap well on the dentin around the exposure, but not nearly fill the cavity. Warm this, just touch one surface to a drop of eucalyptol or oil of cajaput, carry it

to place and go around the circumference with a ball burnisher, sticking it to the dentin. Then fill the cavity with pieces of gutta-percha so as to avoid pressure on the pulp. Even if the application of cloves is made for the first time, even without removal of the dentin at all, it will usually stop the pain which is present in the tooth. Then suppose you employ a treatment of cloves, and leave it for a week, and it does not make any trouble. Then adjust the rubber dam, taking out enough gutta-percha so that you can get the rubber dam on, but don't take it all out. Get it dry, and then remove your gutta-percha. Then use your Hill's stopping preparation, without anything else under it. After a little covering has been placed over the actual exposure, put a little cement over it. Then Hill's stopping will keep the phosphoric acid out of that tooth, and will save the patient from having a howling tooth-ache. Then after that is hard, you can fill the cavity with any material that is indicated. I know that that procedure will give results. I know one case in which the pulp of the lower first molar was entirely exposed and treated in that way, and then filled with oxy-phosphate of copper for two years and finally the oxy-phosphate of copper was removed, and it was filled with gold. When it was removed and the gold filling put in I took off everything, and there was no exposure of the pulp. There was dentin formed, which covered the previous exposure.

Dr. A. D. Black:

In giving the technique, I think Dr. Noyes made one misstatement when he said that he has the cotton saturated with the solution. It is very difficult to seal that cavity with gutta-percha if the cotton is saturated. After the cotton has been dipped into the medicament it should be pressed against another piece of cotton, or a towel, to remove most of the drug.

Dr. Noyes:

That is the idea that I wanted to convey. It should not be filled with the oil. This point is absolutely essential, because unless you do that the gutta-percha will not stick to the dentin.

Dr. J. P. Buckley:

I dislike to enter into this discussion, and I wish that I had left the room before Dr. Black spoke. I have enjoyed these papers, especially the off-hand talk by the man by the name of Noyes, and who is always "noisy" in his practical and logical discussion. The thing that I must take issue with is the statement of Dr. Black, and

another statement emphasized by Dr. Noyes in his latter remarks, and that is whether it is absolutely essential to remove, with the tooth aching and the pulp inflamed, all of the decalcified dentin. I am frank to admit that my little patient with a pulp hypersensitive, dentin seemingly more so, will not permit me at the first sitting to remove all the decalcified dentin, even though I do have that nice sharp excavator to which Dr. Noyes referred.

Dr. Black said he would remove all of that decalcified dentin, regardless of the exposure it makes, and yet his end in view is to save that pulp. I want to tell you that that delicate pulp tissue, however well supplied with blood because of the large apical foramina, will not tolerate too much abuse, and if you expose it too much in the removal of that dentin that pulp is going to die sooner than you hoped. It is not necessary, ladies and gentlemen, and I question whether it is advisable, to remove all of that decalcified dentine over the pulp, if your end in view is to save that pulp. We have remedies at hand which are non-irritating to the pulp, and which will absolutely destroy microörganisms, not merely check their growth and activity, as oil of cloves will do. Black's 1-2-3 ought not to be used because of the cassia it contains, one of the most irritating of the essential oils. We do have remedies at our command which will absolutely sterilize all of the calcified dentin over that pulp. If in your effort to remove that carious dentin it becomes necessary to expose the organ extensively, then a hundred times would I prefer to seal some agent in the tooth over that pulp which contains thymol to sterilize the dentin, and then at a subsequent sitting cap the pulp as described by Dr. Noyes. If you are going to expose the pulp to any great extent, I do not care how delicately you may cap the organ, it is going to die before the roots are fully developed.

Dr. F. B. Noyes:

The last speaker has made me think that it is necessary to go still more into detail. I believe in the majority of cases the little patient will come to you with a howling toothache, and at a time when you are so busy that you cannot do much. The first thing you will do will be to dry it as well as you can in a quarter of a minute, more or less, put into that cavity a pellet of cotton absolutely saturated with oil of cloves, and put on top of that a pellet of cotton saturated with varnish or anything else that will keep the air out until you see it again. That is the logical procedure. It will stop the

toothache, and will give you a chance to go on with your work. Before you get to the capping stage you have to get rid of the decalcified dentin. I do not care what you do with that tissue, a decalcified dentin matrix is as much a foreign matter as if you put a piece of wood in. I do not care what you treat it with, I do not believe you have as good a biological condition there as you have if you take it out and get down to healthy tissue. One familiar with histological technique knows how difficult it is to entirely remove acid from decalcified dentin, and acid is a severe pulp irritant. It would be as logical to say, if you were treating a case of carious bone, that you had better leave a piece of softened bone in there so as not to injure the healthy tissue. You had better cut off half an inch of healthy bone tissue, and leave perfectly healthy tissue in the normal rather than leave some result of the diseased condition.

All I have to say in defense of oil of cloves and 1-2-3, is that I have used them fourteen years, and have had pretty good results from them. There may be other agents that will do as well, but I simply state what I have used.

Dr. A. D. Black:

I did not say that I would put on a rubber dam at the first sitting, nor did I say I would remove all of the carious dentin at the first sitting. I was trying to be as brief as I could. The point I was trying to bring out was that before I would cap the pulp I would remove all of the carious dentin.

Dr. Buckley:

I dislike to split hairs, but when we are discussing filling root canals or capping pulps, I do like to hear a man come right out and say what material or agents he uses.

Dr. Noyes thinks that decalcified dentin is as much a foreign material as a piece of wood. I do not dispute that it may be foreign, but it is not as foreign as the foreign material he uses with which to cap the exposure. His analogy of necrosed bone or sloughing tissue is not a true one. In the one instance you can sterilize. You have come nearer to what Nature will subsequently do by throwing out secondary dentin. That dentin is not foreign to the pulp, and the pulp will tolerate it much better than any foreign material you can use as capping material.

I have said before, and I say again, that some micro-organisms are happy in oil of cloves. Oil of cloves is what I consider to be an

ideal disinfectant if you are dealing with live tissue. If live tissue is infected you can come about as near sterilizing that tissue with iodin and oil of cloves as anything I know. Oil of cloves is just sufficiently irritating to act as a stimulant, and if you stimulate the animal cells of tissue which is invaded by a vegetable cell (microbe) you give to the animal cell new life, and the animal cell will kill the vegetable cell. Where you are trying to kill the vegetable cell in the dentin of a tooth, where that vegetable cell is removed from the animal cell, and where by stimulating the animal cell there will be no effect as to destroying the vegetable cell, then I say the oil of cloves is in the very lowest scale of antiseptics.

Dr. G. V. Black:

Mr. President, I have been very careful for years to cap pulps and learn the results, and I want to say to you that whatever you do in the way of capping the pulps that have been exposed to carious dentin, the great majority of them will soon be dead pulps. But it is capping the pulps during the childhood period that we are talking about tonight. We are justified in running great risks in trying to save those teeth.

Now there is nothing that I have ever found by which you can sterilize decayed dentin without also poisoning the tooth pulp, and there is nothing that is worse poison to the tooth pulp than decayed dentin.

In regard to antiseptics, I am glad to have heard what was said about oil of cloves for sterilization of tissue. It is exactly what we need before capping the pulp. It arouses the energy of the tissue so that it is enabled to dispose of the micro-organisms that may be present. If the pulp is nearly exposed, and there is imminent danger of exposing it with your instrument you are not justified in placing anything over it permanently until you have removed the last trace of softened dentin. My records show me that it is an actual fact that carious dentin left near the pulp, when not exposed, is a dangerous thing to the pulp because of material in it that is poisonous to the tissues, and will work destruction after you have made your filling. The next thing you know there will be a crop of alveolar abscesses. I have a record of every operation that I ever did in my life except for one year, where fire destroyed the book. I think I know pretty well what I am doing. I leave no more any decayed material in any cavity I fill because my pulp is safer exposed.

My knowledge in this matter is the result of long years of careful work and experience in capping pulps, especially for children.

Dr. Buckley has referred to the use of cassia. I desire to state that I haven't seen any cassia in the market for nearly ten years.

Dr. W. H. G. Logan:

Mr. President, each man has been describing what he really does in practice, so I will simply describe what I think is good practice. I think if you really intend to save the vitality of a pulp you should always retain your remedy with cement, providing the cavity is exposed to occlusal stress. I look upon cotton or gutta-percha as not a good material to retain your remedy in such a crown cavity, for it results in a condition that allows the pressure of mastication to force the irritated properties found in carious dentin into the pulp. That is one reason that I always employ cement in such cases.

I understand Dr. G. V. Black to state that most pulps die when exposed to carious processes. I believe he would be willing to say that the rule is that all pulps ultimately die even with or without treatment when the pulp has been exposed as result of caries. The rule is that pulps that have been exposed by the carious processes have also become infected and an infected pulp ultimately dies.

However, I would not take out the pulp in the first permanent molar, because I found an exposure where the ends of the root of this tooth had not perfectly formed. With the exposed pulp in a tooth whose roots have not fully developed I would cap the pulp; with the understanding on the part of the patient and parents that the pulp would probably die, but that I want it to remain alive as long as possible to aid in the development of the ends of the roots.

I believe it is possible to leave tooth substances between the cavity and the pulp wall that has been involved by caries, and yet the pulp remain alive; providing that you leave even a very thin wall of dentin that has been involved by the process and have applied appropriate treatment to overcome the irritating properties found in carious dentin.

In reference to the use of oil of cloves, I believe it is one of the best anodyne remedies we have, and is appropriately used in hyperemia and nonseptic inflammation of the pulp. However, we should not make the mistake of using one remedy to sterilize the dentin and the pathological condition found in the pulp; so to your oil of cloves

add some phenol or thymol to overcome the condition found in the carious dentin.

If you leave a wall of carious dentin that is fairly solid and destroy the irritating properties in it what harm will it do to the underlying pulp? The question is can the irritating properties of dentin be thus reduced? As I look upon this subject the whole question hinges upon the possibility of controlling the irritating properties found in the pulp, and the gaining of the normal condition within the tissue of the pulp proper.

Dr. G. W. Dittmar:

Mr. President, it seems to me that the speakers have not been defining their positions very accurately. Dr. Logan very forcibly brought out the fact that the various speakers understand differently what is meant by caries of the teeth. Some have been talking about carious dentin, others about discolored dentin and others about decalcified dentin. It seems to me that these are three different conditions that need different treatment. We all know that we may find discolored dentin that may reach from a discolored spot in the enamel to, or almost to, the pulp, and yet that dentin is hard. It may or may not be infected to any great extent. To my mind it is necessary in capping pulps to cut out every portion that is badly decalcified, though I often leave discolered dentin which I endeavor to disinfect, rather than badly expose a pulp.

I think that we all agree with Dr. G. V. Black, that most pulps die after they have been capped, and for that reason we should be careful as to what we place in teeth as fillings. I think that fillings in teeth whose pulps have been capped should be placed with the thought that they are more or less temporary, often gutta-percha or Hill's stopping should be used after cement has been placed over the capping, something that can be removed without much trouble or pain to the patient, when the pulp does die. Do not place large amalgam or gold fillings or large cast gold inlays in teeth with capped pulps.

Dr. R. R. Gillis:

Mr. President, about three-quarters of an hour ago Dr. Noyes made a suggestion that brought to my mind this point: He said that in one case, he placed a gold filling over a previously capped pulp, and that in the second process of excavating he found no exposure. Evidently then secondary dentin had formed. It appears to me that if we could leave a layer of sterilized dentin in the floor

of the cavity, then leaving the outer layer of the pulp, the odontoblastic layer, undisturbed, secondary dentin would be more liable to form. We are taught in our text-books that pulp nodules occur late in life. I have been particularly unfortunate in regard to pulp stones and pulp nodules. I have found as many as three in one day and usually find one every week. Three of the largest I ever found were in children of 15 or 16 years years of age. In one case a boy of 14 years presented the largest case of pulp nodule I ever found. During these early years the circulation in the pulp is best, the recuperative powers strongest, and we are justified in believing that the chances for secondary dentin to form are more favorable than in later years. Why then, should we disturb Nature's pulp covering if we can thoroughly sterilize it and leave it in the tooth?

Dr. F. B. Noyes:

I will admit that gutta-percha is as much a foreign matter as anything can be. The fact is that gutta-percha is non-irritating, and decalcified dentin is extremely irritating. Further, the tissues will live and functionate in contact with gutta-percha, but they will not in contact with decalcified dentin matrix that contains a trace of acid, whether steril or not. You remove the decalcified tissue back to the calcified dentin, and replace it with a covering of non-irritating material, and the pulp tissue will begin at the point of dentin, with which it can be in physiological relation, and it will continue its physiological action. Biologically it is practically impossible for the pulp to form secondary dentin over a decalcified dentin matrix, but if that is removed it can begin the formation of secondary dentin.

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EDITORIAL.

SAY IT WHILE HE LIVES.

There seems to be a growing tendency in the profession to show appreciation of a man while he is yet alive, and it is a most laudable tendency. In the past ten years there have been many public dinners given to members of the profession in recognition of their services and their worth in the world, and each dinner has been productive of much good, in the closer community of sentiment developed and the broader charity shown one for the other. It is always a healthful sign to see commendation given one who has wrought faithfully in any field of labor. It is an inspiration to do nobler and better things. Encouragement never killed anyone and it has often helped to lift a limping pilgrim over the rough places of life and make his pathway easier. And by the same token while we are giving public dinners to the few let us remember the many with kind words and a helping hand whenever the opportunity presents. It is so easy and natural to say good things of men when they are dead and cannot hear them, but why do we not look for the good in men while they are living? If a man gets in our way we are too inclined to put our foot on his neck and trample him in the mud, and when we look down and find that he has expired we say: "Poor fellow—he squirmed gracefully."

We can always find something commendable to say of a man when he is gone, but the essence of right living commands that we shall search for these things and say them while he lives.

THE FIFTH INTERNATIONAL DENTAL CONGRESS.

This congress will be held in Berlin, Germany, August 23 to 28, 1909. Details of the meeting are published elsewhere in this issue, and it is strongly urged that our American colleagues make a good representation at the congress. It would seem from the program that the arrangements are very complete and that ample provision is being made for the entertainment of visitors from other countries. Germany has been well represented at former congresses, and it is only common courtesy for other nations to rally to the support of this one. The time of year fits perfectly into the vacation period, and the importance of the event is such that it will well repay any dentist to cross the ocean and attend the meeting at Berlin.

THE EDITOR'S DESK.

A VACATION ON TIRES.

(CONTINUED FROM THE FEBRUARY DENTAL REVIEW.)

Although born a Canadian, I had never been in the capital of the Dominion till I visited Ottawa last summer, and I was impressed with the wondrous beauty of the spot. As we drove up Parliament Hill I felt like doffing my hat in respect to the tradition of the place. Surely Nature never gave to seat of government a more stately setting. The view from the Parliament buildings out across the noble river and over to the shores of Quebec is most impressive. The drives about the city are wonderful and the scenery most picturesque. If you ever have an opportunity to go to Ottawa, do so —then call on Sam Davidson and tell him I sent you. But be careful or you may get lost in his office. He has one of the finest dental offices I was ever in, and it is large enough for an automobile show. The dimensions are 60 feet long by 30 feet wide, and if they charged rent in Ottawa as they do in some of our larger cities Dr. Davidson would have to work overtime to pay his expenses.

After several delightful days I took the train for Myrtle and was met at the station by our entire party in Betsey. My Indian Girl had come on to Toronto from Wisconsin and Alkali Pete had

been gathered in from all her fellows and her girl friends, and we were for the first time a united party. Talk about fun! If we didn't have it after that I never knew what fun was. We ran to Blackwater in a few minutes that night and entered the place with a whoop.

By this time Betsey was quite well known in the vicinity and everyone who had a ride in her fell in love with her. She surely gave a great deal of happiness on that trip, but the time of all vacations must come to an end and one day we loaded the car with ourselves

Our Entire Party.

and our luggage and started for Toronto on the return trip. From Toronto to London we took a different road to see a new part of the country and we saw it. Such hills I did not know existed in Canada outside of the Rocky Mountains. Our first intimation was a large sign which said: "DANGER! GO SLOW. BAD HILL!" And as the boys would exclaim, "that was no dream." We encountered several of these and each one was a little worse than the one before. The noted Algonquin hill in Illinois, which we subsequently went over, was a baby grand besides these hills, and Betsey actually laughed when she saw it. At London that night I spoke of the road to the garage man and he said: "Oh, you came over the 'road of

sixteen hills.'" I said: "Yes, but since you saw it they have piled the sixteen up into two or three, and then added some for good measure."

The next day running from London to Sarnia we had our first tire trouble. It was a large-mouthed puncture, and landed us beside the road for a time to put on a new tire. The farmer boys of the neighborhood began to flock around us to watch the process, and it was not many minutes before the Mater knew the life history of every lad in that vicinity. One poor ragged little urchin in particular took her fancy, and she has been lamenting ever since that she forgot his name and address so she could send him something for Christmas.

After the tire was fixed we made a quick run to Sarnia, crossed the river to Port Huron, and on up to Amadore, Michigan, that night. My game leg was sufficiently better by this time so that I was running Betsey once more. Between Port Huron and Amadore we encountered a bad bridge and had to stop. Fritz went ahead to explore and found the approach partly caved in and some of the planks missing. It was a nasty looking structure, but the roadway was too narrow to turn the car around, and we were in for it. Fritz got some rails and planks and fixed the bridge as best he could and we had the girls all get out of the car and I took her over on slow speed. I figured that if she went down I would at least be on top, but fortunately she came through with safety. Such incidents as these lend to the excitement of the trip if not to its pleasure, and when one goes motoring one must be prepared for any emergency. After all it is the difficulties overcome which make life really worth the living, and one of the fascinations of touring is the satisfaction of meeting and conquering obstacles.

These articles have extended themselves into many times the length originally intended, and to be in keeping with any sense of propriety they must be brought to a close. The rest of the trip home was uneventful. The last day's run we had was 156 miles, starting about 10 o'clock a. m. and running till after dark, the entire run being enlivened by the chattering, laughing and singing of the five girls in the tonneau. I have traveled a great deal but I have never seen a merrier party than the one we had last summer. Fritz and I had to attend strictly to business in the front seats, but the girls were entirely care-free and rang the welkin with such

inspiring airs as "Ask her while the band is playing," "Over on the Jersey side," and the classic selection of "H-a-r-r-i-g-a-n." They raised such a racket at times, particularly if we were running over a rough bit of road, that I frequently had to turn around and count them to see if I had them all there. In short our vacation trip was most delightful in every way, and we find ourselves sighing yet over the good times we had.

And now a few closing words about touring in an automobile. I know of nothing in all the realm of recreation to approach this. There is an absolute independence about it that exists in no other means of locomotion. You do not have to consult time tables or rush for trains. You start when it pleases you and stop when you wish. And the miracle of it all! You run up to a country grocery and put a few gallons of gasoline in the tank and away you go for miles and miles over hill and dale, rolling along in the greatest ease, and generating the power that propels you from that few gallons of subtle liquid in the tank. It is inconceivable to me even yet when I think of it. The ever shifting scenery, the new, and sometimes the wondering, faces, the beautiful landscapes (I never realized what a glorious country this is till I saw it from an automobile), the fresh air, the music of the motor, ah! the music of the motor! the exhiliration of skimming over the ground, the exclusive companionship of those you know and love without intrusion from strangers or possible objectionable fellow passengers, an utter oblivion to the serious stress of business cares, the abandonment to relaxation and the renewal of youth, the invigorating, restful days and the sleepy nights; and then the constant study of the car itself, the marvel of its mechanism, the beauty of its lines, the ingenuity of its construction, the luxury of its appointments—all of these and more go to make touring the most fascinating sport in the calendar. If anything ever excels this it will be the flying machine made perfect. And even then—well I shall be content to stick to the automobile for some time yet.

I could write a long article on the practical phases of touring—the kind of car needed, the care of the car, the condition of the country roads, the behavior of horses, the requisites for touring comfortably and safely, and many other things touching on the subject, but I fancy my readers have had enough of the automobile for a

while, and I must have some consideration for them and bring the series to a close.

THE END.

CORRESPONDENCE.

AS THE NEWSPAPERS SEE US.

Editor Review:

You never would imagine that the sapient and ubiquitous reporter who penned the enclosed description of the latest improvement in dentistry, which I clipped from a newspaper, was the son of a dentist, I am sure that I would not.

"New Tooth Filling Method.—Several New York dentists are experimenting with a new method of making gold fillings which will do away with the tedious pounding now thought necessary. A wax impression of the tooth is taken after the cavity has been prepared for filling, the hole plugged with gutta percha and the patient sent on his way. The wax impression is then poised on a slender brass rod and surrounded with a plaster casting. When this sets the rod is withdrawn, and the wax melted and run out of the hole left by the rod. Molten gold is now poured into the mold. The filling thus made is cemented into the tooth to be filled, the process taking only a few minutes."

One thing that I have, as yet, failed to understand after reading and re-reading the lucid explanation of the operation is, why, if the whole operation takes "only a few minutes" should it be necessary to "plug the hole with gutta percha and send the patient on his way."

We may smile as we read it, but when we present our bill for two or three gold inlays, and are more or less politely informed that we are not so very distantly related to the renowned Captain Kidd, or to some other pirate of equal renown to charge such prices for the work of "only a few minutes"; and for such work too, as any foundry hand or molder can do, the smile I am sure will not be so wide as to include the ears, neither will it be of "the kind that won't come off."

W. C. BUNKER.

DR. TAGGART AND THE DENTAL PROFESSION.

The editorial in the DENTAL REVIEW for February entitled "The Tragedy of the Dental Profession" states the case fairly and truthfully and makes pretty clearly apparent the "tragedy" of the situation as it related to Dr. Taggart. It seems necessary, however, if it is possible, to bring more sharply and clearly to the attention and the consciences of the dental profession the duty that we owe to Dr. Taggart.

There is no doubt whatever that the dental profession will continue to maintain its opposition to the holding by members in good standing, of "process patents" which require an office license or the payment of royalties upon operations performed, but moral questions are apt to have several aspects and those who have insisted strongly upon the relinquishment of the legal rights and emoluments which an inventor might receive under such a patent have mostly ignored the responsibilities which the profession must assume when it insists upon such an ethical requirement, namely, the obligation to prevent or remedy any instances of gross injustice that may arise by reason of obedience to that ethical rule. If there are any who are insisting upon such compliance by Dr. Taggart and have not yet fully discharged their personal obligation to him, it is worth while for them to consider carefully whether they belong to that old sect that received the indignant and scornful rebuke "For they bind heavy burdens and grievous to be borne, and lay them on men's shoulders; but they themselves will not move them with one of their fingers."

It is to be noted that before taking any steps to enforce his supposed legal rights under his process patent he waited at least eight months, during which time the dental profession had ample opportunity to show their appreciation of the obligation above referred to and their disposition, if they had any, to treat Dr. Taggart with something like justice.

Dr. Taggart has spent two years, more or less, of his time, all of his money, and strained his credit to the limit, and, whether willingly or unwillingly, he has given it all to the profession, and the profession is in full possession of it all today.

Now the solution of this situation is not, chiefly, by organizations and subscriptions, and resolutions by societies or even by ap-

propriations from society treasuries, all these may help some, but the only proper and adequate solution is by the individual action of every man who is casting inlays.

Probably there are not more than a dozen men in the United States who would dare to say positively that they would now be making any cast inlays except for the work and the announcements done by Dr. Taggart. The making of inlays has a money value to every man who is making them and that value he has received from Dr. Taggart and owes to him a just compensation in money for that value received. The whole matter resolves itself, in this aspect of it, into a question of simple, common, every day honesty, exactly the same kind of honesty we all expect our patients to practice toward us and that we wish them to believe that we practice ourselves. There are probably at least one thousand dentists (perhaps there are two thousand) in the state of Illinois who are making cast inlays. If each of these men will pay his debt to Dr. Taggart, in amount having proper relation to the money value of the process to himself, or more properly still by buying Dr. Taggart's machine, the price of which represents Dr. Taggart's judgment as to what he is entitled to receive from those who use his process, it need not be doubted that Dr. Taggart will gladly relinquish all attempts to collect office licenses or royalties. Ingratitude and dishonesty are pretty hard words, but it is doubtful if any sophistry, or special pleading, or extenuating circumstances, will enable any man to squirm out from under them if he refuses or neglects to repay his pecuniary obligation to Dr. Taggart. EDMUND NOYES.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Hollow Inlays:—After preparing the cavity and making the wax model I mount the model on a sprue and thoroughly chill it. With a fair sized bur I cut away the wax where I desire the inlay to be hollow. With moderate care there is no danger of distorting the wax model.—*C. A. Hintz, D. M. D., Springfield, Minn.*

Roach Attachment:—One point that I have discovered is that the more occlusally the ball is soldered the more lateral movement of the plate is permitted. The closer to the gingival the ball is soldered a less lateral movement is permitted. This is because in the lateral movement of the denture an arc of a circle is described which centers at the point of the plate and gum contact. We have better rigidity of the plate in proportion as the attachment approaches the gingival.—*E. A. Ihle, Chippewa Falls, Wis.*

Setting Crowns:—Dry the tooth and crown, coat the exposed surface of the root and the inner surface of the crown with a film of whiting dissolved in alcohol and allowed to dry; press the crown to place, remove and note high places. Trim off where necessary either on the root or crown. If necessary repeat the process until the crown is properly adjusted. This method may be applied in the adjustment of bridges, plates, inlays, or wherever the operator may find it necessary to apply it.—*J. H. Frankel, Chicago.*

Mal-Occlusion As a Cause for Pyorrhea:—The longer I practice dentistry, and the more I observe of cases where pyorrhea exists, the more I become convinced that the nodular deposits, which are very irritating, are more frequently caused by mal-occlusion and the resulting looseness than are they the cause of the looseness and the general bad condition about the roots of the teeth. The deposit of the calculus is the result of mal-occlusion and wrenching and the resulting looseness, rather than the serumal calculus being the cause of the breaking down of the tissue and the looseness.—*W. V. B. Ames, Chicago.*

Extracting in Pyorrhea Cases:—I have wasted a great deal of time in my endeavor to follow the enthusiasts who advise retaining the teeth. If one-half of the process has been necrosed and absorbed, a hard proposition confronts us in trying to save the other half for any great length of time. We might possibly carry these conditions along for a year or two comfortably, but the ultimate result in my opinion is the loss of the tooth. During the last four or five years I have extracted many more teeth on account of pyorrhea than I did prior to that time. I am convinced that we are carrying along too many crippled pyorrhea teeth.—*J. G. Reid, Chicago.*

Do Not Use Peroxide of Hydrogen for Pyorrhea:—I may say that I have tried lots of things for pyorrhea, and I can say that I do not think I have effected any cures. In one case in which I was particularly interested a medical friend said he thought the organism was anærobic, and suggested the use of peroxide of hydrogen around the pockets of the affected teeth. After cleaning out the mouth of one of my patients I used it every day excepting Sunday for nearly four weeks, and I can safely say at the end of that time the patient was really worse than at the beginning. I have worked along other lines, getting a little better results.—*W. R. Parker, Brisbane, Australia.*

Cleaning a Gold Inlay:—A gold inlay may be easily cleaned after casting as follows: The inlay is heated in the bunsen flame until it begins to assume a red color and it is then plunged in a solution of hydrochloric acid; this removes all the dirt which is so often hard to get rid of by boiling in any of the acids excepting hydrofluoric, and it does not affect the inlay so far as its shape and adaptation is concerned. It changes, possibly, the density and temper of the gold, but this change I think is more beneficent than harmful. In the same way the button of gold used for recasting may be cleaned.—*M. A. Gottlieb, New York, N. Y.*

Banish the Canine:—When, where, and how did the name of any part of the dog's anatomy become identified with the human anatomy? It is uncalled-for, unscientific, unnatural and an abomination, anyway, and ought to be banished from dental nomenclature. One might with as much propriety call the bicuspids bicanines. And yet today these terms are used in text books, journal articles, and public addresses. Let us use the plain, scientific, sensible term cuspid. Then we use the term "eye tooth," which means nothing, and also "stomach tooth", which is equally uncalled for. A patient recently asked me what it meant—had it anything to do with the stomach?—*L. P. Haskell, Chicago.*

A Common Error:—One of the common errors we fall into is to side in with thoughtless and unscrupulous patients, who berate the last dentist who served them. It is a temptation to fall into line and pass judgment on some operation that seems to us not like it

should be, but before entering into the criticism let us pause a moment. How do we know under what circumstances that particular piece of work was performed? Neither do we know how long it may have been doing fairly good service. We find some people whose memories are woefully poor when it comes to dental work. Some stretch their conscience in this, much as they do in avoiding the just payment of taxes.—*Isaac Sundberg, Decatur, Ill.*

Extracting Roots:—In securing a firm hold on the root, I find it is necessary to push the beak well up under the gums. In order to do this the forceps must have a "butt end" handle, similar to the "Allen" pattern. Grasp the handles between the first and third fingers, with the second between the handles to regulate the distance between the beaks, and to "feel." Place the beak on the lingual side first and push well up on the root. Then place the buccal beak at the gingival margin and press up to its position. This should secure a firm hold on the root. I prefer forceps with a blued or oxidized finish, which I think is easier to keep clean and less unsightly to the patient than the nickel-plated ones.—*B. G. Wood, Forreston, Ill.*

Sterilizing Instruments:—The process consists in heating the instruments in mineral machine oil (paraffinium fluidum ph. germ.), which must be brought up to 120-130 degrees Cel. By this method one is able to make a thorough, mechanical cleansing, which is satisfactory from an esthetic point of view, without injuring the instruments. The heating in oil afterwards has the effect of drying, lubricating and preserving the instruments. This method is decidedly economical, and as it is easy to apply it answers all practical demands. The sterilization itself at 120-130 degrees satisfies all hygienic demands and the physical qualities of the oil prevent the septic matter which has dried up, from sticking to the instrument.—*Viggo Andresen, Copenhagen, Denmark.*

Treatment of Acute Pericementitis:—If the cause is in the pulp chamber or canal that must receive the first attention. Cleanse it out thoroughly and so far as the membrane is concerned it will take care of itself. Many teeth in this condition are lost or turned into chronic form by too frequent medication, especially with irri-

tating agents. If the canal is filled with putrescent material it must receive the most careful attention in order to avoid running into alveolor abscess. Apply your remedy the first sitting, and let it remain from 24 to 48 hours. When the patient returns, mechanically clean the canal, reapply your dressing and allow it to remain for a week or ten days, and in a majority of cases the canal will be ready for filling.—*Earl G. Stephens, Robinson, Ill.*

Mastication in Relation to Oral Prophylaxis:—If we attempt to prevent the ravages of dental caries by means of the brush we will never accomplish our end, as we are only treating effects, leaving the cause aside. Instead of avoiding the lodgment by the natural method we attempt it by artificial means after its accumulation. When I see a mother give her child, in place of her breast, a bottle with an india rubber, containing a large hole, so that the child may suck the milk quickly and easily without disturbing the patience of the mother, and when I see her give sweets and candies in order that it may not cry, I predict an orthodontia case; and when I notice the present generation eating their meals in five minutes, I see them later waiting hours for the professional services of the dentist.—*Victor C. Erausquin, Buenos Aires, R. A.*

Stimulants :—A nervous system that is overtaxed does not need stimulation unless you want to eventually cause a breakdown. What is needed is a tonic, and the only tonic that is safe in this condition is rest and diversion. If we allow our best judgment to control our actions we will avoid all narcotics, the most common being alcohol, tobacco, tea and coffee. I think that the main cause that we do not reason more on this subject is that we do not feel any injurious effects arising from the modern indulgence in narcotics, especially tobacco, tea and coffee, while the immediate pleasure derived is quite appreciable. It is surprising how much abuse or disregard for the laws of health the system can adapt itself to in the way of stimulation or overindulgence before the evil effects are manifest in the form of a breakdown of one or more of the organs of the body upon which the chief strain has been thrown.—*S. C. Sims, Sterling, Ill.*

MEMORANDA.

ILLINOIS STATE DENTAL SOCIETY.

The forty-fifth annual meeting of the Illinois State Dental Society will be held at Danville, May 11, 12, 13 and 14, 1909.

R. J. Hood, Secretary, Sparta, Ill.

A Quiz Class will be organized, commencing about April 15, for the benefit of those wishing to review for the California State Board examination in June. For further information regarding same, address

Dr. J. Geo. Kanouse, 602 Lankershim Bldg., Los Angeles, Cal.

"TEMPERAMENTS."

This is the title of a pamphlet written and issued by Dr. Gustavus North, Cedar Rapids, Iowa. It consists of fifteen pages, and is illustrated with several cuts showing teeth of the different temperaments. It is sold for 25 cents.

FOX RIVER VALLEY DENTAL SOCIETY OF WISCONSIN.

Midwinter meeting and clinic will be held at Fond du Lac, Wis., Tuesday, March 9th, 1909. All ethical practitioners invited.

Geo. A. Stratton,
Oshkosh, Wis. Secretary.

"THE MOUTH AND TEETH."

The pamphlet with the above title, published by the National Dental Association, is now ready and can be secured for 50 cents per hundred, of Dr. C. S. Butler, secretary, 267 Elmwood avenue, Buffalo, N. Y.

J. D. Patterson,
Chairman Committee.

SOUTHERN CALIFORNIA DENTAL ASSOCIATION.

The twelfth annual convention of the Southern California Dental Association will convene June 28, 29 and 30, 1909, at the College of Dentistry, University of Southern California, Fifth and Wall streets, Los Angeles, Cal.

Charles E. Rice, Secretary.

MISSOURI STATE DENTAL ASSOCIATION.

The forty-fourth annual meeting of the Missouri State Dental Association will convene at Kansas City, Mo., May 26, 27 and 28, 1909. A good live, program is in course of preparation.

J. F. Wallace, Corresponding Secretary.

KENTUCKY STATE DENTAL ASSOCIATION.

The thirty-ninth annual convention of the Kentucky State Dental Association will convene at Crab Orchard Springs, Ky., May 17, 18 and 19, 1909. We anticipate a most interesting and profitable meeting at this popular central Kentucky resort. A cordial invitation is extended to all ethical members of the profession.

W. M. Randall, Secretary.

VIRGINIA STATE DENTAL ASSOCIATION.

The fortieth annual session of the Virginia State Dental Association will be held at the Mecklenburg, Chase City, Va., July 21, 22 and 23, 1909.

Every effort is being made to make this the most interesting and successful meeting of our society. Men of national reputation will give clinics and read papers. All ethical practitioners are cordially invited to attend.

THE PEDESTRIAN DEAN.

Dr. Alfred Owre, Dean of the Dental Department of the University of Minnesota, recently walked from Chicago to Minneapolis, 429 miles. He was nineteen days on the trip and claims to have enjoyed every moment of it in spite of bad roads, cold weather, blistered toes and frozen nose. The Editor loves to walk some himself, but he will cheerfully let a contract of this magnitude to someone else.

WASHINGTON UNIVERSITY DENTAL DEPARTMENT.

The Annual Alumni Clinic of Washington University Dental Department will be held at the college building, Twenty-seventh and Locust streets, on March 29 and 30. We hope to make this one of the largest alumni meetings ever held, and also hope that the attendance will be in proportion. Any sacrifice that you will be compelled to make to attend this meeting will be repaid by the benefit you receive therefrom.

AMERICAN DENTAL SOCIETY OF EUROPE.

The thirty-sixth annual meeting of the American Dental Society of Europe will be held in Wiesbaden, Germany, on april 9, 10 and 12, 1909. An interesting program is already assured. A most cordial invitation is extended to members of the profession to be present.

T. G. Patterson, Hon. Secretary,
2 Quai des Eaux Vives, Geneva, Switzerland.

TENNESSEE DENTAL ASSOCIATION.

The forty-fourth annual meeting of the Tennessee State Dental Association will be held in Memphis, Tenn., May 25, 26 and 27, 1909. This meeting promises to be one of the most interesting gatherings of any within the history of the association. Ample space will be provided for exhibitors and clinicians. A cordial invitation is extended to all reputable members of the profession to attend and take part in the proceedings.

De Lan Kinney, Corresponding Secretary, Nashville, Tenn.

LOUISIANA STATE DENTAL SOCIETY.

The thirty-first annual meeting of this society will be held at the St. Charles Hotel, in New Orleans, La., on Wednesday, Thursday and Friday, April 28th, 29th and 30th, 1909.

An interesting program is already assured.

A most cordial invitation is extended to all ethical members of the profession to be present and participate in the meeting.

Dr. A. L. Plough, Cor. Secretary,
New Orleans, La.

DAVENPORT DISTRICT DENTAL SOCIETY.

At a meeting of the Davenport District Dental Society, held in Davenport, Iowa, January 23rd, the following officers were elected:

President, C. R. McCandless, Davenport.
Vice-President, A. A. Peterson, Muscatine.
Secretary, O. E. Grecne, Clinton.

Treasurer, J. T. Martin, Muscatine.
Delegate to Executive Council, C. R. Baker, Davenport.

A clinical program was held in the afternoon at the office of Dr. C. R. Baker, followed in the evening by a joint meeting with the Rock Island County Dental Society, in Rock Island, Ill. After a sumptuous banquet in the beautiful rooms of the Rock Island Club, the president introduced Dr. A. D. Black, president of the Illinois State Dental Society, who read a paper illustrated with stereopticon, on Progress of Decay and Preparation of Cavities. Dr. Black also spoke of the classification of dental literature and the post-graduate work being done by the Illinois State Society.

The next meeting of the Davenport District Dental Society will be held in Muscatine, April 6th.

O. E. GREENE,
Secretary.

RECENT PATENTS OF INTEREST TO DENTISTS.

907,949 Artificial tooth, E. H. Ballou, Dodge City, Kan.

907,979. Machine for making toothpicks, C. R. Emens and W. A. Brower, Adrian, Mich.

907,815. Dental engine plugger or mallet. J. P. Kelley, Geneva, Ohio.

907,882. Dentist's tool. W. J. Reynolds, Selma, Ala.

908,336. Wrist-joint for dental engines. A. W. Schramm, Riverton, N. J.

908,056. Dental appliance. P. S. Whitney and R. R. Myers, Fairbanks, Alaska.

908,643. Artificial tooth. S. S. Bloom, Philadelphia, Pa.

908,942. Composition of matter for nerve-canals in teeth. H. J. Bowerfind, Fort Wayne, Ind.

908,626. Dental plate and manufacturing the same. E. Telle, New Orleans, La.

908,627. Attaching teeth to dental plates. E. Telle, New Orleans, La.

909,038. Dental plate. E. Telle, New Orleans, La.

909,643. Dental implement. C. C. Murray, Huntington, Tenn.

909,223. Dental stool or the like. W. H. Reynolds, Toledo, Ohio.

909,696. Molding tooth crowns or the like. S. Shimura and Y. Minagawa, Tokyo, Japan.

910,357. Dental chair. F. E. Case, Canton, Ohio.

910,334. Terret-bur holder. E. Wesp, Canton, Ohio.

Copies of above patents may be obtained for 15 cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the State of Illinois will be held in Chicago at the Chicago College of Dental Surgery, southeast corner Wood and Harrison streets, beginning Thursday, June 10th, 1909, at 9 a. m.

Applicants must be in possession of the following requirements in order to be eligible to take the examination: (1) Any person who has been engaged in the actual, legal and lawful practice of dentistry or dental surgery in some other state or country for five consecutive years, just prior to application; or, (2) a graduate and has a diploma from an accredited high school, or a certificate signed by a State Superintendent of Public Instruction or his duly authorized deputy or equivalent officer, acting within his proper or legal jurisdiction, showing that the applicant has a preliminary education equal to that obtained in an accredited high school, and is a gradute and has a diploma from the faculty of a reputable dental or medical college, school, or dental or

medical department of a reputable university and possesses the necessary qualifications prescribed by the board.

Candidates will be furnished with proper blanks and such other information as is necessary on application to the secretary. All applications must be filed with the secretary five days prior to the date of examination. The examination fee is twenty ($20) dollars, with the additional fee of five ($5) dollars for a license.

Address all communications to

J. G. Reid,
Secretary.

1204 Trude Building, Chicago, Ill.

NATIONAL DENTAL ASSOCIATION.

The thirteenth annual meeting of the National Dental Association will be held in Birmingham, Ala., March 30 and 31, April 1 and 2, 1909. All meetings of the Association, Sections and Clinics will be held in the City Hall, corner Fourth avenue and Nineteenth street; headquarters of the Association at Hotel Hillman, directly opposite the City Hall. Reservations should be made through Chairman of the Local Committee of Arrangements, Dr. J. A. Hall.

The Following Incomplete Program Is Announced:

Essays.—James McManus, D. D. S., Hartford Conn. (subject to be announced). Edward C. Kirk, D. D. S., Sc. D., Philadelphia, Pa., "The Dental Relationship of Arthritism." L. G. Noel, D. D. S., Nashville, Tenn., "The Management of the Mouths of Young People from the Age of Six to Adolescence." Section One.—H. E. Kelsey, Chairman; J. S. Spurgeon, Secretary. George H. Wilson, Cleveland, Ohio, "The Principles of Retention of Artificial Dentures"; discussed by N. C. Leonard, Nashville, Tenn. (This section will have a good program, but it is not yet complete. Section Two—W. G. Ebersole, Chairman; L. L. Barber, Secretary. S. D. Ruggles, Portsmouth, Ohio, "Phases of Importance in Nomenclature"; discussed by George H. Wilson, Cleveland Ohio. George S. Vann., Gadsden, Ala., "Dental Science a Part of Universal Literature"; discussed by F. L. Hunt, Asheville, N. C. W. T. Jackman, Cleveland, Ohio, "The Elimination of Fear in the Practice of Dentistry"; discussed by Herbert L. Wheeler, New York City. (Subject to be announced.) J. R. Callahan, Cincinnati, Ohio, "Operative Dentistry—Root Canal Treatment." Section Three.—Charles C. Allen, chairman; J. W. Hull, Secretary. A. H. Thompson, Topeka, Kan., "The Evolution of Tools"; discussed by L. G. Noel, Nashville, Tenn.; G. V. I. Brown, Milwaukee, Wis. Levi C. Taylor, Hartford, Conn., "Dentistry Past and Present as Seen by a Modern Hygienist"; discussed by N. S. Hoff, Ann Arbor, Mich.; A. C. Fones, Bridgeport, Conn.; J. Y. Crawford, Nashville, Tenn. Gordon White, Nashville, Tenn., "Something on Pyorrhea"; discussed by J. D. Patterson, Kansas City, Mo.; J. C. Hartzell, Minneapolis, Minn.; J. D. Towner, Memphis, Tenn. A. W. Harlan, New York City, "Friction as an Aid to Restoration of Gum Tissue"; discussed by H. H. Johnson, Matin, Ga.; H. W. Gillette, Newport, R. I.; J. H. Crossland, Montgomery, Ala. Truman W. Brophy, Chicago, Ill., "Recent Progress in Oral Surgery"; discussed by J. D. Patterson, Kansas City, Mo.; T. P. Hinman, Atlanta, Ga.

RAILWAY RATES.

The Southeastern Passenger Association grants excursion rates as follows:

From Washington, D. C., and return	$27.15
From Cincinnati, Ohio, and return	17.55
From Cairo, Ill., and return	12.50
From Evansville, Ind., and return	13.60

And from all agency stations in the territory south of the Ohio and Potomac, and east of the Mississippi river.

Tickets for going can be purchased March 29 and 30 and good returning not later than April 4—all tickets limited to continuous passage.

Persons outside territory above indicated should purchase ticket to the nearest point where reduced rate can be obtained.

This reduced rate is not on the certificate plan.

HOTELS.

HOTEL HILLMAN.

$1.50 and $2.00 per day—without bath.
$2.50 and $3.00 per day—with bath.
Two persons occupying the same room with bath, $2.50 per day for each person.

FLORENCE HOTEL.

$1.50 and $2.00 per day—without bath.
$2.50 and $3.00 per day—with bath.
Two persons occupying the same room with bath, $2.50 per day for each person.

HOTEL MORRIS.

$1.50 and $2.00 per day—single, without bath.
$2.50 and $3.00 per day—single, with bath.
$1.25 and $1.50 each—double, without bath.
$1.75 and $2.00 each—double, with bath.
European plan.

BIRMINGHAM HOTEL.

$1.00 to $2.00 per day—one to a room.
$2.00 to $3.00 per day—with bath.

METROPOLITAN HOTEL.

$1.00 to $2.00—without bath.
$1.50 to $2.00—with bath.

JEFFERSON HOTEL.

$2.50 and $3.50 per day—American plan, one to a room with bath.
$6.00 per day—American plan, two to a room with bath.

COLONIAL HOTEL.

$1.00 to $2.00—without bath.
$1.50 to $2.00—with bath.

V. E. TURNER, President.

C. S. BUTLER, Secretary, Buffalo, N. Y.

THE

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CONDITIONS OF SALIVA IN RELATION TO DENTAL CARIES.*

BY G. V. BLACK, M. D., D. D. S., CHICAGO.

The committee having in charge the preparation of the program for this meeting, has appointed me to write something on "Conditions of the Saliva in Relation to Dental Caries."

Interest in this subject is slowly developing. The aims prompting the study has differed with each changing view of the etiology of dental caries. The older writers gave little or no attention to it. One hundred years ago the prevailing theory of the cause of dental caries was that it resulted from inflammation of the tooth-bone, or ivory, as dentin was then called. With this the saliva had nothing to do. This inflammatory theory gave way to the chemical theory during the decades from 1830 to 1850.

In 1835-38 Robertson of Birmingham, England, and Regnard of Paris, France, published well written books in which they denied the correctness of the inflammatory theory of caries, and proposed the theory of chemical decomposition by acids formed by the decomposition of food debris clinging about the teeth in certain positions where decay begins. That the carious material in cavities always showed an acid reaction, as claimed by them, soon became fully established.

Those who followed this thought quickly lost sight of the hypothesis of the formation of acids at particular spots by processes of decomposition, and began a search of the saliva, food, condiments,

*Read before the Chicago-Odontographic Society, January, 1909.

etc., for the acids that caused caries of the teeth. The saliva, especially, was carefully studied with the view of discovering the source of the acids active in producing this decay. In this way an immense amount of work was done. It is now seen that, in the main, the results were negative. It was finally shown that, while the general saliva of most individuals gave a pronounced acid reaction in litmus paper tests, those persons who were immune to caries of the teeth showed the same, or often greater acidity of the saliva than those whose teeth decayed badly. This period may be said to have begun about 1835 and to have ended with the great work of Dr. Magitot in 1877. During this time many wild chemical theories of the formation of acids were proposed and discussed. The results were negative. During the latter part of this period it was definitely shown, by John Tomes and others, that dental caries was different from a simple solution of tooth substance by acids, in that the dentinal tubules were constantly enlarged and closely filled with a finely granular material, the nature of which was not understood. These conditions did not occur in a simple solution by acids.

Leber and Rottenstein wrote the first book on the germ theory of dental caries in 1866. It made no considerable impression on the prevailing thought.

In 1881 Miles and Underwood, of London, showed stainings of micro-organisms in the widened dentinal tubules, which explained the meaning of the granules that had been seen in them.

In 1884 Dr. Miller, of Berlin, Germany, published a series of observations in which he made out fully the agency of micro-organisms in dental caries, so far as the dentin was concerned. He gave accurate descriptions of the micro-organisms entering into the dentinal tubules in caries, and explained the formation of lactic acid during their growth. Immediately these results were accepted, the study of the saliva with a view to its sterilization, and the prevention of caries in this way, was undertaken. This was a failure.

In the years from 1884 to 1895 very active work was done by many men in the study of the saliva in its relation to the growth of micro-organisms. In this work it was definitely learned that those persons immune to caries of the teeth, had the same micro-organisms growing in their saliva as those most susceptible, and apparently in as great numbers. Therefore the conditions of the saliva were such as to afford generous growths in both cases. This must also be

coupled with the fact, previously mentioned, that the saliva is as acid in the immune mouth as in the susceptible one.

In the meantime, from 1840 to 1895, there had grown up, apparently without any individual being responsible for it, the interpretation from facts observed, that the teeth of some persons were soft and decayed readily on that account, while the teeth of others were very hard and therefore did not decay. It was in this way that susceptibility and immunity were explained. Yet no man had examined teeth to determine the variation of earthy salts in them in these different individuals. This was done by myself, and the results were published in the *Dental Cosmos* for May, 1895, showing that no difference in the hardness or softness of the teeth occurs that would prominently affect their solution in acids. It was then pointed out that the explanation of susceptibility and immunity to dental caries would probably be found in some systemic condition affecting the results of microbic growths through differences in the salivary fluids. This created a furor of objection which has not yet entirely disappeared, though the result seems to be generally accepted. Dr. Charles Tomes, of London, repeated the experiments in a few cases, finding results similar to my own, and reported to the Odontological Society of Great Britain that the results would have to be accepted, and some other reason must be found for the differences in the susceptibility to dental caries observed in different individuals.

The saliva then began to be studied anew with a very different idea in view. If the difference between individuals in the decay of the teeth was due to differences in the saliva, it could be found. It was clear, however, that ordinary chemical analysis would not be an effective means of study. The work would be devoted to finding minute chemical differences that induced special effects.

I had pointed out in 1887 before the Illinois State Dental Society that in some special conditions of the saliva, micro-organisms formed zoögloea masses, or gelatinoid plaques, upon the teeth and that decay seemed to begin under them. In 1897 Dr. Williams of London announced that he had found caries to begin under gelatinous plaques, and showed many sections of teeth ground with these plaques upon them. Pictures from these were published in the *Dental Cosmos* of that year. Although I have occasionally found masses of this material growing in my broth culture tubes, I have been unable to explain the conditions of its occurrence.

In 1900 Dr. Joseph Michaels presented a brochure under the title, "Sialo Semeiology," to the International Dental Congress, Paris, France, which was translated into English and published in the office of the *Dental Cosmos* in 1902. In this, Dr. Michaels claims to have found the means of determining definitely the existence of the condition of susceptibility or immunity to dental caries, from the examination of a few drops of the individual's saliva. And this, those who are best acquainted with his laboratory work, concede he could do.

He divided salivas into normal, hypo-acid, hyper-acid and cacochymic. Cacochymic means simply a "bad condition" and has no reference to dental caries. In the normal condition very little caries occurs. In the hypo-acid condition, which he also terms "lymphatism," caries is rapid. In the hyper-acid condition there is immunity to caries. As Dr. Michaels uses these terms they refer to the prominence of certain salts in the saliva, not to tests by litmus paper.

On the whole it appeared from Dr. Michaels' work that the principal agent inhibiting caries found in the saliva, that could be definitely recognized by others, was the sulpho-cyanids. As a special piece of work the committee on dental science of the New York State Dental Society took up the investigation of the effect of the presence of this agent in the saliva in inhibiting caries. The chemical tests for determining the presence or absence of the sulpho-cyanids are very simple, and they seem to show accurate results in pointing out immunity or susceptibility to dental caries in about 97% of cases. It therefore appears that the presence of the sulpho-cyanids in certain very minute amounts inhibits dental caries. How it does it remains unexplained. It does not inhibit the growth of micro-organisms. Some effort has been made to bring about the condition of immunity medicinally, but as yet with indifferent results.

In 1907 Dr. Low, of Buffalo, New York, noticing that the teeth of certain persons became quickly coated over with a viscous covering, evidently a precipitate of the colloid material in the saliva, after cleaning them, tested the power of the saliva of the person to redissolve this precipitate. It was not redissolved; neither was it dissolved by the saliva of others in whom similar precipitates occurred. But it was readily dissolved by the saliva of another person whose saliva did not precipitate its colloids.

I have observed such films on artificial dentures that were not dissolved in water, and which became white much like the white of egg when placed in boiling water. It was not difficult to remove it with a brush. It would be removed from all parts of the surfaces of the teeth vigorously rubbed by food in mastication. This condition is persistent in some persons, but for the most part so far as yet observed, it is not a persistent condition in many persons, though often seen. It may be that this will form films under which micro-organisms may grow and be sufficiently protected so that the acids which they form will not be washed away by the saliva, and the beginnings of caries of enamel will result in a manner similar to what occurs under gelatinoid plaques. The significance of this becomes apparent from the, now familiar, experiment—so often repeated accidentally—of placing a band on a tooth and leaving the cement imperfect in some portion. The micro-organisms growing under this, being free from direct washing by the saliva by which the acid produced is carried away, will produce decay of the tooth even in the mouths of persons otherwise wholly immune.

Dr. Carl Rose, of Dresden, Germany, published in 1908 (Deutsche Monatsschrift für Zahnheilkunde, January to August inclusive) the results of an examination of the saliva of the school children in various sections of Germany and contiguous countries. At the same time he made analyses of the drinking water, earth salts, and food products growing in the regions in which these children lived. While many things of great interest have been brought out in this work, the most important features, as it seems to me, are these: Children who have grown up in regions in which calcium salts, carbonates or sulphates, are abundant in the soil and in the water used, have much better developed salivary glands than those who have grown up in regions of soft water and have used that entirely. Those children who have used very hard water are able to secrete more than three times as much saliva in a stated time than those who have lived in regions of soft water. Those children who lived in regions of very hard water have less caries of their teeth than those who used only soft water. This last may perhaps be accounted for by the increased washing of the teeth by the greater amount of saliva passing over them affording greater cleanliness, and in so far inhibiting caries. Further, examination of the records of examining physicians shows that in the regions of hard water the percentage of persons who are

well developed and able to do military duty, is very much greater than in the regions of soft water. If these observations regarding the development of men are found to be substantially correct, every community should be furnished with hard water for drinking and cooking purposes.

I may say in closing that Dr. Rose is one of those who does not yet receive the results of my investigations regarding soft teeth and hard teeth. I hope that, before he abandons his experimental work, he will make this class of investigations himself. There are several reasons why he should. If differences in the calcium salts in the teeth occur in any considerable degree, he has, in his surroundings, a much better opportunity to find them than I have had. This is for the reason that in his country there are regions of very hard water and of purely soft water contiguous to each other, each region having its population practically confined to it. This is a condition that does not exist in America, as he himself has pointed out.

This represents in brief mention the principal studies of the saliva to the present time, with the objects which prompted them, so far as affecting decay of the teeth is concerned. It is a simple skeleton of the facts, leaving out all details.

THE STATUS OF PORCELAIN INLAYS.*

BY JOHN Q. BYRAM, D. D. S., INDIANAPOLIS.

(a) What is the status today of the average porcelain inlays inserted in the last six years?

(b) What is the status of the most expert work in porcelain inlays during the same time?

(c) Can porcelain inlay work still be recommended as in years gone by?

In answering your question the writer finds it hard to give the status of porcelain inlays inserted within the last six years. The time for preparation of his part of this symposium was so short he was unable to obtain sufficient data, so he is from necessity limited largely to his own experience and from observation. A great deal has been written on porcelain, many of the writers through

*Read before the Chicago-Odontographic Society, January, 1909.

fits of enthusiasm have made statements which have caused disappointment to those who have tried to follow their teachings. When we consider the unreasonable claims that were made for porcelain inlays, and the manner in which we began this work, it is really surprising that the work was as successful as it has been.

Before we can discuss these questions, let us consider the two principal requisites of a filling; first, it should preserve the tooth and permit the pulp to remain vital, and second it should match as nearly as possible the natural tooth.

The question then arises, are porcelain inlays doing this, and the only honest answer is, they are but partially filling these requirements. While the preservation of the tooth should be the first requisite of any filling, the writer believes there are too many cases in which the cosmetic and esthetic requirements are lost sight of, and tooth preservation is the only requisite considered. And he further believes that this desire to make the fillings permanent, causes too many incisors and cuspids to be filled with gold or their pulps destroyed and these teeth crowned.

It has required many years to evolve correct principals for preparation of cavities for gold and amalgam fillings, and at the present time the principals involved and the methods used by many of our professional brethren, not living in the central states, do not conform to our standard. If in more than fifty years we are unable to work out the universally best methods of cavity preparation for gold and amalgam fillings, is it not to be expected that the principals underlying the preparation of cavities for porcelain inlays be in somewhat of a chaotic state.

Question one, What is the status today of the average of porcelain inlays inserted in the last six years? The writer would imagine that about 50 per cent of the porcelain inlays inserted in the last six years have failed. At first thought it would seem that a material whose average of success runs no higher than 50 per cent should be discarded, but in replying permit him to ask what percentage of cohesive gold fillings inserted the first six years after its discovery, preserved the teeth from decay for a longer period. It is probable that 50 per cent would be a fair average. There is a tendency to measure the life of a filling by the length of time it remains in the cavity. But the life of no filling should be considered beyond the time it preserves the tooth from decay. So by making comparisons on this basis we

would probably find that 50 per cent of failures would be a fair estimate for the cohesive gold fillings inserted in the first six years after its introduction. We have evolved correct principles of cavity preparation and developed technique so that it is possible to insert gold fillings that will last indefinitely. But we have learned that cohesive gold fillings have their limitations, and if these limitations are not considered, failure is sure to follow. If it were possible to get a definite average of the life of amalgam fillings, we would probably find the percentage of failures very high. If we were asked what percentage of collar crowns constructed between 1888 and 1896 were successful, the writer would say less than 50 per cent. Probably 95 per cent of the crowns remained on the teeth more than ten years, but it is also probable that 90 per cent of these crowns caused gingivitis and pericementitis.

If it has required many years to evolve correct methods for various operations were only mechanical principles are involved, is it not reasonable to presume that the time will come when the principals will be more correct and the methods much improved in the construction of porcelain inlays. It is true that the application of porcelain has been indiscriminately and injudiciously employed. This has resulted from over enthusiasm on the part of a few, and ignorance of the properties and the principles of inlay work on the part of many.

Question two. What is the status of the most expert work in porcelain inlays during the same time? There is no definite manner in which this question can be answered, unless it can be decided who the experts are, and have them furnish data. The writer believes that 75 per cent of the inlays constructed by men who have given porcelain a great deal of study have been successful, and if we exclude those inlays constructed for bicuspids and molars the average will run higher.

Question three. Can porcelain inlay work still be recommended as in years gone by? Porcelain is not applicable to all forms of fillings and it will never entirely displace gold for filling incisors and cuspids.

Porcelain inlays have passed the experimental stage and their value as cosmetic fillings should be more universally recognized. Porcelain has taken its place along with other filling materials, and when properly applied and judiciously used where indicated it should rank high as a filling material.

The construction of procelain inlays requires precision in each step of the operation. The best work can be accomplished only with a thorough knowledge of the principles of inlay work, and the properties of porcelain, and with the mastery of the technique by the operator. Hence the requisites of a good porcelain inlay worker are: He must have a keen observation, a thorough knowledge of the principles of inlay work and of the properties of porcelain, a mastery of the technique and some knowledge of the principles of color formation, with the eye trained to detect the delicate hues of colors. He must be able to carry tooth form in the "mind's eye" and to use the eye and hand in unison.

If the limitations of porcelain are properly recognized and it is judiciously used as a filling material for incisors and cuspids, it can be recommended more strongly than ever, for the principles of cavity preparation are understood better. Many dentists hoped to find in the silicate cements, a filling material that more nearly reached the ideal, but after two or three years experience, many of them have returned to porcelain as the material that most nearly meets the esthetic requirements. Therefore the writer takes pleasure in continuing to recommend porcelain as the best material for filling most cavities in incisors and cuspids with the vital pulps.

TREATMENT OF FIRST PERMANENT MOLAR WITH PULP NEARLY EXPOSED.

BY M. L. HANAFORD, D. D. S., ROCKFORD, ILL.

Question:—How would you treat the following case?

A child eight years old presents with decay of a first permanent molar, involving the dentin to the pulp, but the pulp not exposed. It is understood that if all the carious dentin is removed, the pulp will be exposed.

I am grateful, Mr. President, that your committee, in presenting this hypothetical case, did not also stipulate that this eight year old child is of the male persuasion and of lachrymose tendencies; that he has been told, "the doctor just wants to look at it," that "he will not hurt," and that the sympathetic mother is to stand by and hold his hand.

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You see, it might have been worse. There are some faint glimmerings of encouragement not denied us, for, sooth to say, it is only a molar tooth decayed to the pulp in the mouth of a mere babe. I shall assume that this eight year old child is a girl, and bespeak for her the feminine trait of confidence.

A molar, carious to the pulp, is more or less painful on account of the piston-like pressure of semi-solid foods in masticating and changes of temperature from drinking cold or hot fluids; therefore I shall try first of all, to make the tooth comfortable. To that end, I shall very gently break down enough of thin, overhanging enamel, to give fair access to the interior of the cavity. Then, with as large spoon excavators as can be used, and repeated washings with tepid water, the debris is got rid of. A generous bit of cotton is now saturated with oil of cloves, or "dentalone" (Parke, Davis & Co.), and placed in the dried cavity and sealed with hydraulic cement.

If I have been skillful enough in my manipulations, and considerate enough in my manner, I have made the tooth comfortable, and at the same time have become a "good fellow" in the estimation of the little girl. If these two ends have been accomplished, our patient will meet her engagement, say a week hence, with smiling confidence.

I shall then apply the rubber dam, if possible, and very rarely is it not possible. If the tooth is well erupted, a ligature with two beads strung and knotted, and then securely tied around the tooth, may hold the dam, which is now stretched over tooth and beads. If the ligature fails, as it will in a large proportion of cases, a suitable clamp will have to be used. If the operator is careful in the selection and application of the clamp, the little patient will submit gracefully and graciously.

With the dam secure, I would remove cement and dressing, trim the margins back as far as necessary with chisels, and scoop out the leathery mass of carious dentin. I would then flood the cavity with camphophenique (camphor three parts, phenol one part), and after waiting a few minutes, remove the excess, and then go over the walls with discoids, and gradually approach the pulpal wall, which I should hope to scrape carefully over, without seeing any blood. If successful in reaching sound dentin, excepting the portion directly over the pulp, and if even here a large discoid, keenly sharp, can be passed

over it, and meet with a reasonable amount of resistance, we are ready for filling.

A portion of cement powder, sufficient to generously cover the floor of the cavity, is mixed with camphophenique to the consistency of "country cream," and dropped in, and gently patted to place with a bit of spunk. This is covered with a layer of cement, mixed just right, neither thick enough to cause pressure in placing, or thin enough to cause pain from the presence of free acid.

Whether to cover the cement with the so-called permanent filling of amalgam, or to fill the entire cavity with cement, would be determined by circumstances. If the child is likely to become a regular patient, I would fill the entire cavity with cement, possibly using for that purpose Ames oxyphosphate of copper.

Now the prognosis in these cases is, to say the least, doubtful, but in the judgment of your essayist, a sufficient number do well to justify the attempt, as above, to retain the pulp alive.

THE GOLD INLAY.*

BY J. V. CONZETT, D. D. S., DUBUQUE, IOWA.

Question: Has the advent of the gold inlay resulted in a decline in the technical skill of the profession.

The time that has elapsed since the advent of the gold inlay is so short that it is not possible to definitely determine the answer to the question assigned me in this symposium. But as reasoning by analogy is a logical method of deduction, and as we can forecast the future by our knowledge of the past, I think that it will not be difficult for us to arrive at a solution of the problem as to the future of the technical ability of the profession, even if we can not say that there has been a retrogression in skill at the present time, due to the appearance of the cast gold inlay.

We know the disaster that was wrought in Prosthetic dentistry by the appearance of vulcanite. Before the days of vulcanite the prosthetic dentist was a skilled workman, who had perfected himself in his art by a laborious apprenticeship and by reason of the difficulties involved in the making of a gold denture he became a master

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workman; one that needed not to be ashamed of his product. But upon the advent of vulcanite all his knowledge of the working of gold and the manipulation of the metals incident to the making of a gold plate was of no use to him, and by reason of the ease with which vulcanite could be adapted to the uses of the dentist, he lost his ability to use gold in prosthesis and the magnificent art of prosthetic dentistry degenerated into rubber boiling, with all of its attendant horrors. This was true, not because vulcanite was not a valuable material, for it was and is, but because it was a material that required no especial skill to use; it made the making of a denture an easy matter.

We see today examples of the highest skill in the making of artificial dentures on vulcanite basis, but where you see one such you will see one hundred miserable make-shifts that are unfit to be placed in a human mouth.

What is true of prosthetic dentistry and vulcanite is true of operative dentistry and amalgam, and I do not decry amalgam. Perhaps no material has ever saved as many teeth as the much abused amalgam. But the old operators that perfected themselves in the use of gold, became the skilled operators that they were simply because it was necessary to work hard in order to perfect themselves in the mastery of gold foil, and the exactness of detail demanded by the material produced men that were accustomed to overcome difficulties and were consequently artists in their profession. All of this labor was not necessary in the making of an amalgam filling, anybody could mix up a batch of amalgam and putty up a hole in a tooth and it would stay there for a while, so it was a success. The result was a brood of tooth-pluggers that could not make a gold filling that would permanently save a tooth to save their lives, and today the mad rush of the profession after the gold inlay is a sad commentary upon the ability of the average dentist in making a gold filling. Indeed, one of our ardent inlay advocates admitted that he never made a gold filling with which he was satisfied, and that that was the reason he did not make them. So if the past history of the profession teaches us that the introduction of an easy method of arriving at a result will cause a decline in technical skill, I am sure that the advent of the gold inlay will not be an exception. I do not want to be understood as disparaging the gold inlay. I believe that vulcanite in the hands of the skilled prosthetist is one of the very best materials

to use and has blessed thousands. I believe that a good amalgam is one of the very best materials to use, and countless thousands of teeth have been saved by it that would have been lost without its beneficent aid. So I believe that the gold inlay is the best thing that has been given to operative dentistry in the past twenty years. But as Emerson tells us, "Every man is as lazy as he dares be," and it takes the stimulus of difficulties to be overcome to bring out the best there is in a man. Remove these obstacles and make his path easy, and he quickly degenerates into a vagabond; so remove the difficulties from the path of the operative dentist, and he will quickly lose his technical skill. This need not be so; it will not be so to the earnest worker. He with clear eyed vision will see the danger of deterioration and the very danger will be a spur to his endeavors and he will become an expert even in the making of a gold inlay and his technical skill will increase instead of diminishing. But the vast majority will take the path of least resistance, will take the easy method, and assuring himself that cavity preparation does not count with the gold inlay, that decay does not take place around the margins of an inlay, and will become slovenly in his cavity preparation. He will say that it does not make any difference if his inlay does not perfectly fit, that the cement will fill the gap and that it will only dissolve out to the depth of the width of the margin, and will therefore become lax in his adaptation.

But we do not look entirely to the past for our evidence, for in the past few weeks patients from four of Chicago's best men have come to me with inlays in their teeth that were made by those men, and I know that none of those men would have sent out a gold filling as faulty as those inlays were. In two of them the margins were so bad that you could throw a cat into them (if I may be pardoned slight exaggeration), and in the other two cases the cavity preparation was very faulty indeed, the margins of the cavities at the bucco and linguo-gingival angles being carried so far into the embrasures that the angles were all in vulnerable territory. If our best men will become so careless what will the ordinary fellow do?

In conclusion, Mr. President, I want to commend the use of the gold inlay in its place, but it should be used with discretion, and to be successful must receive the same careful painstaking attention that is given to the gold filling. If this is done in every case, if the operator strives to make every operation better than the last one,

there will not be a decline in his technical ability but he will go on from victory to victory, for "To him that overcometh shall be given the crown of life." I can not close without urging the profession and particularly the younger members thereof not to abandon the use of gold foil as a filling material. The older men will not. They know the value of it. But aside from its merit as a filling material, I know of nothing that will so perfect the technical ability of the operative dentist than will the mastery of gold foil. The man that can make a good gold filling has acquired a technique that will be of the greatest assistance to him in the mastery of any other material, and other things being equal the man that has gained this technique will make a better operation with any other material than one that has not acquired it.

WOULD THE PROFESSION SERVE THEIR PATIENTS BETTER IF THEY WOULD USE MORE AMALGAM FILLINGS INSTEAD OF GOLD INLAYS?*

BY CHAS. P. PRUYN, M. D., D. D. S., CHICAGO, ILL.

In these latter days of rapid progress in the arts and sciences, these days of wireless telegraphy and aerial navigation, these days of a knowledge of how to prevent the propagation of many diseases by the use of antitoxins, and the destruction of the particular microbes that are thought to be the cause of each particular disease—also these days of the very extensive use of cast gold inlays by the dentists, which seem to have met with such a general adoption by the rank and file of the dental profession, who are now enthusiastically crying from the house tops, "Eureka, we have found it"—would seem to indicate that if anyone should have the temerity to call for a halt in the extensive cutting of good teeth that is necessary for such work, he would be considered a weeping prophet Jeremiah, weeping and wailing over the sins of the dental Jerusalem that he alone saw, while all the balance of the profession would look on scornfully and deride the conservative one for his old foggyism and lack of progress. But the present conditions are such that the program committee thought it best to have some one sacrifice himself by again calling attention to a material that has no superior, and probably no equal as a tooth

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saver, in the cases where it is indicated, and the name of that material is amalgam.

It has done good work as a saver of frail teeth, and has filled a want that nothing else has ever been able to approach.

It is possible, and quite probable, that in the exuberance of youth, and the enthusiasm of most of us over a new method that promises so much, we are apt to forget the old and tried material, amalgam. Therefore, it has been thought best to keep in mind that there are many places in the posterior teeth where amalgam can still be used to much better advantage than any other material I know of.

Take, for instance, the disto-occlusal surfaces of the molars, and in some instances the same surfaces of the bicuspids, where to properly shape the cavities for inlay work it would be necessary to resort to very extensive cutting, amalgam can be used to save the teeth very much more satisfactorily to both the patient and operator.

There are many cases of badly broken down posterior teeth where amalgam can be used to preserve the balance of the tooth that is left, and make it serviceable for masticatory use without cutting away all semblance to a tooth before attempting its restoration.

I realize there is a great temptation to cut largely with the small stones, instead of burs, and open up large cavities, and take an impression and make a wax inlay in the laboratory, and cast a duplicate thereof in gold; or make a wax inlay directly in the cavity and a cast reproduction of it in gold, because it can be made to look so nicely; but what of the future? Can we reasonably expect such cases to endure ten, twenty, thirty or more years, like many of the amalgam fillings we see?

If amalgam is used with care and discretion and thoroughness, it fills a want that nothing else does. But it must be used with a thorough knowledge of its working qualities—that is, of how to use it to get the best results. It is so easy to manipulate and get passable results from its use that only a very small percentage of our dentists ever get the results that are attainable with it. To get the best results from this material, there should be no bevel edges left for the amalgam to lap over, as it has not edge strength sufficient to retain an attenuated edge like gold; that is, no thin overlapping edges of amalgam should ever be left, as they will invariably crumble under the stress of mastication and leave an unsightly crevice in which decay may take place.

It should be used as stiff and dry as possible, and packed with small instruments at first, reserving the use of the larger ones for completing the operation. The first pieces should be a little softer than those subsequently used, so that with small instruments and rotary motion and direct force it may be brought into absolute contact with the walls of the cavity, and all air spaces obliterated. It is not an easy thing to do this, and it can not be done in a careless, hurried manner.

But it can be done, and has been done, and is being done every day, by a greater number of conservative operators than ever before. But the best results do not follow the use of large instruments in packing this material into cavities of nearly the size of the instrument used.

How satisfactory it is to see amalgam fillings that have been in constant use for twenty, twenty-five, thirty years or longer, and still doing good service; and we know the amalgams of two or three decades ago can not compare with those of more recent date. If some good work was done by the careful use of poor material, what may we not expect from the use of a fairly good material such as we have at the present time.

With all due regard for the beautiful, well adapted, well contoured, nicely polished cast gold inlay of today, I predict that my successors of thirty years hence will not find as large a percentage of my gold inlays that I am putting in at the present time as I now see of my amalgam fillings that were put in thirty years ago. Please do not misunderstand me, as I am not opposed to the gold inlay, when and where properly used, but I am opposed to the indiscriminate use, the unmechanical faulty cavity preparation that we too often see in this present craze over the gold inlay.

Unless something is done, and done quickly, to stop this inlay craze, the skillful manipulation of gold foil and amalgam as fillings for carious teeth will soon be one of the lost arts.

That the cast gold inlay has come to stay I haven't a doubt, and that too much praise canot be given to the man who has successfully demonstrated his mechanical aptitude in devising a method whereby the work can be done so simply and effectually. Of course you know to whom I refer, our talented fellow townsman, Dr. William H. Taggart.

While it is possible for us to now do such beautiful cast inlay

work, please do not forget the admirable results that have attended the careful, painstaking use of amalgam in the past and the almost absolutely certain results that will still follow its conservative use in the future. We know it will last and do good service a very long time. We do not known as much about the inlay yet, we haven't had the time to test it a sufficient number of years.

Until we have a cement that has sufficient adhesive qualities, to hold in absolute contact two dissimilar hard substances of very many times its own weight, and neither contraction or expansion in setting—and impermeability to moisture and insolubility in the fluids of the mouth, the permanency of inlay work in the filling of carious cavities in human teeth will be more or less conjectural.

PYORRHEA ALVEOLARIS; ITS PREVENTION AND CURE.*

BY JOSEPH W. WASSALL, M. D., D. D. S., CHICAGO.

Very properly described in the annual address of our out-going president at the last meeting as the "Scourge of Human Mouths," pyorrhea alveolaris is in its destructive potency the peer of dental caries. Susceptibility to both these maladies is governed by the subject's age, for, generally speaking, caries is a disease of youth, while the attacks of alveolitis occur at maturity.

The pathology of pyorrhea alveolaris is but imperfectly understood, and its etiology is still a mystery, notwithstanding the opportunities afforded for its observation and study by its almost universal prevalence. Investigators differ widely as to whether it is a local or systemic affection or whether it is a combination of both, or whether there are not the two distinct types of the malady, local and systemic. Adherents of the various schools of belief as to its nature and etiology have written voluminously, and it must be confessed convincingly to establish their varying speculations, and to upset the tenets of opposing doctrinaire.

Until the essential nature and real causes of this many-sided affection are known, the ordinary practitioner is left to work out his own salvation, availing himself of whatsoever of the teaching of others appeals to his best judgment, combining with it the results of his own study and clinical experience. It follows, therefore, that in the

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present state of knowledge his treatment must be empirical—as, in fact, it is.

There is a widely prevalent and deeply rooted notion that excrementitious matter circulating in the blood, due to malnutrition, suboxidization of metabolism, or faulty innervation is the paramount cause. Pierce, Kirk and more recently Endelman are strong believers in this theory. But all of us have seen patients with pyorrhea entirely and permanently cured by local treatment alone. Kirk and Endelman ingeniously attribute the formation of uratic deposits upon the roots of teeth to a localized lessened alkalinity of tissue at the point where the concretion occurs; but the arguments set forth that motion in a part lessens alkalinity is far-fetched and hardly applicable to firmly socketed teeth. It is a far cry from the red muscular fibers of the great toe to the parsimonious distribution of white fibers found in the peridental membrane. The every-day observer of cases is impressed by the great fact of susceptibility and immunity. Upon what do these conditions depend? That predisposition to this affection in the organs is the controlling factor is borne in upon us every day. But in what this predisposition consists we are in the dark. We know that life-long sufferers from arthritism are entirely free from pyorrhea alveolaris, while subjects in robust, perfect physical health are its easy victims. That a depraved physical condition encourages any local inflammation cannot be disputed. That it must be corrected is obvious, but internal treatment alone will not suffice to cure any of them, let alone pyorrhea alveolaris. It is generally accepted that pyorrhea alveolaris in common with other modern diseases is one of the penalties exacted by civilization. It is the direct result of a departure from the savage state of man, when his dental apparatus performed its full physiological functions. It is a well-known biological fact that the teeth of man or beast will not remain solidly fixed in their osseous and gingival seats unless they receive the hard usage nature ordained, or its artificial equivalent. This deficiency must be supplied if we would have the dental organism survive.

The equivalent of the strenuous use of the teeth and jaws which primitive man was perforce obliged to employ to maintain life is a return to harder food stuffs and the application of artificial friction.

To establish a new regimen in the lives of our patients is a task from which the bravest might shrink. It is a herculean undertaking

to reform dietetics in these days, when the luxury and ease of good living invite our indulgence on every side.

The advocacy of a regimen of plain hard food is an old propaganda, but it needs to be promulgated with all the force and authority of a new cult, championed by a masterful leader, who will be supported by all the authority of the dental and medical world. But such a drastic reform in the habits of life being not immediately practicable, or being too Utopian, we must rely upon the other factor in prophylaxis; namely, artificial friction. The best means by which this is applied now at our command seems to be stiff-bristled brushes. The entire gingival surfaces of the alveolus are to receive the rubbing —the motion of the brush to be vertically downward on the maxilla, and upward in the mandible. A three-minute sand-glass (egg boiler) should be used to indicate the duration of brushing. The full time as stated should be employed without shirking—twice daily. A conscientious practice of the above recommendation, it is the belief of the author, would practically abolish the disease under consideration. But these ideal conditions do not obtain, hence we are brought to the last part of my paper; namely, the cure of pyorrhea alveolaris.

First, there are many cases so far advanced that they should never be treated—the teeth should be extracted. By error of judgment or too sanguine expectations, efforts to prolong the existence of teeth seriously affected only afford temporary relief, and by a recrudescence of old conditions open the way to a spread of infection.

When the disease has advanced far upon one member, the exposed uneven surfaces of the root inevitably harbor growths of pathogenic microorganisms. It is, therefore, futile and unwarranted to make efforts to prolong their existence. This is as true of incisors as of molars.

In these days of really reliable bridging to supply lost teeth, it is no longer a calamity to sacrifice one or two members of a dental arch to protect the whole.

The clearing of the mouth of condemned offenders having been accomplished, measures to restore normal conditions in other affected members of the arch are in order.

The treatment consists of surgery, medication, splinting, and instructions in personal hygiene to prevent recurrence. As a preliminary procedure, the mouth and pockets are thoroughly sprayed under high pressure. Surgery involves correcting occulsion—always

diminishing the excess which the disease usually has produced, and relieving the liability to more than very slight contact with opposing teeth. This at once removes a source of irritation, and is in accord with the general principle that all inflammations subside more easily in physiological rest. The removal of the concretions is then accomplished.

Medication is not, to the writer's mind, an important matter. Measures to remove all foreign matter, both infective and mechanical, should, of course, be taken. This, it is needless to say, is imperative. Pyrogenic membrane lining pockets or sacks should be curetted and cauterized in the first treatment, but this should not be repeated.

The case now is ready for immobilization by splinting, if the conditions require it. This is an important aid, but the comfort thereby afforded should not lull the operator into false security, tempting him to conserve unworthy teeth, as is so frequently the case.

The patient should be instructed as to the curative value of brush friction on the gums, and absolute cleanliness. Until the pockets are healed, an atomizer should be used three times daily, at home. Prolonged brush friction with cold salt water, at least three minutes twice daily, will keep the pockets evacuated and prevent the formation of bacterial colonies at the gingival margin or in the unhealed pockets. Demonstrate how the brush is to be applied directly to the whole surface of the alveolus and the importance of brush movements only from apical ends to necks.

The results of this extreme prolonged brushing with hard brushes and cold water have been so surpassingly successful in curing and preventing recrudescence of pyorrhea alveolaris that I am convinced that it has a more profound influence than mere asepsis and toughening of the soft tissues, which was the object first sought. It is fair to presume that even the most dexterous and expert manipulator of the scaler of tooth roots will frequently fail to detect and remove deposits entirely. The inference is, therefore, that as these cases get well the deposits are resorbed. It is my belief and theoretical conviction that the extreme brushing recommended happily stimulates the activities of the cementoclasts in the peridental membrane to an extent which has heretofore been unsuspected.

DENTAL CEMENTS.

BY A. C. HEWETT, M. D. LL. B., CHICAGO, ILL.

I think there is not an up-to-date educated dentist that will say that there is a dental cement wholly reliable and trustworthy for the uses required. This lack is much to be regretted. A universal demand should induce a supply.

At the forty-third annual meeting of the Illinois State Dental Society, at Quincy, Ill., May, 1907, a notable paper was read by Dr. C. C. Corbett on "The Advantages of Cement as a Cavity Lining Under All Dental Fillings."

If human evidence can, in the language of judical rulings, be "conclusive," then Dr. Corbett built an impregnable structure of conclusiveness, proving advantages not only theoretically but practically. To add to the strength of his fort Drs. J. P. Root, C. B. Rohland, A. M. Harrison, J. M. Barcus and T. W. Pritchett, built an abatis defying hostile approach to its walls.

Dr. Dittmar's assertion that cements are porous and will absorb moisture, quoting Drs. Black and Poundstone, was, as lawyers say, *non res judicata,* and consequently irrelevant.

Dr. Corbett argued that, for the use advised, cement (as found even) was advantageous. No nosing searcher has dug up a substratum of cement deposited as Dr. Corbett advised, and found a "Fly in the ointment." Until that is done, the "sane and safe" plan may be wrought out, and too the claims of the inlay enthusiast vindicated.

Another incident of the discussion of Dr. Corbett's paper, I wish to note, for it goes to the very heart of the matter of cements. I refer to the manner and matter of what was said by the last speaker in discussion, before the closing reply of Dr. Corbett.

The speaker referred to was Dr. Fred B. Noyes of Chicago. He is a young man, yet undeniably a scientist to make older men listen. He permits me to quote from his argument. The words are as recorded, but I shall not attempt a description of the "suggestive," "hypnotic" force that flamed out from him and sent his telling points home with the impact of a rock hurled from a catapult. I quote. "I have within the last half hour, since listening to this paper and

discussion, been tempted, when I go back to Chicago, to take my microscope and scientific apparatus and throw them into the Chicago river, for it seems to have destroyed my faith in things to which other men pin their faith, and to give me faith in things which other men doubt. I cannot understand the faith of the dental profession in cement. To me it is the most unreliable thing that I know anything about." * * * * * *

"I do not see how any man, who has ever removed a crown or a bridge, and cut the cement out from under it, and has had the delightful sensation to his olfactory nerves, can believe that cement hermetically seals anything, for we will find that this cement is permeated by organic matter. How did it get there?" (*Transactions of the Illinois State Dental Society,* 1907, pages 200 and 201).

Reference has been made to the paper read by Dr. Corbett, to his able corps of supporters and to the courageous wail of Dr. Noyes, who not denying the conclusiveness of the evidence in favor of the value of cement as a lining, not calling in question the veracity of either the writer of the paper, or his supporters eloquently and tersely gave an array of facts known to be such by every intelligent listener, and when once admitted as facts seem logically to raise a barrier of dispute.

It (cement) cannot be depended upon.

Reference aforesaid has been made, not to laud the writer of said paper and his supporters; nor to praise Dr. Noyes.

The mal-odors Dr. Noyes shuddered over I could smell as he spoke, and I know quite as well as he, perhaps, the effects of the housed-in, disintegrating, toxin-breeding masses upon the health of the victim.

How often these nesting places (smells) contribute proliferated microbes to cause attacks of diphtheria, malignant scarletina, or the "white plague," I do not know, but it is fair to infer that such breeding-places of micro-organisms cannot be productive of health or give permanence to reparative operations, no matter how well or skillfully performed.

I have been besought by letter and personal appeal for explanation. Why, I cannot tell, for I frankly aver that of the formation and manufacture of cements, I know as little as how to make a loaf of bread or a plum pudding.

As I view the matter in retrospect, both Dr. Corbett and Dr.

Noyes were right. Dr. Corbett nowhere claimed successes for cements except for a certain use.

A fact familiar to all observant dentists argues strongly in favor of Dr. Corbett's practice, to-wit: recurrent decays contiguous to porcelain inlays, rarely, if ever, are seen. Nor does the cement holding the inlays disintegrate. At least till the lapse of ten to twenty years; even at that time no mal-odor is harbored. The same condition obtains under all-around, closely-fitting shell crowns. Puzzling facts? Not at all if the explanation I shall attempt, explains.

At the outset I ask the charity of readers to take for truth some statements necessary to the explanation, sans argument. To give reasons for statements would require space sufficient for a book.

All dental cements harden, "set" by process of crystallization. The solids, whether oxids from metals, from rocks, earths or silicates, are seized by the bite of phosphorous and dragged into place and take forms through excipient moisture, named crystals, prisms, columns, etc.

The excipients, or moistures concerned are named "waters of crystallization." The force drawing the solids, and piling them in heaps, or cairns, shaping facets, planes, parallels, cones, parabola, helicoid or point, is named crystallogenic attraction: a force we know as little of, as of gravitation, light or heat.

When left to form with no impinging or impedite force they are rhombic, the nearest perfect specimens in shape may be found in agate goedes of Saxony. When the goedes are broken they are found lined with beautiful crystals of quartz or amethyst. Their greatest power of crushing resistance lies in their longest diameters. Their points are often so hard as to cut glass.

A familiar homely illustration from Nature will give hint to what the foregoing leads in explanation. Certain kinds of tubers, the potatoes especially, in natural growth have a flattened oval. Grown between two tree-roots they take curious forms, but always elongating more than widening proportionately.

Crystals of cements under tightly fitting inlays of porcelain, gold or readily setting amalgam have to "grow between roots;" dentinal on one side, metallic or ceramic on the other. The planes of least resistance being at right angles of dentine and inlay flattens

and lengthens them. This is element one, favoring inlay and cavity-lined processes.

Element No. 2 follows as a deduction from premises above stated. When considering liquids used chemically potent in formative labor of "cairn and heap" of gathered solids, the liquid element indispensable in formation of dental cement-crystals is water, and like disks of blotting paper between solid compressors, will not drink up oral fluids laden with acetic acid or otherwise as readily through their edges, as they would from an uncompressed flat surface.

Element No. 3 can be very briefly stated. The sides of the flattened crystals on the one side lie against the inlay, and on the other against enamel. Two very barren surfaces on which micro-organisms have to cling, feed, and proliferate. So much for the advocate of cavity linings under fillings and of the inlay enthusiast.

But what of the other side? We all know what Dr. Noyes said was true, every charge confessed, of large fillings and illy-fitting crowns.

I will give but two reasons for the unreliability and mal-odor complained of by Dr. Noyes. The first concerns the powder. The second the liquid.

Oxid of zinc is the universally used base for the powder. Why, I am utterly at a loss to determine. The American product (zinc oxid) is notoriously unreliable, though of less cost than the foreign make.

As said before, zinc is the base of cements. If used, then the best (none too good) should be chosen.

The debasements of zinc are arsenates, sulphates, silicates, carbonates, and other adulterants of lesser note. If not honestly and skillfully cupellated, Metalicized, an impure metal will result, and the composition (silica 25, 0, zinc oxid 67, 5 and water 7, 5) will not obtain. The variance will be carried to the commercial output, and (as hereafter noted) cements therefrom will be tainted.

As an aid to manufacturers of poor cements, zinc is isometric; (blende), crystallizes in octahedrous, and allied forms so that imperfectly and insufficiently calcined oxids yield a powder that when moistened with phosphoric acid in aqueous solution will "set," crystallize in the form (generally) of acute rhombohedra; modified, however, as to strength and form, by adulterants.

The oxid powder is not crystalline but impalpable in contradistinction to "amorphic."

In the non-crystalline, impalpable condition the ultimate particles are absorbents of moisture; voraciously thirsty; like the flower of wheat (triticum vulgaris); moist before mixing.

Now here in this pocket of absorptivity lies the *crux criticorum*, the puzzle of the critic, Dr. Noyes.

Manufacturers of cements take the zinc oxid, calcine (?) it at a heat to drive off the moisture inbibed from the air, but not sufficient to carbonize the impalpable, and change it to an amorphocrystalline condition (in this latter its ultimates, moisture proof). They fail to make what Dr. J. O. Keller names "all grit." (Vide his article on Cements, *Dental Review* for February, 1908, page 97.)

Not only this, but reckless of the frailty of the solvend (cement) and in defiance of chemical coalescences, and somatics, manufacturers charge their basic phosphatic liquids with sodium, the thirstiest imbiber of moisture of any element of which we have knowledge; one with the least resistance to lactic, malic or acetic acids, or to other digestive forces originating or placed in the human mouth.

It is not strictly germain to the purpose of the present paper to give suggestions which shall remedy the evils spoken of above.

Protection against moisture should be given to prevent the dissolution of the waters of crystallization.

If desired, in another paper, I may give the result of some experiments that I am making with amber, fossilized and artificial, to cover in and protect the said water-crystals, and by the use of germicidal antiseptics render them prophylactically impervious to microbal assaults.

PRESIDENT'S ADDRESS.*

BY M. E. HOLLAND, D. D. S., JERSEYVILLE, ILL.

It is a custom, I believe, to have the president of this society deliver an address, no matter how short, or how long. Mine will be short.

I wish to speak of a few of the fads in the dental profession. A fad is tersely defined in the later editions of the dictionaries to be a hobby. It has become, however, so commonly used to express this idea, that I presume any explanation is unnecessary.

The reorganization movement in our State Society in 1904 was almost considered a fad, and it was thought by some members of the State Society to be an impossibility to make a success of the undertaking; but under the generalship of Dr. A. D. Black, under whose bonnet the bee was hatched, and who, with other self-sacrificing men of ability in our profession, undertook this task, a marvelous success has been accomplished. This is shown by the increase in membership (which in 1904 was 376, and at the present time is about 1,500), and also by the interest displayed by men now in the societies that seldom or never attended a society meeting before.

I congratulate the Madison County District Society that it has taken its place at the front in membership and attendance, and also for the interest displayed by the members to make it one of the banner component societies of the state; and it is to be hoped that we will all consider it a matter of honor not to let it fall behind either in membership or attendance or in anything else that tends to make a good society.

We may sometimes feel that we are so busy we cannot afford to quit the office for this meeting, and anyway will not miss much by staying at home this one time; but "this one time" is likely to be followed by another, with the same excuse. We are aware of the fact that excuses are one of the dentist's long suits. After missing a few meetings we begin to lose interest and that good-fellowship and friendly feeling that comes from rubbing shoulders with our fellow-practitioners, which has an elevating effect and gives us higher ideals in professional life.

The library movement recently started by the State Society makes it necessary for us to have the journals to keep up our li-

*Read before the Madison County District Society.

braries. The society members should make it their business to see that the several journals, namely, *Digest, Cosmos, Review* and *Items,* be secured for this purpose. Who will volunteer to subscribe for one of these journals and donate it to the library, so that the collection may be maintained? Those of you who will, I would suggest that you give your pledge either to the secretary or to Dr. A. D. Stocker, who is at present in charge of the collection for the library located at Alton, so that we may be sure to have them at the end of the year. After the members have donated the journals, this society should charge itself with the duty of seeing that these volumes are properly bound, which will not be a very great expense. The probable cost will be seventy-five cents per volume, which, after the volumes on hand are bound, will amount to about $3.00 per year. The volumes already in the hands of the collector should be bound now, or as soon as the files are completed, at the expense of this society. I hope such action will be taken at this meeting.

Many years ago, before some of us were born, Dr. Arthur advocated the wholesale cutting away of tooth structure, to make large V-shaped spaces between the teeth. He must have presented this fad very forcibly to the dental world, if I am to judge by the way it was taken up by the dental profession from the box of old files I fell heir to in the office of my predecessor. Some here have never seen the result of that miserable practice which at one time was almost universal, and if ever a fad was to be condemned, this one was chief among sins, as it disfigured the teeth and left an opening for food to pack into the interproximal space, which was a great annoyance forever after.

Dr. G. V. Black's paper of about 1890 on the interproximal space was the first to intelligently point out the reason for preserving and protecting this space, which should always be done for the comfort of the patient. But, alas! too often, I fear, it is not taken into account in our eagerness to get hold of the lucre, and a working space is secured with a file, a disk, or a wooden wedge. The teaching we had at college, twenty-four years ago, was to cut a piece of orange wood into a nice little wedge, and, with a wooden mallet to drive it between the teeth. You don't have to be told what effect that will have upon the soft tissues, but it was a universal practice to go hunting up a pair of wedge cutters about that time, until the patient had quieted down. Now if an immediate

separation is absolutely necessary—and in many cases it is the best plan—I should recommend the Perry separator as the best little instrument of torture to accomplish the purpose. It was gotten out in 1884, but it was some time after that before I ever heard of it.

The filling of root canals has had its full share of fads; most "everything under the sun" has been stuffed into or at these small spaces once occupied by pulps of teeth, a few of which we will enumerate. I mention gold, first, as that was the first material I was taught to use for filling a root canal, and the good Lord only knows how close I got to the goal, but many times since I have thought of it and wondered what the outcome was. The fad of filling roots with amalgam, copper points, lead, spunk, cotton, wax, paraffin, cements, wood points, pure gold wire luted in with oxychlorid of zinc, carbolized catgut, or anything that can be gotten in, have apparently all had their day, although some of them are adhered to at the present time. Guttapercha points and chlora-percha are more generally used at this time. My fad in filling roots is to manufacture my own root canal points of Hill's stopping, using a little oil of cajeput to moisten the root before introducing the point, just a little, and that is enough to soften and seal the material to the walls of the canal and to make it possible to carry it to the end.

As an aid to help in filling a root difficult of access, I make metal points of gold spring wire, warm it and force it down through the gutta-percha, which I think is a great help and timesaver. But of all methods of taking care of a pulp canal, the fad of using cotton and a mumifying paste I consider the most slovenly fad of modern times. The most I have seen written on this practice comes from Dr. Waas, an acquaintance of twenty-five years ago. When I first read of it in 1898 I thought it good practice to hold fast to that which is good and use that which is new with fear and trembling. I could never bring my conscience to a point to allow me to try it.

Twenty-five years ago the fad of capping pulps was carried to such an extent that some operators would not think of destroying a pulp, but would consider it a case of malpractice to apply arsenic on a pulp because he found it exposed. If it was in a healthy condition, there was, of course, nothing to do but to cap it carefully; if it was sick, treat it till it was well; if part dead, cut that off and restore the rest to vigor and activity, measure carefully the exact dis-

tance up the root to the living tissue, and fill up just to that point, being very particular not to bring any pressure, etc.

The best treatment for an exposed pulp is its removal, thereby saving future trouble.

Implantation was a fad that, by the rank and file of the profession, was regarded in the light of a scientific experiment. Nothing is heard of it any more, although twenty odd years ago there was thought to be a great future for it in replacing a lost tooth—especially for a public speaker or singer—and thereby save the annoyance of wearing a plate.

It is to the bright and ingenious fellows in the dental profession that we are indebted for most of the fads. They make hobbies of them, and sometimes before they are ridden to the end and found to be useless, the dentist parts with some good money in exchange for a machine of their invention to try the merits of the fad. I allude now to cataphoresis and the outfit which was to be a great boon to suffering mankind. Cavities were to be prepared and filled painlessly by this procedure. We all know how catchy that is, even if only as an advertising medium, and perfectly ethical, too, so long as it is not put in public print, which is not necessary, if successful, as it goes fast enough from the patient to a friend. We all wanted this new invention whose merit was proclaimed at every society meeting, and were watching the workings of it to determine which one we would buy; but it seemed that something prevented it from giving the desired results at all times. So the purchase was deferred from time to time, in my case, until a salesman dropped in my sanctum with the only perfect outfit on the market. It was with the greatest pleasure I gave him a trial, which lasted a half hour, at the end of which time I told him I was not in need of an outfit at all, as I preferred to use sharp instruments.

Cocain is not attracting so much attention from the dentist as formerly. When cocain was first introduced it was exploited and used injudiciously, as are most fads. The consequence was that its application was followed with a good many uncomfortable, unpleasant, and sometimes fatal results, which, for the time, brought it into discredit. This was due to the ignorance of those using it. Cocain undoubtedly has many good qualities, and is a boon to the dental profession. It is also a deadly poison and should be applied with the greatest care. Even to this day it is being used by many in

whose hands it is a very dangerous agent. It has become an ingredient of many of the nostrums that no ethical dentist should use under any circumstances.

With the advent of the rubber dam in the early sixties, which was in the all gold age, the method of gold filling was revolutionized from the flat, soft gold filling, and was carried to the other extreme with the use of cohesive foil, with which whole days were sometimes consumed in building up a tooth to usefulness, or a monument to the skill of the operator. This not only taxed the endurance of both patient and operator to the limit, but if they survived the ordeal, the harmful results, caused from the long continued malleting, were likely to cause the loss of the member entirely. This was observed, and one of the most brilliant members of our profession came out in open rebellion, at last, and proclaimed a new "fad" of plastics, insisting that instead of gold being the only material fit for the preservation of tooth structure, that, in proportion as teeth needed saving, gold was the very worst material that a dentist could use for that purpose. Many accepted his theories and practiced them, to their future sorrow and humiliation; yet in the terse statement given of his position, that "in proportion as teeth needed saving, gold is the worst material with which to fill them," there lies the grain of truth, which has destroyed, we hope forever, the pernicious activity of the golden "fad." Today the men of our profession of the widest usefulness frankly acknowledge their employment of amalgams, cements, gutta-percha, porcelain and gold, as agents through which they bestow their best services to their patients. So through the contending forces of the opposing "fads" a proper equilibrium is being established which will add much to the aggregate of our usefullness in the future.

The crown and bridge work fad we all know is not a new invention and to no one man belongs the glory of its perfection. It is one of the most potent adjuncts in modern dentistry and places within our reach a means of service to mankind that has the highest possibilities. There is something very fascinating about bridge work, especially as its successful completion, like all other works of civil engineering, betokens a more than ordinary amount of skill, and its advantages are real and obvious in that it provides a system of restoring lost and broken down and useless teeth and roots, thereby dispensing with plates. Nevertheless, there are objectionable fea-

tures, even in an apparently perfect bridge, as I think I can truthfully say it is never kept clean, and I don't think it possible to keep it as clean as the natural teeth. Bridge work has limitations beyond which the honest dentist must not allow himself to be carried by his enthusiasm or his greed. There is considerable temptation to the unscrupulous to shut their eyes when conditions contraindicate this class of work, because of the money there is in it. The enthusiastic bridge worker nearly always clinches his arguments with the all-sufficient and telling assertion of how well it pays. Also the competitor across the way does it and must not be permitted to monopolize all of the glory to be gotten out of this fad, the greatest invention of modern times.

The modern fad of inlays has a grip on the dental world today, surpassed by no other fad. The porcelain baby was conceived by Dr. B. Wood in 1862 and has developed through the different stages from grinding a piece of broken tooth to fill a cavity made circular in shape, on down until today we have the scientific fad of inlays baked in a metal matrix by electricity, gas, gasoline and alcohol. Those baked by the latter are principally made up of flux. Some enthusiasts went so far as to abandon the plugger altogether for this new fad, and when questioned as to the limitations of porcelain would boldly proclaim there were no limitations of the advisability of the use of the porcelain inlay except the ability of the operator to place it. Since becoming a fad a few years back when all society clinics were made up largely of porcelain inlays, today it is an exception. It failed to fulfill our expectations. It has run its course and found its true place as a filling material, which seems to be a very limited field, being confined to the labial and buccal cavities on account of its esthetic effect. Porcelain not being equal to the strain of mastication, it became necessary to invent a substitute that could be cemented into the cavity, hence the swaged, burnished and soldered gold inlays were used to fill the gap until Dr. Taggart's experiments produced the casting machine, which is a great achievement, and with which it is claimed all of the hard work in gold filling is eliminated or made easy. But failures will surely come to many along with this greatest invention of modern dentistry,—an invention that revolutionizes many good and long employed methods. There are those who will fail or fall far short of success by the heedless use of the casting machine.

I do not want to be a pessimist and oppose that which is new —far from it—but, in working out the every detail in the method of making a cast inlay, it is just like learning dentistry over again. As a time-saver, I find it a delusion, but a very interesting class of work indeed. Make gold inlays, to be sure. At the same time I would urge upon each the necessity to keep up in the use of foil and pluggers and retain his skill as a foil filler by making many such fillings, because we shall have use for them years to come.

We should be conservative, use good judgment in selecting the best material and method that is indicated for the special case that comes up from time to time. No operation ought to be made on the human body without careful thought as to what is best in that particular case, so I believe no dentist is justified in making experiments in which he can have no reasonable ground to hope for success.

THE PORCELAIN CROWN IN DENTISTRY.*

BY DR. H. N. DONALDSON, BELLEVUE, OHIO.

I don't know how often this society has had before it for consideration artificial crowns of various kinds. I was present once when Dr. Thatcher read a very interesting paper on the subject of artificial crowns, and without any hope of presenting as good thoughts as he did I have elected to discuss briefly and in an humble manner the same subject—"The Porcelain Crown In Dentistry," with particular reference to the Justi crown.

About five years ago, possibly longer, there was placed upon the market by H. D. Justi & Son a porcelain crown known as the "Justi Crown." I shall only describe it briefly, as doubtless you are all familiar with it. The crown and pin are detached. The pin is of platinum and silver, which is more rigid than platinum and yet can be bent to suit the requirements of any case. In one end of the pin there is a groove and it passes into a horse-shoe shaped hole in the crown making a stronger anchorage against the tendency to rotation than any other crown with which I am familiar where the pin is not baked into the crown. The crown contains undercuts, and with the somewhat unique construction of the pin and the use of a good cement it seems to me we get a remarkably strong attachment

*Read before the Sandusky County Dental Society.

between crown and pin. The pins are made in three sizes and in case of a large crown such as a central incisor or cuspid, a large pin to fit the crown may seem to require the root canal to be enlarged to an extent that would seem to weaken the root. This may be overcome by banding the root. I seldom do that, but have often reduced the thickness of that portion of the pin which I wish to introduce into the root canal by the use of a carborundum wheel. I am not here to discredit any of the porcelain crowns—far from it. Great has been the service rendered to humanity by the Logan crown, and the same can be said of the Davis and others, but it seems to me the Justi Crown is superior to the Logan in one respect at least, and that in the case of a closely overlapping bite or articulation. I have never seen a Justi Crown that had been sprung out of its position by the force of mastication as sometimes happens with a Logan Crown. I had such a case just last Thursday—a lady well along in years wearing a left lateral Logan Crown. I do not know for how long, nor do I have any reason to doubt that it had been well adjusted, but it was sprung forward clear out of line with her other teeth to such an extent as to catch and irritate her lip. The pin was bent and stretched but not loose in the root. This was such an exaggerated case that I was able to pass a very small bur along three sides of the pin and cut out the cement, and in that way was enabled to remove the crown. The pin was then straightened and the crown reset as best I could under the existing conditions.

I have in three or four cases with considerable satisfaction both to patient and myself been able to use a Davis Crown where a Logan had been broken, leaving the pin firmly anchored in the root. In such a predicament, a Davis Crown can often be adjusted pretty securely to a Logan pin and avoid having to drill out the pin and the consequent weakening of the root that such an operation sometimes necessitates. A case where a Logan Crown might suggest itself to me rather than a Justi would be some such case as a lower incisor where the root canal is, and must necessarily be small. The force of mastication on the lower anterior teeth is not of a nature to spring them out of position.

I began the use of the Justi Crown in September, 1904, cautiously at first and gradually approached the time when I felt I could use them with a considerable degree of confidence, and why do I now use them with a degree of confidence? Because in more than four

years' time I have made use of at least several dozens of them and so far as I know not one has gone wrong. If they are not all in as good condition as they should be it is probably due to a faulty adjustment on my part. Not one of them has come off or been broken so far as I know. Of course, such a thing might have happened and not been reported to me. I regard the Justi crown as being fully as easy of adjustment as are the Logan or Davis crowns, and at least a little bit stronger in the attachment between crown and pin than is the Davis and less apt to be sprung from their position than is the Logan crown. I do not band the root for any kind of porcelain crown as a rule, which means that I rarely make use of a Richmond crown. There are exceptions to all rules, however, and in cases where it seems advisable the root can be banded with a Justi crown as easily as with any other with which I am familiar. Success with it as with all other bandless porcelain crowns, depends largely upon the condition of the root, the accuracy of adjustment, and the use of a good and reliable cement.

PROCEEDINGS OF SOCIETIES.

CHICAGO-ODONTOGRAPHIC SOCIETY.

A meeting was held January 12, 1909, at the Northwestern University Building, Chicago, with the president, Dr. Fred W. Gethro, in the chair.

The subject for the evening was a symposium on "Operative Dentistry."

1. Dr. G. V. Black read a paper entitled "Conditions of Saliva in Relation to Dental Caries."

DISCUSSION.

Dr. M. R. Harned, of Rockford, Ill.:

In asking me to open the discussion on Dr. Black's paper, it makes me feel as Brother Nichols did in prayer meeting, when called on to pray. He began by saying, "Oh, Lord, give us power; oh, Lord, give us power," and some brother in the audience said, "Brother Nichols, suppose you ask for ideas." (Laughter.) And that is the way I feel tonight.

To attempt to discuss a paper by an authority like Dr. Black upon so important a subject as this is quite presumptuous on my part.

Dr. Black has given us an excellent review of the theories of the etiology of dental caries ,and his paper is so complete and concise as to need no comment further than to emphasize a few points. He outlined very thoroughly and clearly the progress of the etiology of dental caries. The first was inflammation, a theory which was untenable. Second, the chemical or acid theory of decay, which was exploded by reason of finding that the saliva of the immune was quite as acid as that of the patient when the decay was most ravenous. Third, the germ theory, which has been substantiated and demonstrated by Miller later.

Dr. Black is not responsible for what I say, and probably I shall say some things he will not corroborate. These two theories, the germ theory and the chemical theory, contain essentially the truth of decay. Fourth, out of these theories and through them comes the theory of hard and soft teeth. This theory Dr. Black has exploded by demonstrating that there is no difference in this respect worthy of consideration, and "We will have to look to the saliva for the solution." Dr. Williams added a point to this in 1897 by showing that the teeth of the lower animals were less perfect in structure than those in man, and yet were practically immune to caries except in cases of domestication.

In 1887 Dr. Black called attention to the gelatinous plaque under which caries is found to occur, and it begins to look as if this was the secret of dental caries, not the cause, for the cause of caries seems always present. It is the Pandora box, the cover of which must be lifted and known. Who will reveal this? Will Dr. Black do so? It is one of the most important of many questions demanding the answer of the dental profession.

Dr. Michaels has shown that the sulphocyanids bring about immunity. Is this done by dissolving the plaques or preventing their formation, or what is the process? These are things we want to know.

I want to say a word or two in explanation of Michaels' classification of saliva, particularly the hypo- and hyperacid kind of saliva. These he distinguishes by certain salts, and, as I understand, hypoacid saliva or "lymphatism" indicates vital overactivity, favoring a rapid change of tissues, too rapid elimination and hydration, and consequent lack of tonicity. That is what he means by hypoacid saliva. In other words, it means lack of balance and a contagious diathesis.

By hyperacidity he indicates tonicity as distinguished from the hypoacid saliva, slowness of change; retarded oxidation, and lack of elimination, as illustrated in the gouty and rheumatic diseases, and all dental practitioners have observed the immunity of such patients from dental caries.

In 1903 Dr. Kirk, of Philadelphia, presented to this society a paper on the subject of "Saliva as an Index of Faulty Metabolism," which dealt with hyperacid saliva only and to me was one of the most interesting and instructive papers I have ever listened to, and I think many of you will remember it. It seemed as if Dr. Kirk was about to solve the problems which are confronting us today; but I regret very much that he has not reported having done so, for it seems to me of prime importance.

Dr. Carl Rose's work is a wonderful one. I hope he has not yet reached its conclusion, although he has suspended publication. It seems as if he ought to be able in this connection to solve many problems, and either corroborate or refute many others.

I feel for my own part that the Chicago-Odontographic Society is in good shape to push on this work of the study of the saliva better than any other organization in the United States, and I hope some step will be taken to persuade Dr. Black to carry on this research work, as I feel that he is the man to do it.

2. Dr. J. Q. Byram, of Indianapolis, Ind., read a paper on the following questions:

"What is the Status Today of the Average of Porcelain Inlays Inserted in the Last Six Years?

"What is the Status of the Most Expert Work in Porcelain Inlays During the Same Time?

"Can Porcelain Inlay Work Still be Recommended as in Years Gone By?"

DISCUSSION.

Dr. Lester Franklin Bryant:

In looking over this paper there is nothing that I could take exception to, so I shall confine what few remarks I have to some data I got out of my books today.

In going over my books of the latter part of 1902 and all of 1903, I found I had inserted fifty-two porcelain inlays. So you see that my practice is not so large that my health is in danger. Of those fifty-two fillings, I have seen forty-three during the last six

months; out of the forty-three fillings there were four failures. In two of these the cavities were so shallow that it is a wonder they stayed until the patient got out of the office. The others were molars and, of course, the margins frayed out. In one of the cases there were four inlays inserted in the anterior teeth; the posteriors had been filled with gold by a man you all know, and know he did good work. These fillings were beautiful. The patient had a severe illness lasting about two years, aud when he reported at the office, his mouth was in a lamentable condition, and all the work that did not have to be replaced was a bridge and the four porcelain inlays.

3. Dr. M. L. Hanaford, of Rockford, Ill., read a paper on the following subject:

"How would you treat the following case: A child, eight years of age, presents with decay of a first permanent molar involving the dentin to the pulp, but the pulp not exposed. It is understood that if all the carious dentin is removed, the pulp will be exposed."

DISCUSSION.

Dr. R. J. Hood, of Sparta, Ill.:

The question fails to state the condition of the pulp, but from Dr. Hanaford's treatment of it, it is safe to infer that he assumes there was considerable pain in the pulp before the patient was brought to consult a dentist. In this case we are confronted with two unfortunate conditions, either the necessity to devitalize or temporize. The need of the dental pulp in these cases to complete growth or development of the tooth is so apparent, and the circulation of the pulp so free and full, and its vital resisting power so great at this time, I believe in such a case we should adhere to the biblical adage, and of the two evils choose the lesser, and try and retain the pulp.

I believe in these cases it is wisdom to use a temporary filling, such as the oxyphosphate of copper, but I shall always think it is advisable to impress upon the patient or the one who accompanies the little one, the necessity of seeing the tooth at frequent intervals if any occasion should demand, and state to them specifically what has been done, and why. The high percentage of successful cases of this kind justifies a procedure similar to that mentioned by Dr. Hanaford, and I agree with him in his method of treating them.

4. Dr. J. V. Conzett, of Dubuque, Iowa, read a paper on the following question:

"Has the Advent of the Gold Inlay Resulted in a Decline in the Technical Skill of the Profession?"

DISCUSSION.

Dr. C. N. Johnson:

It gives me pleasure to commend the essay of Dr. Conzett. It seems to me sound in its logic and clear in its prophecy. That there is no operation in dentistry which so surely develops the technical skill of the operator as does the manipulation of gold foil there can be no doubt. Dental work of all kinds is being better performed today by reason of the exacting nature of gold as a filling material. Given two men starting out with equal ability and let one practice extensively the insertion of gold foil, and the other practice without it, in ten years time the former will be an infinitely better operator than the latter. He will have the ability in his fingers to do a higher class of work and do it easier. There is something irretrievably lost to the man as an operator who does not develop a good technique in gold filling. It teaches not only manipulative ability but it impresses the lesson of painstaking care. Gold foil will tolerate no lack of precision, it enforces exactness. In a profession where so much of our work is technical this is an important factor in developing skill, and if the advent of the inlay shall displace gold foil fillings it will surely result in a decline of manipulative ability.

No one will argue today for some of the extensive restorations in gold foil that were formerly made. It would be folly to go back to that, but it would be equal folly to discard entirely a material which has done so much for the teeth of the human family as has gold foil.

Dr. Conzett has pictured the decline of prosthetic dentistry following the introduction of vulcanite. It is the history of the profession from the first that the scramble for the short cut has resulted in a deterioration of skill. The easy way of doing things has almost always been demoralizing to the profession, and there seems to be a constant tendency among the rank and file to let down. This is no argument against inlay work when properly performed. It is a great and beneficent adjunct to our many methods of saving the human teeth, and we should welcome it as such. But if we allow it to dominate us in our practice it will ultimately detract from the peculiar quality of technical skill which in the past has made dentistry what it is.

One of the greatest dangers I see in inlay work, so far as it relates to technical skill, is its possible influence upon our students in

colleges. Those familiar with the teaching of students will readily recognize the necessity for careful training in technique, and this training in the past has been accomplished more perfectly by the insertion of gold foil fillings than by any other means. If practitioners are prone to look for the short cut it may be said that the average student is actually infatuated with it. The possibilities of bad technique in inlay work and the temptation to cover it up with the scapegoat of cement is a demoralizing factor which must be closely reckoned with in the teaching of students.

The advent of inlay work need not and should not detract from the technical skill of the profession, but that it will there can be no doubt unless we have an occasional reminder in the nature of just such papers as we have listened to from Dr. Conzett.

5. Dr. C. P. Pruyn, of Chicago, read a paper on the following question:

"Would the Profession Serve Their Patients Better if they Would Use More Amalgam Fillings Instead of Gold Inlays?"

DISCUSSION.

Dr. G. W. Dittmar:

No one regrets more than I that Dr. Wedelstaedt is not here to open this discussion. Just a few hours ago I was notified that I was to open this discussion, consequently I have not had time to prepare formal remarks. However, I shall endeavor to give you a few thoughts at random.

Dr. Conzett and Dr. Johnson covered the field very thoroughly, and said things better than I can say them. In fact, they have said almost all that can be said on this subject. Dr. Conzett paid quite a tribute to amalgam. What Dr. Pruyn has said I can heartily agree with; there is practically no exception to be taken, yet there are one or two things that might be mentioned.

Dr. Pruyn stated that gold inlays twenty or thirty years hence would probably not preserve the teeth as well as some of the amalgam fillings that he has seen which were put in twenty or thirty years ago, or had gold inlays been placed at that time, he thinks they would not have preserved the teeth as well as the amalgam fillings that were inserted at the same time. We must consider the conditions under which amalgam fillings are doing such good service; the health of the patient, the condition of the saliva, the conditions which naturally surround the teeth and fillings, etc. I believe under similar

conditions gold inlays, well made and properly fitted, if inserted at that time, would be now doing better service than those amalgam fillings. We know that a great many amalgam fillings do not last more than a few years. We know it is a much abused material. We know that there is more sloppy work done with amalgam than with any other filling material. Much harm results from putting amalgam into places where it should not be, as the interproximate spaces, etc., by sloppy dentists. It takes skill to place a first class amalgam filling. It takes considerable time as well to do so. It cannot be done in a few minutes, and an amalgam filling that is not inserted right is not going to do good service any more than a gold inlay which is not properly made.

Another very important place for amalgam is in the filling of cavities in deciduous teeth. I think it has quite an important place there, and also in the permanent teeth of children, where it can be used very advantageously, and where other materials cannot be well used.

Regarding the gold inlay, I have said numerous times, and I still stick to it, it will take some time to convince me otherwise, that a well-made, perfectly-fitting gold inlay, properly cemented, is one of the best fillings that can be used *where it is indicated.*

Regarding the life of inlays, I stated the chairman of the program committee, notified me but a few hours ago, since that time I took the trouble to call up a prominent dentist in this city, a man whose word is unquestionable, and in substance this is what he told me over the phone. I knew this man had some of the late Dr. Swasey's patients, and possibly most of you know that Dr. Swasey made gold inlays many years ago; that he was one of the pioneers in this class of work. This man told me he had a patient who came to him who was a patient of Dr. Swasey's a little over forty years ago. This patient had two gold inlays placed by Dr. Swasey in two lower molars in 1868. About ten years ago this patient presented himself to this dentist, who examined the mouth. The patient in 1868 and shortly after had a considerable amount of work done, a number of gold fillings inserted, some crowns, and other work. He also stated that most of the teeth that had been taken care of at that time had been lost since; the crowns and teeth that were filled. There were two teeth in position with two gold fillings in practically perfect condition, and the two inlays that were placed at the time were in

good condition, saving the teeth, and doing excellent service. They had been in position for over thirty years at that time, so we know something about the life of some inlays.

GENERAL DISCUSSION.

Dr. John K. Conroy, of Belleville, Ill.:

I am very much surprised to travel about three hundred miles up here to listen to a talk on that much degraded substance—amalgam—a substance which a few years ago, I think, I would be put out of a dental society meeting of this nature for speaking about, and yet it is a material that ninety per cent of the dentists of the country are using—and I do not believe I am exaggerating—for filling teeth. Fifty per cent of the dentists owe a large part of their living to the use of amalgam. When we consider the manner in which amalgam fillings are placed in teeth, and the condition, or way we see them later, it is a wonder they have ever stood, and yet they are standing. I venture to say that an amalgam filling, properly made, the filling properly polished until the surfaces are just the same after you get through as when you make a gold filling, is as good as any filling you can put in the mouth. (Applause.) You inlay men are doing the profession an injustice; that is not saying I do not make inlays, and whoever the shoe fits, please wear it, Dr. Dittmar not excepted. It is all well and good to speak about inlays. I know of a case where Dr. Rohland, whom you all know, and I am sorry he is not here tonight, told me he had removed a porcelain inlay which had been placed in a central incisor before the advent of the furnace for baking the inlay. It was a piece of porcelain tooth ground to fit the cavity and cemented to position, and he told me that inlay had been in position for seventeen years. But we do not operate in that manner today.

Dr. Dittmar spoke of a well-made and properly-fitting inlay. That is the only kind of an inlay to put in a tooth; but I am here to say to you that a well-made and properly-fitting gold filling, or a well-made and properly-fitting amalgam filling will serve the purpose just as long and possibly longer than an inlay because of that film of cement. In fact, I would rather trust an amalgam filling with cement under it in my mouth than I would a cast inlay or any kind of inlay. I mean it. There is a tendency on the part of the human mind to grasp at something easy, and I do not believe there is anyone in the profession who is connected with dental colleges but

what can see more of that every day. Students do not want to make gold fillings. There is a tendency of the human mind towards retrogression when it comes to grasping new ideas. There is not enough conservatism used in dental practice. In all other lines, all other business lines, there is more conservatism used than there is among the dentists today.

I attended the Illinois State Dental Society meeting in 1904 or 1905, shortly after I moved into the state, and at that time I thought the dental profession was going wild about porcelain. At the meeting in Moline everything was porcelain inlays. The next year the society met in Springfield, and there was not quite so much of it, and at the last meeting I do not believe there was a porcelain inlay clinic. And you will do the same thing with regard to gold inlays. Possibly, you think it is easier to make a gold inlay than a porcelain inlay, but I have only this to say: Do not place too much confidence in the gold inlay. Follow the ideas of the men from Minnesota and those up in that neighborhood, and in Iowa, who are following out the ideas of proper cavity preparation and the most approved methods of placing fillings, and by so doing you will make your fillings in a proper manner. Make your amalgam filling on practically the same lines as a gold filling; prepare the cavities on the same lines, with the one exception of not beveling the margins, and have your patients come back in a few years and look at the fillings, and you will be surprised.

Dr. Edmund Noyes:

I am an optimist by temperament, by habit, and by preference, and I want to give you an optimistic word tonight.

Dr. Conzett, and Dr. Johnson following him, have pointed out to you some very serious dangers and risks that are coming to the professions in connection with inlays, especially in connection with gold inlays. I will not minimize these dangers at all. They are great. But I want to give you the lines on which they may be avoided; it was hinted at in the paper, and I want to elaborate it a little. There is no doubt that the field for the gold filling has been encroached upon on the one side by the porcelain inlay, on the other side by the gold inlay, somewhat also by amalgam, though to a trifling extent. During the last ten years, since we have had a decent material for the purpose, good amalgam fillings have been put in; but notwithstanding this, do not forget that there is a large field

for the filling of teeth with gold. (Applause.) There are a large number of places and conditions in which nothing else will serve your patients so well as well-made, properly-fitting gold fillings. The necessity for making them is frequent enough if you recognize it to maintain your skill in the handling of gold. So there, gentlemen, is the way to avoid the loss of skill in consequence of the introduction of gold inlays.

If the profession had recognized the same thing fifty years ago in the relation of rubber work to gold work, and realized that a great number of cases might still be better served by full or partial plates than by rubber plates, they might have avoided deterioration of skill in prosthetics, which lamentably and disastrously came over the profession. This time we must not make any such mistake, and instead of loss of skill we must gain it. To the man who keeps his perfection of skill in making a gold filling, the necessity frequently to make a gold inlay will give him additional skill of no mean quality. I tell you, gentlemen, it bothers me to get enough skill to make gold inlays that I am at all satisfied with. (Applause.) It is skill of a different sort, but it is not of a low order, if it is done properly. We are having in these days necessity for the skill of porcelain technic, for the skill of gold inlay technic. It is indispensable that from year to year the profession becomes more skillful, and not less so, and we shall do it.

Dr. Arthur G. Smith, of Peoria, Ill.:

Walt Whitman says, speaking of men and their relations to each other, "I do not call one great, and another less; that which fulfils properly its own time and place is the equal of any." And, it seems to me, that there is room for a little additional light on the side of difference in technic.

We have all been harking back to the good old times. We have heard a good deal about the times of the good old prosthetic dentist that did all this good work. I stand on my feet, young as I am, although I am getting over that (laughter), to say, I believe there are more good prosthetic dentists today than there ever were in the history of dentistry. I believe that there is a higher service in the line of prosthetic dentistry to be had, if anyone wants to pay for it, in the City of Chicago than the sun over shone upon in the good old times that people talk so much about.

Eighteen years ago I went down to the island of Nantucket,

and it was my privilege to take to pieces some of the gold plates that were made by dentists on that island, the good old Quaker dentists, and the amount of technic they must have had to make the plates, bake the teeth, and carve sections, was something wonderful; but, gentlemen, you would not put those plates in anything but a museum now (laughter). If you think anything of the theory of infectious diseases, you would have them in hermetically sealed cases. (Laughter.) The point I am getting at is this: In the good old times there were here and there and somewhere else magnificent workmen, but the rank and file were found more rank and coarser file than they are now. (Renewed laughter.)

We have heard a good deal of talk about the profession wanting to grab something that is easy. Is it not possible that one's intellect is capable of grabbing something good? Is it not possible that we are far enough advanced to rely upon our own judgment? In this matter of gold inlay work, as opposed to gold fillings, and all that, is it not possible the next step is being taken? We all know what we went through with porcelain; but we are apt to forget that out of the stress and failure and disappointment of porcelain has come this gold inlay process, that never would have come if we had not had the inlay idea. The inlay idea was all right, but the material was wrong. While we put these magnificent fillings in, we have got to have a little consideration for the fellow at the other end of the instrument. There is no question about it; we may call it a bread and butter proposition or anything else, we must have some consideration for the fellow at the other end of the instrument. We are not the whole thing. You, gentlemen, ought to appreciate the idea that an inlay can be put in with a minimum amount of pain to the patient and with a minimum loss of time, because nobody seems to have time enough to do anything in Chicago. That is my observation. The inlay idea has come and it will develop, although it has weak points. Perhaps we already see these weak points; I see them, and am trying to avoid them. The idea is with us to stay, and the only thing for us to do is to strive to eliminate these weak points in some way or other. But you talk about there not being *conservatism* enough; in my judgment, there is not *progress* enough in this profession or any other line of human endeavor.

Dr. W. O. Fellman:

I was pleased to hear the papers that have been read tonight

and the discussion of the last speaker. We all enjoyed it immensely. I am a lover of the gold filling, of the amalgam filling, and of porcelain, too, as well as the gold inlay. Each one has its place. But what I want to make a plea for is, gentlemen, be honest, and do not cut a tooth to pieces in order to put in a big gold inlay, when it is not necessary. We as a profession want to get along and want to make a lot of money. Of course, we do. We want to get along the best we can, but what I do hate to see, is a man who will deliberately cut a tooth to pieces in order to put in a gold inlay and get fifteen dollars or twenty dollars for it, when he could have put in a gold filling without cutting away the tooth half so much. Perhaps either amalgam or gold would do just as good service as a big inlay. Gentlemen, be honest, and don't be too greedy.

Dr. E. H. Allen, of Freeport, Ill.:

A word or two with reference to porcelain inlays. The porcelain inlay is the right kind of filling where indicated, as referred to by the last speaker. Of course it is. When a porcelain inlay is indicated, you would not think of putting a gold filling in its place. But so far as my observation goes, it is the tendency of porcelain inlay workers to cut away pretty freely the tooth, and as a consequence much good tooth structure is sacrificed in order that a durable porcelain inlay may be made.

With reference to gold fillings, where a gold filling is indicated and the cavity is accessible, I can put a gold filling in that cavity and get such margins that you cannot get by any other process or any other kind of filling, inlay or what-not. But there are many places where the size of the cavity and some parts of it are inaccessible, so that a gold filling cannot be inserted and secure the margins and results which I have named. That is where the gold inlay is indicated. Do not fool yourselves into thinking that you can put a gold inlay in places with a minimum of skill, or that you do not have to be careful about it, because if you are not careful with a gold inlay and do not have the cavity properly prepared and the wax model well made, and have expended the greatest amount of skill you are capable of from start to finish, when you put it into the cavity, it won't go. Nobody would put a gold inlay in a tooth that does not fit the cavity. It is not supposed that anybody will get up and talk about putting a gold inlay into a cavity that it does not fit.

Something has been said with reference to amalgam fillings that

were put in thirty years ago, and are doing good service today. I grant you, once in a while they will last that long, but not very many of them, and you do not see many gold fillings that last for thirty years. Dental operations, like other things, are subject to all the ravages of time and influences of decay that cause failure. It is a wonder to me that many of these fillings last as long as they do when you consider what they have to go through with, and are surrounded with.

Dr. E. M. S. Fernandez

Prefaced his remarks by telling a story which illustrated the point that a good deal depends on what side the dentist looked at these filling materials, and then said: The moral of all these papers is that the proper material with which to fill a cavity is that which will save the tooth, provided, at the same time, it saves the patient's nerves. The man who will master a knowledge of what materials to use, where to use them, and do the proper work is *the* dentist.

Dr. B. G. Maercklein, of Milwaukee, Wis.:

I do not think the paper of Dr. Black has been sufficiently brought to the front this evening in the discussion, and there are points in it worthy of emphasis. We have all been dealing with the ravages of decay instead of looking more to the prevention of it. In my opinion the forte of the future dentist will lie in the prevention of disease of the teeth the same as the great feature of the physician at the present time seems to be in the direction of prophylaxis and the prevention of disease in the general body. The greatest efforts are today concentrated on the prevention, and not the curing of disease, and it is necessary for us to exert our energies more in that line than it is to simply repair all the havoc that has already been created, and I hope that this society, as has been indicated, will take up this subject and bring it more to the front and, if possible, urge Dr. Black to follow up these lines of research work more systematically than he has hitherto done and eventually try to evolve some truths out of what seems at the present time to be more or less indefinite assertion, and that we may know something of where it is necessary to step in to prevent decay rather than repair cavities after they have been formed. This society is in a position to do a great deal more in that line than any other society. This would do more toward the saving of teeth and their preservation than all inlays, all fillings, and materials combined. It behooves us to think

along this line, and let us make efforts to follow it more. I emphasize this particularly because I see a great deal of the needs of these conditions, and the various men who have followed it have usually been single-handed and alone; they have received very little support from the profession at large, and it has been difficult for them to carry on the work. Without proper assistance from societies like this, it is almost impossible for them to carry it out, and yet it is amazing to think how much has been absolutely accomplished.

Speaking of materials for filling teeth, and of methods used, I remember a few years ago speaking before this society on the subject of inlays, when I was called to the floor, impromptu, as I have been tonight. At that time I said in connection with porcelain inlays, the less I said on that side, the better it would be for the advance of porcelain inlays, and I am glad the pendulum has swung in the other direction. Gold inlays will do the same thing. All these filling materials have their proper places and, if properly used, particularly in places where they belong, they are valuable adjuncts; but we should not let them sway us like the fashion in women's hats, which varies from one season to another. Let us be conservative and hold fast to that which is good, and discard that which is worthless.

I remember making the remark one time in regard to porcelain inlays when platinum matrices were used, and someone had devised a method by which he could reproduce a matrix without failure, without having the patient come to the office again, that I could fill such a cavity with gold and do a better piece of work in less time than this man could reproduce a matrix in the patient's mouth. I was laughed at at the time, but I think it can be done, and I am glad to know that some other men have the same conceit I have who can do the same thing, as I have heard it expressed by one gentleman here tonight.

Dr. William Conrad, of St. Louis, Mo.:

Although I have had considerable trouble reaching this city this morning, only five hours late, the meeting this evening has been a great pleasure to me. I see the tendency of the Chicago-Odontographic Society is toward the practical.

In reference to inlays, I was interested in Dr. Byram's estimate of the percentage of inlays put in today as compared with the number put in six years ago. It has been stated by a prominent dentist

within the last year that there is only about fifteen per cent of porcelain work done now as compared with that done six years ago. That is not an estimate of the successes previously achieved.

Of the papers that have been read and interested me, this evening, the one by Dr. Black and that by Dr. Hanaford were especially instructive. I think they go hand in hand and should be discussed together. Dr. Black's study was most interesting; although he stated it was only a skeleton, it was a most interesting line of investigation. It is a line upon which we must conduct our future studies, and our future progress, and not upon the question of inlays or of fillings of any kind, but absolute prevention of decay from any cause. I am simply astonished that a society of this magnitude and a program committee composed of such distinguished dentists should consider it possible in a first-class practice that an eight-year-old tooth should have the pulp exposed. This is a line of study and of practice that needs further investigation and greater perfection.

Dr. A. E. Matteson:

I shall not attempt to discuss the able and instructive papers which have been presented this evening or the discussions which have followed except as they relate to the porcelain question.

The importance of technic in the manipulation of the other materials used in the restoration of the human teeth have been most impressively set forth not only in the papers and discussion but are presented with equal importance in our special literature; so also with the treatment of the porcelain bodies for color effect, following methods of the cavity preparation, all these and much more may have been observed, in the most minute detail, and yet the entire work prove a dire failure from faulty baking.

Regarding the baking of porcelain I will venture the assertion that fully seventy per cent of the failures of porcelain work are due to imperfect baking.

Porcelain crowns and inlays have been in use a sufficient length of time to have fully demonstrated their worth and in many positions they have no equal, but the entire technic must be understood in all its details, to be able to produce this result.

The technic of baking porcelain is difficult to describe and understand, and it is hard to detect a burned or overbaked inlay. This is undoubtedly the cause of the many discouragements, failures and often the total abandonment of its use.

An inlay which discloses blisters, blubbers or pits on the removal of the matrix, is totally ruined, and should never be inserted. It is burned. Discard it, otherwise those little pits near the margins not discerned by the unaided eye will soon be in evidence filled by the secretions and produce the dark marginal lines which are often charged to the cement.

The cement line of a porcelain inlay which has been properly formed and baked will be less conspicuous than with a gold inlay.

The gentleman who just preceded me has mentioned the excessive decrease of porcelain work in St. Louis during the past year. This decrease is undoubtedly greater than in this city, but there is certainly a falling off in most all localities in its employment.

The causes for this may be readily understood—over enthusiasm in its first employment—lack of technic in baking and the interest taken in the casting of metals under pressure.

The pyrometer was introduced to furnish a heat measurement in the process of baking. This was a decided improvement, but with such limitations as expense and "heat measurement."

Now heat measurement alone for fusing porcelain is not reliable. Time and rate of application is just as important, the fineness of the grain of the body has an important influence.

Probably the most reliable method used for baking porcelain is that devised by Dr. Herman Seger, the foremost ceremic technologist of his day. He introduced it in the principal potteries of Europe in 1886, and it is now very extensively used in this country in potteries of developed excellence.

The Seger cones are prepared from clays, minerals and metallic oxids, which by experiments were found to melt at certain well known temperatures, of high and low degree. By mixing these intermediate melting temperatures were obtained, and cones made from these mixtures are so graded that they will melt and change form just at the fusing point of the product we wish to employ.

Thus we have a comparative test for fusing the various porcelain bodies. The cones are made of similar material and when placed in the furnace are subjected to the same conditions and uniformly respond to like treatment.

It is not claimed that these cones will respond to temperature tests with scientific exactitude, neither is it necessary that they should

for our purposes, but as a comparative test for heat work they are thoroughly reliable.

Dr. J. Q. Byram, of Indianapolis:

We agree with Dr. Conrad and others that as soon as we can prevent decay we will accomplish a great work. I take it that none of the essayists have lost sight of that side of dentistry. We were not asked to discuss that phase of the subject, consequently we were limited in our discussion.

With regard to sacrificing tooth structure in inlay work, I was surprised to hear some of the statements that were made, and if some of you in Chicago are sacrificing tooth structures in the manner spoken of for the purpose of inserting inlays, you are using inlays where they are contra-indicated. Regarding indications for porcelain inlays, they are indicated in cases of proximo-incisal cavities where the teeth are decayed in such a manner that a great deal of the tooth structure is lost. We are not sacrificing tooth structure in such cases. In the proper preparation of a cavity for a porcelain inlay, it is probable that no more tooth structure would be involved than in the proper preparation of a cavity for a gold filling. The points to consider are: Does the porcelain inlay meet the esthetic and cosmetic requirements better than a gold filling? Can it be made durable enough to last a reasonably long time? Many patients cannot stand the shock caused by the insertion of extremely large gold fillings.

These are points we must consider in connection with the durability of a filling. I tried to make it clear that the durability of a filling should be considered, the length of time it preserves a tooth. Undoubtedly, we have hundreds of good gold operators, and we have hundreds of good amalgam operators, but what is the character of the average work? Dr. Conrad says there are only fifteen per cent as many porcelain inlays made today as were made six years ago. Why? Simply because dentists are not willing to give the time to master the technic to do this work. Porcelain inlays, when properly made, will preserve the teeth, but one must be able to carry out every detail to make them successful. Every filling should be constructed by carrying out minute detail, but we know that many fillings do not have the detail carried out or there would not be so many failures. The difference is you can condense an amalgam or gold filling into a cavity and it will stay there, but with porcelain inlays and

gold inlays they do not stay unless the cavities are well prepared, and the inlay properly constructed.

Regarding the loss of technical skill in inlay work, we are agreed that there is nothing in operative dentistry which develops skill so much as the insertion of a gold filling. The most serious problem in dental educational work today is to know just what to teach, and how to teach it, to make the most skilful operators of our students.

I would suggest to those of you who send students to dental colleges, that you do not get them enthusiastic over gold inlays. In our institution we limit that work to our senior course. We require junior students to manipulate gold foil, and we are doing less inlay work this year than we did last.

Dr. Conzett (closing discussion):

When my name appeared on the program and some of my professional friends saw I was going to read a paper upon gold fillings, they thought I was going to decry everything else. I am not that kind of practitioner. However, I believe the gold inlay has its place in the salvation of teeth. I believe the porcelain inlay has its place in the salvation of teeth. I believe amalgam has a large place in the salvation of teeth, but I certainly believe that a gold filling has a place, and a very large one, in the salvation of teeth. I told those dentists who were abandoning the use of the gold foil that just as sure as two and two are four, they would deteriorate in their technical ability if they ceased to use gold. I told them they had better develop their technical ability in the use of gold foil. If gold foil and its uses are not taught to students in our dental colleges, they will never acquire the ability they ought to have in the making of inlay or any other fillings. In our colleges we teach Latin and Greek, not in the sense that the scholars are expected to use it daily, or when they go out into the world, but because it is a good training for the mind. And so in our dental colleges we should train students in methods of handling filling materials. If every man will take the line of least resistance, if every man will take an easy method and the profession adopts it, because it is apparently easy, they are going to make a big mistake. But it is not easy to make a gold inlay. It requires just an exact treatment of the teeth and the preparation of the cavities to make good gold inlays as it does to make good gold fillings, but it is possible to make a gold inlay that is not a good filling. It is possible to make a gold inlay that will not permanently

save a tooth, and yet that filling can be inserted so as to save the tooth for a long period of time because of the cement lining. If you cannot make a good gold filling without keeping the patient in the chair for three or four hours, then do not make it. Any man who has acquired any technic in cavity preparation; any man who has put himself under the masters in the making of gold fillings, in the preparation of cavities, should be able to make a gold filling in a shorter time than that. My assistant never gives a patient more than an hour in my chair. I can make a gold filling quicker than I can make a gold inlay. If I want to save time I will make a gold filling instead of a gold inlay.

The point I wanted to bring out particularly in my paper was this, that there would be less of technical skill in the profession if we adopted the gold inlay to the exclusion of the gold filling. I presume I am considered a crank on gold fillings; I hope I always shall be. It has been a material which has developed the best dentists the world has ever known.

One of the speakers made reference to the work done by old-time dentists. We do want to judge the work done a hundred years ago by the standards of today. The men who operated one hundred years ago and did such beautiful prosthetic work, and made such beautiful fillings at that time, in the light which they had in their day, were giants in comparison with those of us who have had every advantage and every facility which those men did not have. They labored hard; they thought much; they have given us the fruits of their labors. They gave us their original investigations without any help, and we have thought they had not done a great deal, because forsooth they did not understand bacteriology and many of those things which we now understand. Some of the plates put in in the old days may have smelled. But if you want a genuine odor smell an old vulcanite plate. If any of you will take an old vulcanite plate, put in in a sand-bath, and heat it, if you have any olfactory nerves you will understand what I am talking about. There is hardly anything on earth that will compare with it as regards disagreeable odor. So it is not fair to judge the work done by men a hundred years ago with that which is done today.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held December 8, 1908, with Dr. J. W. Wassall in the chair.

Dr. J. W. Wassall read a paper entitled "Pyorrhea Alveolaris: Its Prevention and Cure."

DISCUSSION.

Dr. C. N. Johnson:

Mr. President: I enjoyed Dr. Wassall's paper a great deal because it touches upon a subject which is now and has been for years one of the most important subjects we have to deal with in dentistry. The question as to whether pyorrhea alveolaris is a local or systemic disease is one which has been discussed by the profession a great deal. I have the feeling that there are some cases which are due simply to local irritation because we know that in many instances the thorough removal of the deposits and proper treatment locally will result in a cure of the disease. That has been demonstrated many times. There are other cases, however, in which I believe I am not rash when I make the statement, that local treatment, no matter how skilfully performed, or conscientiously carried out, will not result in the cure of the disease, and I cannot be convinced that constitutional effects are not a great factor in many cases of this disease. I had one instance I should like to recite which goes to prove the fact that systemic tendencies are sometimes a very prominent factor. I had a lady patient whose teeth were becoming loose; in fact, two of the upper molars were lost from this disease. The lower molars were evidently going the same way. I gave them the ordinary treatment as skilfully as I could, but I could not be as thorough in the instrumentation as I should have liked because of the sensitiveness of the tissues and the teeth themselves, so I considered the work I did was not thorough.

She went away on a vacation; the lower molars were quite loose when she went away, and I felt I could not accomplish very much for her. She came back in the fall, not having seen a dentist in the meantime. She looked better physically, and when I examined the teeth I found them comparatively firm and the gums around them in good condition, so much so that I asked her if she had had any treatment, and she said she had not. I think undergoing systemic treatment in the way of regulation of the diet, etc., had something to

do with the improvement. I saw her two weeks ago and those teeth are absolutely firm today and the gums normal, and the pockets are closed where formerly I could probe at least half way down the roots of the teeth. It was not my treatment that did it, becausc I have treated other cases more skilfully, more carefully, and with better instrumentation than I was able to give in that case, and I have failed utterly to accomplish any such result as that; and so while local treatment is exceedingly important, and while I do not believe systemic treatment will cure these cases when there are extensive and deep deposits, at the same time I cannot be convinced that constitutional effects do not have a very grcat influencc upon this disease in many of its features.

As to the local treatment, most of us are not thorough enough when we attempt to treat a case of this kind. It is a long tedious operation to go through a mouth in which there are many pyorrhea pockets, and properly operate upon them. It is not a simple or easy matter to remove the deposits. But that is not all. It is going beyond that and smoothing down the surface of the root that is hard and flint-like until it is not only smooth, but until the apparently hard incrustation is removed and we get down to good tissue into which the scaler will bite easily. We do not ordinarily follow down to the bottom of these pockets and give the instrumentation which will result in an absolute obliteration of all of that necrotic tissue and the stimulation of new granulations to fill the pockets, and unless we do that we are failing in our local treatment. I believe with the essayist that local medication of these cases is not as important a factor in the treatment of this disease as a great many believe. I believe in the thorough removal of the deposits, if this can be done, but we cannot always do it.

The treatment of this diseasc has been in my hands one of the most difficult and most unsatisfactory factors of my practice, although I have had some very encouraging results in treating pyorrhca. However, I cannot get results in this disease that I feel I can in other diseases. I can take a chronic alveolar abscess, I can take a badly broken-down tooth, and approach that kind of operation with a great deal more confidence and more satisfaction than I can a case of pyorrhea alveolaris. And still there is this feature of it I want to impress upon the profession generally, and that is, a large number of dentists are failing in their duty to patients when they consult them

for relief of this trouble. Many of them, if they see pus coming from a pocket, will say it is pyorrhea alveolaris, and that they cannot do anything for those cases. That is a cowardly position for any dentist to take. He can stop that pus, and he owes it to his patients to do so, and while I cannot promise to cure cases of pyorrhea alveolaris in all instances, I can promise patients to make their mouths healthier than when they came to me. I do not think any man ought to promise to cure every case of pyorrhea alveolaris that comes to him, because I do not believe he can do it.

DR. J. H. WOOLLEY:

I have not been able to follow Dr. Wassall's paper in detail. However, it shows that he has thoughtfully formulated a systematic plan as regards an attempt at cure of pyorrhea alveolaris. Regarding this disease, there are two schools, one of them believing that the cause of pyorrhea is systemic, and the other that it is local. I do not know that we will ever arrive at the true cause of the disease, and it remains for the researcher to discover it. From the experience I have had with this disease, I should say that local disturbances are caused from a lowering of the tone of the pericemental membrane. I have had quite a few cases where this disease had so ravaged the mouth that many of the teeth became quite loose, and in some of them I opened up into the pulp canals, destroyed the pulps, and filled the roots. In opening up the pulp canals in these cases I have not found a natural pulp, presupposing, on account of the unhealthy condition of the pulps, there was a lack of nutrition, and discovered also that the pericemental membrane had been stripped, there being necessarily pockets present. I have also found salivary calculi. Whether the calculus has caused a diseased condition of the pulp, I do not know, because I have not the previous histories of the cases to determine that; but I am rather impressed with the idea that it is a malnutrition of the pulp following periostcal trouble, together with the inroads of calculus, and then we have this disease. To determine that question, we should take our patients, get data, have them under our careful and close observation, and then we may come to some conclusion. But let us in some way get at the cause of the disease, if we can possibly do so.

I want to emphasize the importance of research work in this direction. I think it is Carnegie who has established an institute in New York for research work, where he has medical men examining

these and other cases that come under their observation, the work being carried on in a scientific manner. If we could get Carnegie to establish a similar institution in Chicago and set some of our very capable men at work, we might get not only reliable data regarding pyorrhea trouble but of other troubles that arise, and about which at present we are very much at sea. I have had fair results from treating these cases, but some of them are very intractable to treatment.

Dr. L. L. Davis:

I always enjoy hearing a paper from Dr. Wassall, because he gives us something to think about. There was one point in his paper which I was pleased to hear him emphasize, and that is the absolute necessity for surgical treatment rather than medication. So many medicines have been advised for the cure of pyorrhea from time to time that if we undertook to keep all these bottles of medicine in our cabinets we would require an office three times larger than we have at present. Whether the cause of the disease be local or systemic, we all know that, without doubt, it is one of the most general of all the diseases with which the dentist is confronted. The longer I practice dentistry, the more cases of pyorrhea I see. I think it must be on the increase. I read a paper some five or six years ago in which I mentioned that fact, and possibly it is because I am thinking along these lines; but certainly I see cases today that I did not recognize in years gone by, and from what Dr. Johnson has said, I should say the average practitioner is more likely to err in not seeing pus around the gingivae and not doing anything for it. He does not recognize the condition of pyorrhea. I should dislike to say the percentage of dentists in the city of Chicago who cannot recognize a case of pyorrhea if they see it, but I venture to put it at 75 per cent. A number of years ago a clinic was given at one of our large dental colleges on pyorrhea by Dr. Harlan. Three cases were submitted to him which had been set aside by the superintendent of the clinics of that great institution, in order that Dr. Harlan might show his skill in the treatment of this disease; but they were ordinary cases of salivary calculus. There was no pyorrhea present whatever showing that this man, whose duty it was to select material, did not know a case of pyorrhea when he saw it. The error is not so much in seeing the condition and not treating it as it is in seeing it and not knowing it. Those who are successful in treating these cases recognize them when they see them, and they do more work along this line than the average dentist.

As to this three-minute glass which Dr. Wassall recommends to his patients when they clean or brush their teeth, it is an excellent device. I have been trying to impart to my patients the importance of brushing their teeth from three to five minutes, night and morning. I tell them to carry a watch into the toilet chamber and time themselves in doing it, but I am satisfied very few of them brush their teeth for three or five minutes at a time. This three-minute glass is an excellent thing for patients to have in the toilet chamber. The trouble is the hired girl is apt to carry it off and use it for boiling eggs. Dr. Wassall has certainly hit the nail on the head, and his common-sense way of handling this subject convinces me that he knows considerably more about the treatment of this disease than some of the men who pose as specialists. I had a patient in my office this afternoon who is wearing an upper denture, and in looking over her mouth I told her she ought to have the gums of the lower teeth treated as she had pyorrhea. She said, "I know that, doctor. Two years ago I went to a Detroit dentist who told me that I had pyorrhea, and that my teeth were loose at that time. I treated them myself." She is a Christian scientist, and if she told the truth, she is the best of all of them, because I have a number of scientists who come to me two or three times a year for the treatment of pyorrhea. But she does not pose as a healer. Two years ago her lower teeth were so loose that they wabbled. She treated them herself with hot water. She would take her tooth brush, dip it in boiling hot water, place it against the gums, and reduce the swelling Her gums are in good condition today; there is very little hypertrophy of the gums; there is some recession. This was two years ago, and a dentist has not touched her mouth since. If Christian science cannot do anything else, it may cure pyorrhea.

Dr. J. E. Hinkins:

I did not expect Dr. Wassall to treat this subject in the manner in which he did; but I thoroughly endorse his views.

As to the etiology of the disease, I do not think we have anything in literature which will throw light on it. As I meet the disease in my practice, there are three different conditions we have to contend with. When I began to practice dentistry I had a family turned over to me by Dr. Edmund Noyes who had pyorrhea. The man had pyorrhea with deep pockets, so that when I ran an instrument between the wall of the pocket and the root of the tooth it had a gritty

deposit. Dr. Noyes told me that if I could save those teeth for five years I would do well. He is not wearing a plate yet, but comes to see me about four times a year, and when under a high nervous tension (he is a lawyer) his saliva and his urine have always been acid, his saliva being one-fifth of 1 per cent, taking acetic acid as a basis. When he gets more acid than that he has an acute form of pyorrhea and his teeth get on edge. Sometimes they are sensitive to heat and cold; but, as a rule, since aspirin has come out, by removing the deposits, and then painting the pockets with a saturated solution of nitrate of silver, and following that with iodin, making iodid of silver, which will stay in the pockets a little longer, and putting him on lithia water and a vegetable diet, in forty-eight hours, he is made comfortable. I cannot persuade him to brush his teeth, but he massages his gums with his thumb and finger. He will do this when sitting at his desk, and that is one thing which has helped him to keep his teeth as much as anything.

The other patient was his wife who had a different type of pyorrhea altogether, my own diagnosis at the time being a blood disease. While I believe the other case is infectious, I have no literature to bear me out. His wife has been coming to me ever since Dr. Noyes turned the family over to me. The gums were constricted tightly around the necks of the teeth. They would become sore. She is the mother of twelve children. Nitrate of silver treatment did not do any good; constitutional treatment such as I gave the husband did no good. When I took a small instrument and ran it under the gum a distinct pocket could be found, with a little pus from it, but very rarely any roughness on the root of the tooth. I would treat and clean those teeth and they did not seem to get any better, but by putting her on constitutional treatment, such as iron, strychin, quinin, etc., the pockets would almost dry up and she would get better. Her teeth were never troubled with heat or cold. I used 10, 20 and 30 per cent solutions of iodid of zinc. I gave her a syringe, after I had cleaned the teeth, and she would work it around up in under the gums, and with constitutional treatment she would get along very well. Two weeks ago I was called to see her in consultation with their family physician. We tried devitalization of the pulp; we tried constitutional treatment; she was so susceptible to heat and cold that she could not go out of doors. She came on to Chicago and I extracted five of those teeth, and I am going to put in a plate for her at once.

I have watched those two cases carefully ever since I have been in practice.

Recently I had another case of pyorrhea. I removed the deposits from around the teeth, and I found I could run an instrument clear up over the apex of the lingual root of each upper first molar. I told him the only way to afford relief would be to extract those two teeth. He said, "get them out quick." I removed them and he was relieved. He came to my office this morning and I removed the deposits on the lower teeth as best I could. He said he had never had any trouble with those teeth before. The man is from Philadelphia; I never saw him before. The gums of all the teeth are receded half way to the end of the roots; he can hardly breathe the air out-doors; he has got to carry a handkerchief over his mouth. He has rough deposits on the roots of the teeth, and the teeth are very sensitive and sore. In painting them with nitrate of silver he nearly jumped out of the chair. I stopped that. I applied it to the lower teeth and it did not do any good. It increased the pain. The object of painting them with nitrate of silver was not to derive germicidal or antiseptic properties, but from the action of the nitrate of silver on the organic matter in the teeth I expected to protect them from the atmospheric conditions. These cases were very trying. I have long since given up hope of curing all cases of pyorrhea. I am inclined to associate pyorrhea with rheumatism as physicians do. Some of them claim that rheumatism is an infectious disease; others believe it is a blood disease. I have seen cases where constitutional treatment helped a great deal, and I have seen others it did not help. This man I saw yesterday is six feet and one inch in height, weighs 190 pounds, and is a perfect Hercules in appearance. He has never had any trouble except with his teeth. In his case we cannot trace the trouble to a rheumatic diathesis or to a gouty diathesis, and so there we are.

Dr. Elliott R. Carpenter:

In the first place, I want to congratulate Dr. Wassall on the terseness of his paper and the salient points of it, and I am especially pleased with the way in which he has presented the subject. I think it is generally conceded by the profession at large that there are two methods of treating pyorrhea, one purely systemic, and the other purely surgical. We cannot lay down any iron-clad rule for the treatment of every case, because Dr. Hinkins has pointed out that what will cure one case will not apply to others. I believe that physical or

mechanical stimulation will be the ultimate slogan in the treatment of pyorrhea, and not only will it be proper and prolonged stimulation from brushing the teeth, but from proper trituration of food, and in sacrificing a badly infected dental member when it contaminates its neighbors, and replacing it with a bridge.

As to the etiology of the disease, I know absolutely nothing; but I have been a close observer clinically and in my practice of the people I see, and this thought has been forced upon me; namely, people who lead inactive sedentary lives, who are slow of movement, and inclined to be epicures, are more subject to the disease than others, especially those who lead active lives, and when the latter have pyorrhea my experience has been they are more easily treated and cured.

I have a case under treatment on which I am not quite ready to report, but hope to be able to do so at the next meeting. The patient is a girl, of frail physique, rather nervous temperament, for whom I have labored for about two years to eliminate pyorrhea from her mouth, and gradually one by one I am plucking the teeth out until I have removed up to this time seven or eight of her teeth. The young woman is in poor circumstances and cannot afford bridges. In her case I use partial plates to hold the spaces and restore the masticating surfaces, and in spite of everything I did I could not stop the pyorrheal process. She has become very anemic, and finally some one suggested that I take her to a physician who makes a specialty of using the violet ray. She has been using the violet rays religiously three times a week, and since taking that treatment her gums have become pink and hard and her teeth are tight. There is no pus. I will report further on that case at a subsequent meeting.

Dr. George W. Cook:

This discussion reminds me very much of one that occurred years ago between pathologists. In 1844, or in 1855, two great investigators —Virchow and Max Schultz—thought they had discovered the origin of diseases, and they pointed out that disease was almost always either inherited or acquired. Finally it was thought that the cellular structures were so constituted that disease originated in these particular cells. That theory held sway for a number of years until Pasteur and Koch discovered bacteria in certain cellular structures, and by isolation and inoculation of bacteria into susceptible animals disease was produced by microörganisms; so then there originated among scientific men two schools of pathology; one that the entity of the disease

was in the cell or tissues of the body; the other was that the entity of the disease was in the bacteria. That discussion has gone on from that day to this, and there are those who believe that the entity of some disease is in the cell ,while there are others who claim it is of external origin. That is the way we talk about pyorrhea, that it is in the tissues or in the body, and that it is local or systemic. We have had brought to our attention this evening again that same old discussion. Is the disease constitutional or local? If we interpret all that has been accomplished by scientific investigations as being correct, both may be the case. Since we have learned more about cellular activity and the cellular changes that are produced by a certain metabolism of the body or tissues, we must contend also that the predisposing causes are to be sought in the tissue cells. That is true of all diseased conditions, and we would never have any disease if we did not have a predisposition to it, but because we have a predisposition to a disease we do not necessarily always have to have a disease. I look at pyorrhea from an entirely different standpoint to most practitioners, and my conclusions are that we never have a disease unless we have a predisposition to it, and we may have this predisposition to an extent that we will be very susceptible to the disease; but we will never have it under any circumstances unless we have an exciting cause. Now, then, the question arises, What is the exciting cause? If the exciting cause is some external agent, what would that agent be? If we have a predisposition to pyorrhea, do we acquire it as soon as we are born, or have we inherited it? We may do both, and probably do in many instances. We are born with certain tendencies to disease. We are constantly brought face to face with the exciting causes of all diseases, and my belief is this: We never have pyorrhea until we have a predisposition to it, and there are a thousand things that make this predisposition purely local, or there may be a thousand things that will make this predisposition purely constitutional. If we have a poor circulation, in a great many instances we have a tendency to arterial disturbances. We know from experimentation that we can produce artificial arteriosclerosis in perfectly normal animals. We may have degeneration of certain cells of the arteries which interfere materially with circulation in that particular locality; but we must have an exciting cause. I believe we have always a predisposition, to a greater or less extent, to disease, and if we have an exciting cause, and that exciting cause is a bacterium, the initial lesion is made by

one specific bacterium. We cannot say what other things may be present in that initial lesion, because we know there are a number of different bacteria that inhabit the human mouth, and perform certain functions, doing so in constant contact with other bacteria in the same locality. I do not think we can say that we have a purely specific bacterium of caries. We know we have caries of the teeth; that we have a number of bacteria present in carious conditions, but we may have one bacterium which initiates this process, and the other bacteria help to carry it on (symbiosis). We know that in fermentation and in putrefaction we have a similar condition existing. We have what we call fermentation bacteria, and we have other bacteria that are the cause of putrefaction or saprophytic, or those which act on nitrogenous substances, producing altogether different compounds from those of fermentation bacteria. We can have the same conditions existing in disease, and we do have them both in caries and in pyorrhea alveolaris. A question which constantly arises in my mind is this, when we cure the disease locally, how can we remedy constitutionally some of these predisposing factors? If we have local predisposing factors, we can probably regulate them to a greater or less extent, as, for instance, a malocclusion, or irregularities of the teeth. These, in my opinion, would be purely local predisposing factors. We do not have dental caries until we have certain predisposing conditions constitutionally whereby the microörganisms in the mouth may produce and do produce a certain kind of fermentation; and we know also, if we have dental caries to any great extent for any given length of time, those individuals suffer from constitutional disturbances, which are the products of the dental caries. Are they the products of the bacteria which cause the dental caries, or is the trouble the outcome of certain constitutional conditions from bacterial decomposition of tooth substance? These are questions we have not yet settled; but my opinion is that under certain circumstances, certain environmental conditions, with certain food, and a certain way of caring for ourselves, we become predisposed and then these other things come on. The majority of infectious diseases of childhood do not come very late in life, because children, when they grow up, become immune to certain infectious diseases of childhood. They become immune to the action of these microörganisms, consequently that phase of predisposition has passed away, and only to a very limited extent do we have those troubles in more advanced age. In pyorrhea in childhood we do

not have that predisposition, but a developmental process going on by which the tissues are immune to the action of microörganisms, or else the bacteria have become accustomed to live in conditions in which they cannot produce such disturbances as have been mentioned, and later in life, under certain environment, methods of living, etc., disease may develop. In other words, a good deal depends on what we eat and our digestive powers, all of which when faulty bring about a predisposition to disease. They also bring about conditions of bacterial growth which favor infection. Dr. Johnson cited a case which brings to my mind this one fact: he said he could not do anything with a certain patient; that she went away, and later got well. Possibly, when he instigated the thorough treatment to which he referred, he did more for the constitution of that patient than he thought. The treatment relieved the patient or prevented her from the constant swallowing of bacteria which can produce more interference with metabolism and with digestion than all other things combined, and I believe if we took a broader and more comprehensive view of these facts we could handle more cases in which there are marked constitutional conditions than we think we can. In this connection I want to mention briefly the case of a woman who came to me some ten years ago suffering from rheumatism. She had consulted a number of physicians for her rheumatic condition. She suffered from indigestion, and there were constitutional conditions which we were unable to relieve. She suffered from pyorrhea alveolaris. I talked with her in regard to her case. I studied her case as systematically as I could, bacteriologically and constitutionally. She had given up the medical side of her treatment as it did no good. She had suffered for five years from a rheumatic condition. I took out some of her teeth which were badly involved with pyorrhea, restored her mouth to as nearly a normal physiological condition as possible, and have constantly kept track of the other teeth she has. By pursuing this course in her case periodically, one to six months, cleaning the teeth, her rheumatic condition has markely improved, although she still has some tendency to rheumatism. She feels stiff at times; she is not so ready, not so active, not so willing to get around; but cleansing the teeth and keeping the mouth is as good condition as possible she gets better, and so it is quite essential for her to have her teeth kept in a condition as near perfect as possible, and she realizes the importance of this. I believe that if we take these cases, watch them, think about them from

the standpoint purely of hygiene, and treat them carefully and systematically, we will accomplish more for many of these patients constitutionally than any physician could possibly accomplish for them under any circumstances with the remedies at their command.

Regarding the use of the tooth brush, Dr. Wassall mentioned the use of a stiff tooth brush. If the investigations of Miller are worth anything, they show that we cannot advise the use of stiff tooth brushes to our patients. We could do so, perhaps, if we could get patients to do just as Dr. Wassall recommends, which, I believe, is the only way the teeth should be brushed. As to the sensitive condition around the necks of teeth, wherever we find teeth sensitive to hot or cold, if we will stop and think for a moment we know there is a lot of tissue that ought to be covered up in these cases and not exposed to the fluids of the mouth. If you prepare a cavity for filling and leave it to be filled the next day, the patient will return with a sensitive condition of that tooth, because you have relieved it of its protective covering. That is precisely the condition we have in the teeth under discussion. In some cases where the gingival border of the gum has receded and a constricted condition exists, you will find the pulps of the teeth have degenerated, and when the minute calcific degeneration of the pulp begins those teeth will become sensitive to heat and cold. It is one of the symptoms you can rely on. We do not necessarily have to destroy these pulps, but I think in the majority of cases the patients would be better off if one felt justified in destroying them. In the majority of cases the process of degeneration would be arrested and the patients relieved by it.

Dr. J. G. Reid:

The more cases of pyorrhea I see, the more I am perplexed as to the outcome, and I do not know that I can add anything to what has already been said. One of the best things we can do is to inculate prinples of hygiene as our standby, and if we cannot get the coöperation of our patients in doing that, we are going to be handicapped in the treatment of this disease. If I can impress on my patients the absolute necessity and importance of taking care of their teeth, I feel I am doing something towards the alleviation and cure of the disease, and when it gets to the point where they do not do that, it strikes me we are pretty nearly hopeless in our efforts to try to retain the teeth of those patients in their mouths, particularly those who will

not give us the assistance and encouragement we should have in giving them that advice.

Dr. Wassall (closing the discussion):

I am much pleased with the discussion. There are a great many men who feel unnecessarily discouraged about the treatment of pyorrhea, as Dr. Johnson said he was, in his case. He thought his efforts had been fruitless, and that he did not achieve the amount of success in cases of pyorrhea that he does with other affections of the mouth, such as caries, alveolar abscesses, etc., but the reason the whole profession are pessimistic about their ability to cure pyorrhea is because they have listened to the stories of others who claim to always cure pyorrhea, and who think they are at fault unless they cure the worst cases that come to them. But they too often make a mistake in trying to cure cases, the prognosis of which is unfavorable under any circumstances. Take the usual acute cases, if you free the teeth of deposits nature will usually cure them for the time being, even if you do not give them further treatment.

If the cause or causes of the disease are constitutional, as some think, and not local, it is curious that when we extract a tooth that is affected with pyorrhea, the disease disappears.

Dr. Cook's remarks were very instructive. He is the best equipped man among us to discuss this subject from a scientific standpoint. I congratulate him on advancing a new idea, which may come as a shock to the men who have written so much on pyorrhea, that instead of it being the result of rheumatic diathesis, swallowing or absorption of pyorrhœic products may cause rheumatism.

I was naturally grieved to hear Dr. Cook give utterance to his remarks about the use of the tooth brush, and I must say, a stiff tooth brush will be beneficial if it is used as I recommended, no matter how sensitive the necks of the teeth are. Nature has provided, that if the pulp receives irritation from heat or cold, that there shall be normal protective calcification. I have—every day patients who come to me and say they cannot use cold water in brushing their teeth because it hurts, and generally after two or three weeks' use of cold water, as it comes from the cold water faucet, they begin to enjoy it.

FOREIGN DENTAL COLLEGES.

Zahnarztliches Institut, University of Würtzburg, Würtzburg, Germany.

Tandheelkundig Institut, Ryks Universitat, Utrecht, Holland.

FOREIGN DENTAL COLLEGES.

Australian College of Dentistry, Melbourne, Australia.

National Dental Hospital and College, London, England.

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Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

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EDITORIAL.

THE DEATH OF DR. A. W. HARLAN.

Reference to our obituary notice and New York letter in this issue will reveal the sad intelligence of Dr. Harlan's death, and it is with a sense of personal loss that we add our editorial tribute to his genius. Dr. Harlan was the founder and for many years the editor of the DENTAL REVIEW, and the journal stands today as one of the chief monuments of his executive ability. From 1886, when it was started, to 1901—except the year 1894, when the present editor had charge of it—Dr. Harlan was editor-in-chief, and the establishment of the journal on a firm footing was due to his discriminating judgment and his immense capacity for work. Nothing was too great for him to undertake, and in the accomplishment of a given task he spared neither body nor mind till the end was attained. He was one of the most indefatigable workers we have ever known, and his mind was a storehouse of interesting knowledge not only on dental subjects but on the general topics of the day. He had the most marvelous memory for facts and dates of any man in the profession, and it was always safe to go to him for information in this respect. Such a master mind as his is not often introduced into our professional ranks, and it is a severe loss to dentistry to have it taken away. When the records of the great men in the profession are finally written the name of Dr. A. W. Harlan will be conspicuous among those who wrought hard in his day for the better organization and the greater enlightenment of his chosen calling.

Great in body and great in mind, he has been taken from us, but his memory will not soon be forgotten, nor will his influence for the upbuilding of dentistry be lost.

THE MILLER MEMORIAL FUND.

This fund was started as a world movement under the auspices of the International Dental Federation to establish a suitable memorial to Dr. W. D. Miller. In foreign lands the subscriptions have been very generous, but, strange to say, in America, the land of his birth, very little has so far been accomplished. In some of the eastern states pledges have been made for substantial contributions but in the middle west almost nothing has been done. At the last meeting of the Illinois State Dental Society a committee was appointed to raise one thousand dollars, but the money has so far not been raised. This apparent laxity is due not to any lack of appreciation of Dr. Miller, but to the tendency to defer such matters to the last moment. We can not believe that America will allow itself to be behind in such a movement, and we urge the members of the profession and particularly the officers of societies all over the country to take action at once and see that America is properly represented in the fund. The chairman of the American committee is Dr. T. W. Brophy, 6 Madison street, Chicago, Ill., and he will be pleased to receive contributions, or to hear from societies intending to contribute.

DENTISTRY COMING INTO ITS OWN.

There never was a time in the history of the profession when dental service was more sought for and appreciated than now. Medical men are realizing as never before the significance of keeping the mouth and teeth in a healthy condition, and trained nurses are taught to pay close attention to oral hygiene during illness. The people are becoming more fully alive to the value of dental service as it relates to health, comfort, beauty and human happiness, and they are more willing to pay adequately for it. Dental service was never so well rewarded as it is today. In the past fees have been too low for first class service, and men have too frequently grown old and gray in practice without commanding sufficient income to live comfortably in their declining days. It has been frequently said that no calling in life is more taxing on the individual than is the close application to dental practice, and it is also true that the years of best service of the dentist are limited. When a man devotes himself conscien-

tiously to the highest class of service he should receive ample reward, and fortunately this reward is being realized more and more among the profession.

One of the most conspicuous cases of this occurred recently in the city of Chicago. A young dentist only a few years out of college did some work for a patient. It was exceedingly intricate, extensive and difficult; but the young man put his heart into the case and finally achieved a most signal success. He is the kind of man who works for success in what he undertakes more than he does for the dollars his service earns, and be it said this kind of man seldom wants for dollars. When the case was finally completed after weeks of the most painstaking effort and intense application, the patient said: "Well, Doctor, what is your bill?"

This was the first reference either had made to the fee, and the dentist answered: "Really I hardly know. I haven't thought much about that feature of the case till now."

Some observations were made by both on the amount of time consumed and the character of the work and finally the patient remarked:

"Would $8,000 recompense you sufficiently?"

The dentist said it would, a check for that amount was immediately made out and handed to the dentist, and that was practically all the discussion there was regarding the fee.

This case is really refreshing from several points of view. In the first place it is an endorsement of the principle that conscientious effort is the surest basis upon which to build to secure a just recompense, it is most creditable from the dentist's point of view because full value was given for the fee received, and it is encouraging to find a tendency among patients to place a just estimate upon the value of dental service, and to be willing to voluntarily pay handsomely for it.

The dentist in question is too modest to permit his name to be known in connection with the incident, but the case is authentic and it should prove an incentive to our young men to so equip themselves that they are capable of taking care of such operations as these when they meet them in practice. Cases of this kind and fees of this magnitude are to be more common in the future as dentistry comes more nearly into its rightful heritage, and it is to the young men of the profession that we are to look for maintaining the highest possible standard of service and for commanding respect for its value.

THE EDITOR'S DESK.

THE SOUTHLAND.

It is seven years since I started this department in the DENTAL REVIEW, and it has proved a source of great pleasure to me. But, of course, it has been dreadfully undignified. To publish matter in a dental journal which has no relation whatever to dentistry is accounted by some very excellent people to be wholly out of place and I suppose it is. But my perversity in continuing it is due to the fact that so many readers have expressed an interest in the department, and also that it is a delight for me to conduct it, and I would rather be delighted than dignified.

In February last I had the pleasure of visiting Nashville, Tenn., as the guest of my good friend Dr. Henry W. Morgan, my mission being to deliver an address on "The Life and Works of the late Dr. William Henry Morgan," who was founder and dean of the Dental Department of Vanderbilt University. This great and good man died in 1901, leaving behind him a record worthy the emulation of every young man in the profession, and it was for the purpose of trying to do some good by pointing out the qualities which made Dr. Morgan great that I visited the south. The occasion was one which I shall not soon forget.

I never visit the dear old Southland without coming away filled with delight over the traditions of the place, the historical points of interest, and the unexampled hospitality and charm of the people. Such genuine large-heartedness as one finds in the South can not be duplicated anywhere else in the world that I know of. The people of the South take the visitor into their own homes, sit him down by the fireside, and make him feel as one of them. And they do it so naturally and gracefully that he never realizes that he is being entertained —which is the very essence of entertainment.

The day I arrived in Nashville my friends Drs. Bogle, Gray and Morgan took me in an automobile out to the famous Belle Mead farm, about six miles from the city, where have been raised some of the most noted race horses in the country. The estate is now owned by Judge J. M. Dickinson, our present secretary of war in President Taft's cabinet, and has been converted into a dairy farm. Judge Dickinson's son, Mr. Overton Dickinson, is in charge of the farm and

showed us around with true southern hospitality. They are milking about one hundred cows, mostly Jerseys, and the appointments of the place are very complete. A herd of beautiful deer are running at will over the estate and lend picturesqueness to the scenery. One of the most distinctive features of Belle Mead is the presence of the typical old-time Negro quarters, maintained much as they were in the early days of the estate. They consist of a group of small houses, or cabins, surrounding an open space and each with its garden spot. The latter —Mr. Dickinson confided to us—was seldom worked, the colored people being content to help themselves from the proprietor's garden up by the big house with the utmost generosity and good will. Verily, verily, they are a race of children. This is one of the very few places in the entire South where the Negro quarters have been preserved.

It was the 21st of February and the birds were singing in the trees much as they do with us in May, while the air was balmy and springlike. Who could help being charmed with the South at this season of the year?

Nashville is situated in a basin with hills and rolling country around it, and the country is beautiful in the extreme. Not only this, but much of it is historic ground. Please remember that Nashville was founded in 1780, and has been making history most of the time since. One of the chief places of interest near the city is The Hermitage, about twelve miles out, the former home of General Andrew Jackson, seventh President of the United States. I had long been desirous of visiting this place, and one afternoon Drs. Bogle, Gray and I went out in Dr. Bogle's automobile. As usual, I fell in love with the automobile—I had been in love with the men before.

I do not believe I was ever so profoundly impressed with any trip as I was with this one to The Hermitage. The famous pikes around Nashville are most excellent for automobiling, and the sight of the old country estates along the road with their colonial architecture, the old stone fences—some of them nearly a century old—the delightful quiet and calm repose of it all melted my heart into memory of the long ago when men of might lived in these houses, owned these estates, traveled these roads, raced their horses, and fought their duels. We passed the famous Cloverbottom farm, where was located one of the noted race courses of the South. I have heard of Cloverbottom ever since I heard of horses, and I have heard of horses ever since I heard of anything. And here it lay before me, a broad expanse of the

most beautiful rolling land the eye of man ever rested upon, with an old mansion far back from the highway as calm and reposeful as only a country estate of the South can be. I never passed one of these old colonial homes without the desire to go up the long gravel road to the door, step into the broad and hospitable hall, turn into the living room and sit down by the big fire place and doze and dream. And I wanted to sleep in one of the old canopy beds opposite a south window with the breeze gently flapping the curtains and fanning me to rest, and then to be awakened by the music of the birds in the trees standing near the porch. But one can not have everything one wants in this world except in the delightful realm of imagery.

The Hermitage estate originally consisted of several thousand acres, and the state now owns 500 of it. As soon as we began to approach the place I felt as if I were on sacred ground. We first visited the old brick church which General Jackson built on the place and sat on the pew where he worshipped. Dr. Gray pulled me some ivy from the church-yard, and I am going to see if it will grow in the North.

Then we went to the old homestead and as we rode up between the rows of cedars toward the house I was impressed with the historic spirit of the place. For it was here that Andrew Jackson lived and died. The homestead is now in charge of the Ladies' Hermitage Association, and it is a veritable museum of intense interest. So many relics of Jackson and his times have been preserved that it would take hours to properly examine them. And they were all extremely interesting to me, and very impressive. Here was the bedroom where he died—in 1845, remember—with the bedstead and surroundings much as they were at the time. Here was the sideboard in the dining room, a most exquisite piece of furniture. Andrew Jackson must have been a man of taste, judging by the artistic and intrinsic character of many of his belongings. We visited his tomb down in the garden, and picked some hickory nuts from under the trees which he planted nearby. We saw the old carriage in which he drove to Washington when he was elected President. It took thirty days to make the trip in 1829. We saw—but it is fruitless to go further. I could not enumerate a tenth of what there is to see, nor give an intimation of what there is to feel. I came away in a haze of memory, and didn't wholly awaken from it till we neared Nashville and Dr. Bogle punctured a tire. That brought me back to 1909.

And it was just at this point that Dr. Gray and I demonstrated the true value of having some one along to help in case of accident to a tire. I suppose Dr. Bogle would have been there yet if it had not been for the aid we gave him. While he was putting on a new casing I sat in the tonneau raving over the wondrous beauty of the landscape and occasionally offering some sage advice about how to put on tires, and Dr. Gray actually got out of the car, kicked a piece of mud off a wheel and said he wished he had a glass of water. It is astonishing how every little helps in a case of that kind, and the tire was soon fixed and we were on our way.

The next day Dr. L. G. Noel gave a luncheon where I had the pleasure of meeting all the leading practitioners of Nashville, and we sat and told stories till my train threatened to leave me. I came home with a big place in my heart for the cherished memory of the Southland, and particularly for the good people of Nashville. The sun never shone on a land with warmer or truer hearts.

DOMESTIC CORRESPONDENCE.

SOMETHING MORE, AND IMPORTANT, ABOUT DR. TAGGART AND THE DENTAL PROFESSION.

To the Editor of THE DENTAL REVIEW:

To the older men of Illinois who for thirty years have been witnesses of Dr. Taggart's readiness to make his professional brethren acquainted with everything he knew and everything he could do, the present antagonism between him and the profession seems very deplorable, and every possible effort should be made to bring about agreement and co-operation instead of antagonism. There has been considerable complaint and criticism of Dr. Taggart, much of it by men who have not bought his machines and have no claims upon him. We are at present more concerned with the attitude and the duty of the profession toward him. There is essential and important misunderstanding by the profession generally as to Dr. Taggart's attitude, intentions and efforts as expressed in the suit he has brought for the protection of his patents. This will be best shown by a brief account of the facts, the principles and the duties relating to the subject. First as to patents: The dental code of ethics has

nothing to say about patents either directly or by implication. The "Principles of Medical Ethic" is explicit and sweeping, in a short clause as follows: "It is equally derogatory to professional character for physicians to hold patents for any surgical instruments or medicines." The attitude of the dental profession is that of tolerance, probably approval, of the patenting of such things as can be made and sold in the open market by the makers or the supply houses. This is evident from the fact that many men holding such patents have never had their membership or standing in dental societies called in question. The profession has shown, and rightly, as I believe, an uncompromising dislike and opposition to such patents as can only be enforced or protected by the collection of an annual office license or of royalties on the operations performed. These are sometimes called "process patents." This opposition is very little if at all on account of any unwillingness that one who gives to the profession some valuable new process or operation should be suitably rewarded financially. It is chiefly on three grounds. First, because the exactions are likely to be extortionate, as was the case by the Dental Vulcanite Co., and attempted by the Crown & Bridge Co. Second, because the manner of collection is vexatious and irritating. Third, and perhaps most justly, because the larger part of the money collected is likely to go to people outside the profession, who have conferred no benefit upon us and to whom we are under no moral obligation. In the case of the Vulcanite Co. this happened as to the whole amount collected.

Dr. Taggart's attitude and intentions in these matters ought to be inferred and understood by all the older men of Illinois by the illustrations of it they have seen in him during the past thirty years. It is, however, shown more positively by an occurrence that happened in July, 1906, an account of which has not heretofore been published.

At that time, long before his patents were granted and half a year before the public announcement of his process, Dr. Taggart received a letter (which I have read) in which a perfectly responsible business man of Chicago proposed, with some of his friends, to form a corporation and take over Dr. Taggart's patents when they should be granted, with such improvements as he might make subsequently, and to pay Dr. Taggart $100,000 cash and one-fourth of the stock. He refused the offer because he was unwilling to put it in the power

of men outside the profession whom he could not control, to exploit the profession after the manner of the Vulcanite Co. At the present moment the dental profession are exploiting Dr. Taggart to such an extent that he is the only man in the profession who has not profited financially by the use of his process. It is perhaps natural that the men who are doing this should have some wholesome fear that he may retaliate if he subsequently should have the power to do so, but in view of his character and record he should not be accused of it till he begins to do it. When Dr. Taggart took his patents he was advised that he could not defend the patent on his machine without taking also a patent on the process. What Dr. Taggart wishes is to sell his machines and to receive by that means his reward for what he has given to the profession. He has never asked anyone for a license fee or royalties for the use of his process, and his present suit is not for that purpose, but only to prevent the defendant from using his process except with his machine. Now the purchase of the machine carries with it, not as a favor or by agreement but by necessary legal implication, all the rights and privileges under both patents for their entire term. It has been called a mistake for Dr. Taggart to make the price of his machine so high. That may or may not be true as relates to his business interests. As it relates to the profession: If there is any man who thinks he would be casting inlays except for Dr. Taggart, let him speak up and tell us from what other source he feels sure that he would have derived the practice, and if there is any man who thinks it will not be worth $110 to him and his patients to cast inlays, crowns and bridges during the next fifteen or sixteen years, let him speak out. He would probably be laughed out of court, or if not, perhaps those who think it is worth more would take up a collection to supply the deficiency.

There appears to be a general demand on the part of the profession that Dr. Taggart withdraw his suit and rely upon the generosity of the profession to compensate him for his sacrifices and expenses in giving the casting process to them. If during the eight months from the time his machines were ready and before the bringing of his suit there had been any adequate disposition to do justice to Dr. Taggart, leaving out generosity, no suit would have been brought. If a man owed you a debt which he acknowledged but refused or neglected to pay and you brought suit believing you could collect it would you withdraw the suit and trust his generosity to pay the debt afterward?

That appears to be exactly what the profession is asking of Dr. Taggart.

The present attitude of the profession puts Dr. Taggart "between the devil and the deep sea." If he loses his suit to maintain his patents they propose (judging by the experience of what the profession has done in this case and in other cases in the past) to make him a martyr financially, and if he wins his suit they intend to make him a martyr professionally for holding a process patent. The solution of the situation is simple and the moves for it are due from the members of the profession individually. If we do not like the process patent let us sustain the patent on the machine by buying it so largely that the process patent can be left in disuse.

It is a maxim of law which applies as properly before the bar of professional judgment and opinion as before a United States Court, that, "He who comes into court asking for justice must himself do justice;" in other words, "he must come with clean hands." How can the members of the profession come before the bar of professional judgment asking Dr. Taggart to relinquish his legal rights and depend solely on the generosity of his profession while denying him the justice they all admit to be due him? or how can any man plead for the maintenance of ethical standards unless he deals uprightly himself? The adopted code does not include all of ethics, it was not thought necessary to say "Thou shalt not refuse to pay just debts."

It has been suggested and some men have seemed inclined to promise that if Dr. Taggart will withdraw his suit the profession will rally generously to his support. Possibly this is true, but in view of their not having done so before he was forced to commence a suit to establish his right, there seems reasonable ground to doubt that they would do so now. However, should there be shown on the part of the dental profession an honest effort, even at this late date, to treat the matter fairly and deal justly, knowing Dr. Taggart as I do, I believe he would gladly meet the profession if necessary even more than half way in an honest effort to remove all difficulties between him and the profession, or that part of the profession which seems to think Dr. Taggart is wrong in the position he has taken.

The remark has been made to me: "We do not like the idea of being *forced* to buy Dr. Taggart's machine." It is a common sentiment among honest men that they do not like to be forced to pay

their debts; they therefore pay them voluntarily. We owe to Dr. Taggart a great sentimental debt, which is to be paid in gratitude, affection, honors and fame, but we owe to him just as truly a debt in money for money value received, and if we refuse or neglect to pay it we ought not be any more surprised if we find ourselves defendants in suits at law than we would be if our butcher or grocer were to sue for a debt we refused to pay. EDMUND NOYES.

NEW YORK LETTER.

My Dear Mr. Editor:

It is some months since The Borroughs has had a chance to send you the news, but the desire has been strong to do so, if the flesh has not.

During the past year or so I have attended but few of our local society meetings, but on Tuesday last the First District Society announced an essay by Professor George A. Bates of Tufts' Dental School of Boston, subject: "Studies of Life as it Finds Expression in Living Matter," and as Dr. Bates' ability, sincerity and earnestness are so well known, it was not surprising to note that he attracted an unusual attendance. His beaming geniality displayed in friendly intercourse before the meeting opened gave many a peep into the personality of the man so that when he was introduced by the chairman, Dr. Taylor, as the one to read the paper, many felt quite well acquainted with him.

In his opening remarks he pointed out that in the early part of the last century there were two schools endeavoring to ascertain what life was; they were the vitalists and the scientists. What life really is still remains a problem. Living matter is only seen through protoplasm. It is not a chemical but a morphological substance. Protoplasm is complex. We cannot analyze living protoplasm.

During his lecture lantern slides were projected on a screen in which the doctor gave the most lucid and comprehensive description of the cell and its method of manifesting. He told us that a simple cell *held within itself to do what any living thing can do—even to reproduction.*

Then he went on to describe the marvelous amœba, how it invests its food and digests it. Then he showed in many ways how this cell could operate. This may sound to the reader like a return to the

lecture room, but to hear Professor Bates and see his slides was a treat, and the old practitioner who had almost forgotten biology and the young man just graduated who felt sure that he was surfeited, both carried something new away.

He went on further to say that there were two classes of cells, the general and the special. The latter such as brain cells, nerve cells and in fact all special cells lose the power to reproduce themselves.

During his address and by slides he described in a very minute way and beautifully, cell division and fecundation. In the description of the spermatozoa he told of the two purposes, one to stimulate and the other to bring hereditary character. He told us that cell division was not dependent upon spermatozoa, that cells were sexless; that back of all phenomena of reproduction was hermaphroditism. The scheme of life is for variation.

One part of the cell he called the chromatone, which he asserted was the factor which produced heredity.

The doctor spoke quite rapidly and covered much ground and he appealed to his audience several times to bear with him a few minutes longer, but so interested did all become that he was applauded again and again to continue.

Dr. J. B. Stein and Dr. Whistler were the only ones who tried to discuss the subject. The latter said that some author had claimed that a germ is a miniature of the adult and all the progeny to come and the writer adds—must be the result of all its past developments.

In closing Dr. Bates paid high tribute to the early workers in the field of biology and of philosophy.

At the close of the meeting Dr. Walker offered resolutions and called for the appointment of a committee to take up the matter of Dr. A. W. Harlan's death, of which you will give an account, I know.

Dr. Harlan came to New York in 1904 and established a practice. His office was at Thirty-fifth street and Fifth avenue. His home on Summitt avenue, Mt. Vernon, the most exclusive residential section of that town.

The funeral took place at the Church of the Transfiguration, where a most impressive service was preached by Dr. Houghton.

Those who acted as pallbearers were: Dr. Allen W. Haight, for-

merly of Chicago; Melville E. Stone, chief of the Associated Press; Dr. Archibald Campbell, of Mt. Vernon, his family physician; Dr. Charles A. Meeker, of Newark, N. J.; Dr. C. F. W. Holbrook, of Newark, N. J.; Dr. William Carr, of New York; Dr. R. T. Oliver, of West Point, N. Y., and Dr. Louis C. Le Roy, of New York.

The interment was in Kensico Cemetery, New York, about thirty miles above New York City. THE BURROUGHS.

DR. C. N. JOHNSON,

Editor of THE DENTAL REVIEW.

Dear Sir:—Every ethical dentist should rise up in arms and object to the advertisements gotten out by some of the dental laboratories. Very often I receive—and other dentists do—a folder unsealed, on the cover of which is a picture like a comic valentine sometimes with reference to the profession, or some other crude thing gotten up with the idea of it being attractive and original. So far as I am concerned, these find a snug place deep down in the waste basket without reading them, with the exception of one which I received the other day.

This one was so large it would not go into the mail box by one-half its length, it being unsealed was, of course, open to inspection by the general public. For those who do their own prosthetic work, or even those who do not, it certainly puts the profession in a bad light if read by those who do not understand.

I inclosed this circular with a letter back to the sender, and asked him not to send me any more such stuff unsealed. And more, I intend to do the same thing with all others, until they desist from getting out the comic valentine variety, and learn to treat the matter as confidential.

I believe we as dentists have some rights in this matter. I would like to hear what others think of it.

Yours truly,

7042 Jackson Park avenue. E. C. THOMPSON.

FOREIGN CORRESPONDENCE.

Dr. C. N. Johnson, Editor of THE DENTAL REVIEW:

Basel, Switzerland, March 9, 1909.

Dear Sir:

In our meeting of February the 25th, 1909, the "Basler Zahnärtzliche Gesellschaft" resolved that our committee should write to you and protest against an article by Mr. Horace Wyndham on "Dentistry in Switzerland," which has appeared on page 137 of the February issue of THE DENTAL REVIEW.

Every sentence of this article shows a complete lack of knowledge of the subject on the part of the writer, and of any good will to gather the necessary information, so as to be competent to write an article of this description. The article is full of statements, which are directly untrue and is nothing less but offensive to any reputable practitioner of Switzerland.

Our association deeply regrets that such an unworthy sample of dental journalism should have found its way into the pages of so important and excellent a dental journal as THE DENTAL REVIEW, and we therefore beg you, dear doctor, to do justice to your colleagues in Switzerland by publishing this protest in your journal.

Very sincerely yours,

DR. F. C. KLOETZER,
Chicago College, President of D. S., 1905.
DR. WILHELM THIERSCH,
Chicago College, Secretary of D. S., 1905.
DR. H. B. RESPINGER,
Treasurer, Ann Arbor, Mich., 1895.

[We have published several articles by Mr. Wyndham illustrating the practice of dentistry in various portions of the world and up to the present have not received a complaint as to his accuracy. We regret exceedingly that any misstatements should have been made and publish the above letter as requested.—Editor.]

OBITUARY.

DR. A. W. HARLAN.

Alison Wright Harlan was born in Julietta, Harlan County, Indiana, November 15, 1850. Attended the district school and later entered the office of Drs. Kilgore & Helms in Indianapolis as a student. Coming to Chicago in January, 1869, he began the practice of dentistry, working for Dr. Bell, and a little later was associated with Dr. Baker. In 1870 he opened an office of his own and during that year was married to Bessie Muirson of Indiana.

The great fire swept away his office and equipment, but with that energy and perseverence that was so prominent a factor in his life, he at once opened an office in his little home on West Washington street, moving down town again as soon as the rebuilding of Chicago's burned business district offered an opportunity. In 1878 we find that his writings had attracted the attention of the dental profession at large so that an invitation to read a paper before the British Dental Association caused him to make his first trip across the ocean. From that time on he never ceased to be a factor in the growth and development of dentistry. His personal attributes were so exceptional that he gained a world-wide reputation, second to none in the history of dentistry. In fact, his life work did more to establish dentistry as a profession than that of any other man.

The names and works of its great men are the heritage of a profession, and the dental profession of today is endowed—through the efforts of Dr. A. W. Harlan—with such a wealth of knowledge and power as passes comprehension. As an organizer, he had no equal. This is evidenced by the number of dental societies that owe existence to his efforts. Organization, co-operation and fraternization seem to have been his watchword, and to this end his executive capacity and strong personal attractions had full play.

In March, 1879, he graduated from the Ohio Dental College of Cincinnati. In urging the passage of a law regulating the practice of dentistry in Illinois he was among the foremost. When, in 1882, such a law became operative, he was one of the appointees on the first board, and again in 1895 was reappointed by another governor of the state. In November, 1883, the Odontological Society of

ALISON WRIGHT HARLAN, M. D., D. D. S., A. M.

Chicago was organized under his direction, and through that body a dozen or more kindred societies were established.

As a student and scientific investigator, he was untiring. As the result of his researches in materia medica he placed dentistry on a firm scientific basis from the standpoint of the therapeutist, and his fearlessness in debate, together with his trenchant pen, did much to individualize dentistry as a profession. Always ready to combat any attempt to parcel dentistry on the medical profession as a poor relation, he took the arena and fought many a battle, so that the position of the full sisterhood of dentistry with medicine in the present day is another of his many achievements.

His essays and clinics on Pyorrhea Alveolaris caused a widespread interest in combating the ravages of "Riggs disease." Here again is another legacy to the dental profession from him. "The Treatment of Pulpless Teeth," a monograph published and distributed by the Odontological Society of Chicago, a classic which combined the best thought of the greatest men in the dental profession on this subject, had its inception through him. In November, 1886, appeared the first number of the DENTAL REVIEW, a dental magazine that has from the very first held the attention of dentists the world over by the publication of the best in dental literature. As organizer and editor his genius found full scope for all his powers, and every page breathed the virility of the man.

Strong and true in his friendships, with a great sympathetic heart, his deeds of kindness to many young men in the profession will live long in their memories. For the non-scientific or slightly veneered dentist he had the greatest contempt, and his methods of handling such in debate often caused rancor and ill will. He never spoke on any topic but to add some new thought. Never attended a dental society meeting without first considering the subjects to be discussed, and often spent more time in reference work and experimentation than had the essayist. Thoroughness in all things was one of his mottoes.

With the organization of a dental congress to be held during the World's Columbian Exposition and his appointment to the secretary generalship, his executive capacity again was demonstrated with a result far reaching. The recurrence of these periodical gatherings of dentists from all over the world was determined at that time and still continues.

As a teacher in one of the greatest dental schools of the country,

his name will ever live in the memories of its graduates. So contagious during his whole life work, was his energy and singleness of purpose to make of and for dentistry the highest and best, the influence of his personality will never cease. He loved his profession and his wonderful mental endowments were all trained to one end —the welfare of dentistry. No man ever gave so bountifully and freely as he or ever left so great a heritage to the dental profession.

He died March 6, 1909, in New York City. He had for some time suffered from diabetes, and on February 20 he slipped in a bath tub and suffered a ventral hernia. He was operated on for this March 5, and died the following day. L. L. Davis.

BOOK REVIEWS.

Saunders' Question Compends. Essentials of Bacteriology. By M. V. Ball, M. D., formerly Instructor in Bacteriology at the Philadelphia Polyclinic. Sixth Edition, thoroughly revised. 12mo., volume of 290 pages, with 135 illustrations, some in colors. Philadelphia and London: W. B. Saunders Company, 1908. Cloth, $1.00 net.

The first edition of this work appeared in 1891 and it has gone on into the sixth edition with a constant improvement in the presentation of this most fascinating subject. The present volume brings the subject matter strictly up to date, and it is so well arranged and so profusely illustrated that it furnishes a good working system for the student. Probably the chapter of greatest interest to the dentist is the one on "Immunity." This should be studied by every practitioner.

Des Dents a Pivots. A Manual of Theory and Practice. By Victor Dubois, Editor of the International Review of Prosthetic Dentistry. Preface by E. Bonnard. Published by Vigot Freres, 25 rue de l'Ecole-de-Medicine, Paris, France, 1909.

This is a manual of 178 pages in French on the crowning of teeth, and it is a most complete work on that subject, amply illustrated with every conceivable kind of pivot tooth. It is the first volume of the Library of Prosthetic Dentistry, and has been written for the student as well as the practitioner. It is a most worthy addition to the French literature of the subject.

PRACTICAL HINTS DEPARTMENT.

Edited By G. W. Johnson, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, The Dental Review, 55 State street, Chicago, Ill.]

Preparing a Cavity in a Porcelain Tooth:—To cut a cavity in an artificial tooth; use small carborundum or gem stones to get shape and form desired; then finish inside and form retention with inverted cone bur, vaseline and powdered carborundum. Rotate bur backward.—*R. L. Graber, Peoria, Ill.*

Ligatures as a Cause of Deposits on the Teeth:—If you tie a ligature around the neck of a tooth and leave it there for two or three days you will find that deposits are forming around the tooth. It is due to the fact that the irritation produced by the ligature has caused an increased amount of blood supply to the part and coming up against the side of the tooth osmoses out of the tissues against the tooth.—*Geo. W. Cook, Chicago.*

Decay Under Regulating Bands:—Two cases have come to me recently with buccal and mesial surfaces of lower molars decayed as a result of regulating bands. I know that it was on account of the bands for the reason that the line of decay had extended around the angle of the teeth from the buccal to the mesial surface, a condition we do not find ordinarily. We must be extremely careful to have cement under the gums to protect the enamel from injury.—*Arthur D. Black, Chicago.*

Pyorrhea Prognosis:—The amount of absorption of alveolar tissue is a determining factor. Where the plates of bone forming the socket of the tooth have wasted away two-thirds the length of the root, the leverage upon the remaining portion, even though put in perfect condition, will prevent any permanent relief. The immense interproximal spaces or the bifurcation of roots form receptacles for the retention of irritating substances not conducive to the best results.—*L. L. Davis, Chicago.*

An Anterior Cast Bridge:—Prepare roots for abutments and adjust platinum caps. Pass pins through the caps and attach with solder. Take bite and impression; make model and grind facings. Remove pins and caps from the model and enlarge pin holes so the case will draw easily. Replace abutments on model and wax all facings in position, attaching sprue so that gold will not flow direct against the porcelain. The case is now ready to be invested and cast. —*Emerson Cunningham, Parry Sound, Ont., Canada.*

Oral Hygiene:—I am inclined to think that the constant use of a strong germicide is injurious to the mucous membrane. It is a proved fact that mucus plays an important part in digestion. It is suggested that the germicide should be used to bring about health in the membrane. When cured is there any need of a germicide? For a number of years I have obtained most satisfactory results by a thorough massage of the gum tissue with hot water. This promotes good circulation. For stimulation, tincture of iodine is applied in small quantities.—*H. Everton Hosley, Springfield, Mass.*

Crucible Formers:—The crucible formers furnished by the supply houses are, as a general thing, too sharply pointed. The depression they make in the investment is so deep and sharp that it is extremely difficult to get the gold sufficiently fluid in the deeper part of the crucible. Round off the sharp point of the former to quite a considerable extent, making it more oval, and you will be surprised how quickly and nicely your gold will be brought to the boiling point, and how few times you will have to explain to your patient why you must take an impression of the cavity over again.—*F. T. Weeks, Neillsville, Wis.*

Consumption in the School Room:—The seeds of consumption are often sown in the school room where over-crowding, improper ventilation and general defective sanitary conditions too often combine the exact requirements for their speedy propagation. Children should be taught the importance of having their own pens, pencils and books and be warned against the pernicious habit of sharing a cake or apple with a school mate without taking the precaution to carefully separate the portion to be presented. It is our manifest

duty to warn thoughtless parents that education is of secondary importance when a child shows a tendency to pulmonary complaints.—*W. F. Kelsey, Marseilles, France.*

Nasal Breathing:—Nasal breathing is one of the most important requirements for good health and you must see to it that the nose, the post-nasal cavity and the throat are in a normal condition. It will be extremely beneficial if, after the nose is restored to a condition which allows a free breathing, we insist on the patient spraying, or having sprayed, the nose and throat each day. For this a mild antiseptic solution may be employed, and if it is well done each day the patient will not only breathe much better but will be troubled very little with the common ailments of mankind. Colds and throat troubles will be rare, and nasal breathing will, therefore, not be disturbed —*William George Law, Berlin, Germany.*

Retaining Appliances:—A great deal of difficulty may sometimes be experienced when forcing the retaining appliance to position the first time. The trouble in such instances is generally due to the bands being trimmed too narrow in the interproximal space. By leaving them wide in this location, the bands can be more easily started to position and if the retainer is properly made it will often snap to place. Generally a retaining appliance of this kind is allowed to be worn on the teeth for a few days before cementing and then removed. After being repolished and the teeth properly cleaned the appliance can then be cemented to position and the cement will hold generally from six to nine months and very often longer.—*S. W. Fahrney, Chicago.*

Preparing the Edges of a Wax Model for an Inlay:—To obtain a real nice feather edge, so much desired on a wax model, used in construction of gold inlays for proximal cavities, the following method will be found convenient: After the wax model is obtained and trimmed to proper shape and occlusion cut a small piece of rubber dam about half an inch wide and three or four inches long. Pass this between the wax and adjoining tooth and draw tight around the tooth containing wax. Hold the two ends between thumb and finger, and burnish the wax over the margins. This produces a much finer edge

to the wax than could be obtained without the strip of rubber dam. It also serves to hold the model snugly in place while the burnishing is being done.—*F. H. Weiland, Redfield, South Dakota.*

Deposit of Serumal Calculus on Bone:—We find a deposit of serumal calculus on necrotic bone. I have removed many a sequestrum that has been some time held beneath the soft parts upon which there were large deposits of serumal calculus. So far as clinical observation would indicate to me, without going through the process of microscopical examination, I would say that these deposits on the bone are precisely the same as that which we have on the cement of tooth roots, convincing me that the serumal deposit is not the cause of the inflammatory process but the product of inflammation; in other words, the salivary calculus forming upon the exposed surface of the tooth root, and insinuating itself down between the neck of the tooth and the gum tissue, and extending between the pericementum and the tooth itself, will excite inflammation.—*Truman W. Brophy, Chicago.*

Extracting Under a General Anesthetic:—When extracting a tooth or doing a surgical operation in the mouth, under a general anesthetic, just as the patient is fairly well under, put the finger on base of tongue, bring it forward and place a large roll of cotton, two or three inches long, across the base, just forward of the epiglottis; the tongue will not drop back and no blood or debris will get back of cotton. If the operation is a long one, change cotton as often as necessary by drawing one end of the roll forward and passing a fresh one into its place. If this is done until patient has regained consciousness sufficiently to expectorate, no blood will trickle down the throat to be thrown up afterward, or worse still, get into the trachea to cause strangulation. Nor in there any danger of a tooth or root slipping out of the forceps and going down the throat, thereby causing the operator to suddenly develop a case of nervous prostration.—*F. H. Skinner, Chicago.*

Removal of Abscessed Teeth:—Should the tooth be removed when in this condition? In my own practice, I always do so, and even use a gag to force the jaws apart when the glands become in-

fected as they do in eases of infeeted third molars, whieh do not enable the patient to open the mouth to a normal position. One has to use foree enough so that the jaws are separated sufficient to operate. However, use common sense, and not too mueh foree in such eases as you may fraeture the jaw in eases of ankylosis. By the immediate removal of all abseessed teeth, which can not be saved, we remove the cause. For example, a sliver allowed to remain in the finger will cause pain, inflammation and pus. So we remove it. The same applies to an abscessed tooth. Remove the tooth and you remove the cause. One point that must always be kept in mind is, although you have removed the tooth, the infeetion still remains and has been aggravated by forcing the foreeps into the inflamed area. I always insist on the sockets of lower teeth, espeeially third molars, being kept as aseptie as possible, by the patient using a mouth wash, and also seeing a dentist to have him eleanse the soeket, as the soeket beeomes unelean from the saliva alone, to say nothing of the food particles. Constant eleansing by the patient is the only way to a sueeessful reeovery.—*A. Brom Allen, Chicago.*

MEMORANDA.

ILLINOIS STATE DENTAL SOCIETY.

The forty-fifth annual meeting of the Illinois State Dental Society will be held at Danville, May 11, 12, 13 and 14, 1909.

R. J. Hood, Secretary, Sparta, Ill.

SOUTHERN MINNESOTA DENTAL SOCIETY.

The twenty-fourth annual meeting of the Southern Minnesota Dental Society will take place April 12, 13 and 14, 1909, at "The Saulpaugh," Mankato, Minn.

C. A. Hintz, Secretary.

SOLDERING ALUMINUM.

A gentleman in Germany has devised a method of soldering aluminum which seems to be very effective. This may add to the usefulness of this metal in prosthetic dentistry, if it proves simple and permanent.

MICHIGAN STATE DENTAL SOCIETY.

The fifty-third annual convention of this society will be held at Kalamazoo on June 29, 30 and July 1. An attractive and instructive program is in course of preparation and a most profitable meeting is assured.

Don M. Graham, Secretary.

IOWA STATE DENTAL SOCIETY.

The forty-seventh annual meeting of the Iowa State Dental Society will be held at Des Moines, Iowa, May 4, 5 and 6. All ethical dentists in

the state are urged to attend and help make it the best in the history of the society.

T. F. Cooke, Secretary.

PENNSYLVANIA STATE BOARD OF DENTAL EXAMINERS.

The Pennsylvania Board of Dental Examiners will conduct examinations simultaneously in Philadelphia and Pittsburg, June 9, 10, 11 and 12, 1909.

For application papers, or any other information, write to Dr. Nathan C. Schaeffer, Secretary, Dental Council, Harrisburg, Pa.

W. D. DeLong, Secretary.

INTERSTATE DENTAL FRATERNITY.

The annual meeting of the Interstate Dental Fraternity of United States and Canada will be held at Birmingham, Ala., during the session of the American Dental Association. The meeting will be in charge of R. H. Welsh, secretary of the I. D. A. for Louisiana.

R. M. Sanger, National Secretary.

ALABAMA DENTAL ASSOCIATION.

The fortieth annual meeting of the Alabama Dental Association will be held in Anniston, Alabama, May 11-13, 1909.

The program will be an exposition of present day methods of practice. Make your arrangements now to attend.

E. W. Patton, Secretary,
1010½ Broad Street, Selma, Ala.

INDIANA STATE DENTAL ASSOCIATION.

The fifty-first annual meeting of the Indiana State Dental Association will be held at Indianapolis June 29-30 and July 1.

Plans are being perfected to make this the greatest strictly state meeting ever held in the history of our society.

Otto U. King, Secretary,
Huntington, Ind.

EASTERN INDIANA DENTAL ASSOCIATION.

The 1909 meeting of the Eastern Indiana Dental Association will be held at Marion, Ind., May 5 and 6.

The 1908 meeting was postponed that the members might join in the big jubilee meeting of the State Society, and this year's meeting promises to be a record-breaker.

Clinics are to be the special feature.

Leonard Strange, President.

THIEF.

A sneak thief is going the rounds of the dental offices in Chicago. Here is a description of him: Age, 40 to 45; height, about 5 feet 8 inches; weight, about 170 pounds; hair, sandy and thin; *very heavy* eyebrows; red mustache; upper right central and lateral missing, but may wear plate; wears black suit and coat and about No. 10 shoes; has fashion of rubbing his hands together when talking; looks Swedish, but talks good English; good, smooth, oily talker. Favorite time to call is during the lunch hour.

THE TEXAS STATE DENTAL ASSOCIATION.

The annual meeting of this association will be held at Waco June 10, 11 and 12 next. To manufacturers, exhibitors and visitors we call attention to

the circuit formed by Missouri (meeting May 26, 27, 28), Oklahoma (meeting June 3, 4, 5) and Texas, as above.

By this arrangement it is expected to secure a larger number of prominent men and exhibits than heretofore. The profession is cordially invited to attend.

J. G. Fife, Secretary,
Dallas, Tex.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The National Association of Dental Faculties will hold their annual meeting in connection with the National Association of Dental Examiners in the Hotel Chamberlain, Old Point Comfort, Va., August 2, 3 and 4, 1909, commencing at 10 a. m.

Rates to be same as the National Association of Dental Examiners. Railroad and steamship rates given at a later date.

B. Holly Smith, D. D. S.,
Chairman of the N. A. D. F.

KENTUCKY STATE BOARD OF DENTAL EXAMINERS.

The Kentucky State Board of Dental Examiners meets the first Tuesday in June at 8 a. m. in the Louisville College of Dentistry for the examination of applicants for certificates.

All applicants must be graduates of reputable dental colleges.

Application blanks for examination will be furnished by the secretary on request, which, with the fee of $20.00, must be in his hands ten days before the date of examination. J. Richard Wallace, D. D. S., Secretary,
The Masonic, Louisville, Ky.

SEVENTH DISTRICT DENTAL SOCIETY.

The Seventh District Dental Society of the State of New York will hold its annual meeting in Rochester, N. Y., on the 16th and 17th of April at the Seneca Hotel.

Plans are under way to make this the largest and most attractive meeting in various points of interest, which has ever been held in the state of New York, and all the dentists within a radius of three hundred miles will be greatly benefited by coming.

There will be a large number of clinics at the chair and also table clinics, and several interesting papers will be read.

The manufacturers of dental instruments and supplies will also aid in making this a large meeting, and a most cordial invitation is extended to all who will come. Clint W. LaSalle, Secretary,
Rochester, N. Y.

NEW JERSEY STATE DENTAL SOCIETY.

The New Jersey State Dental Society will hold their annual meeting in the "Casino," situated on the beach front, Asbury Park, N. J., beginning Wednesday, July 21, Thursday, July 22, and Friday, July 24, 1909. The clinics and exhibits are so large and varied that it has been necessary to secure a large building to accommodate them and the many visitors at the meetings. The location of the Casino is ideally situated, large and cool and well adapted for dental meetings. The Hotel Columbia has been selected as headquarters for the society, and it offers superior accommodations and low rates for those desiring to attend the meeting. All the principal railroads lead to Asbury Park, with many trains daily, also boat connection to New York for those desiring the travel by water. All the dental profession should mark off the above dates and spend a delightful three days' vacation attending our meeting. Charles A. Meeker, D. D. S., Secretary,
29 Fulton Street, Newark, N. J.

ALUMNI ASSOCIATION OF ST. LOUIS DENTAL COLLEGE.

The Alumni Association of the St. Louis Dental College (formerly Marion-Sims) will hold their annual clinic at the college building, Grand avenue and Caroline streets, on Thursday and Friday, May 20 and 21, 1909.

An excellent program is being prepared. Special attention is being given to the clinical program.

The annual banquet will be held on Thursday night, May 20, and the election of officers for the ensuing year will take place after the clinics the following day. All ethical members of the profession are cordially invited to be present.

Dr. S. T. McMillin,
President.
Dr. John B. O'Brien,
Chairman Publicity Committee.
5761 Etzel Avenue.

RECENT PATENTS OF INTEREST TO DENTISTS.

910,870. Artificial tooth, G. Sibley, Philadelphia, Pa.
910,970. Tooth-brush, A. M. Stryker, Chicago, Ill.
910,631. Dental swaging apparatus, H. B. Zendel, Passaic, N. J.
911,227. Machine for boxing toothpicks, C. C. Freeman, Dixfield, Maine.
911,307. Matrix-retainer, J. W. Ivory, Philadelphia, Pa.
911,398. Artificial tooth, J. W. Ivory, Philadelphia, Pa.
911,510. Dental handpiece, R. M. Mayes, San Antonio, Tex.
911,068. Toothpick, A. C. Perkins, Washington, D. C.
911,078. Artificial tooth, F. Sheinman, New York, N. Y.
912,051. Dental brush, J. H. Abbott, Philadelphia, Pa.
911,646. Atomizing dental obtunder, W. A. Cook and G. S. Hadley, Coldwater, Mich.
911,659. Dental mirror and attachment therefor, A. J. Kleberg, Washington, D. C.
911,664. Dental floss-holder, J. P. Locke, Toledo, Ohio.
912,026. Dental suction plate, C. R. Powers, Princeton, Wis.
911,687. Hot air syringe, H. E. Vogel, Chicago, Ill.
912,810. Dental matrix clamp, S. S. Carleton, New York, N. Y.
912,748. Dental articulator, G. B. Snow, Buffalo, N. Y.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall building, Washington, D. C.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the State of Illinois will be held in Chicago at the Chicago College of Dental Surgery, southeast corner Wood and Harrison streets, beginning Thursday, June 10, 1909, at 9 a. m.

Applicants must be in possession of the following requirements in order to be eligible to take the examination: (1) Any person who has been engaged in the actual, legal and lawful practice of dentistry or dental surgery in some other state or country for five consecutive years, just prior to application; or, (2) a graduate and has a diploma from an accredited high school, or a certificate signed by a State Superintendent of Public Instruction or his duly authorized deputy or equivalent officer, acting within his proper or legal jurisdiction, showing that the applicant has a preliminary education equal to that obtained in an accredited high school, and is a graduate and has a diploma from the faculty of a reputable dental or medical college, school or den-

tal or medical department of a reputable university and possesses the necessary qualifications prescribed by the board.

Candidates will be furnished with proper blanks and such other information as is necessary on application to the secretary. All applications must be filed with the secretary five days prior to the date of examination. The examination fee is twenty ($20) dollars, with the additional fee of five ($5) dollars for a license.

Address all communications to J. G. Reid, Secretary.
1204 Trude Building, Chicago, Ill.

INTERNATIONAL EXHIBITION OF DENTAL SCIENCE.

In connection with fifth International Dental Congress, Berlin, 1909, August 23-28, in the Reichstag building.

The resolution to organize on a large scale in conjunction with the fifth International Dental Congress an International Exhibition of Dental Science in Berlin, 1909, was due to the conviction of the importance of the Congress for the members of the profession as well as for the general public to supplement the scientific discussions and to act as object-lessons.

The importance of such an exhibition for the success of the congress is undeniable and calls for an unusual degree of active interest on the part of all concerned, in order to guarantee success.

The extent and plan of the exhibition are shown by the following groups:

I. Anatomy and Physiology.—1. Comparative anatomy, (a) Anthropology and ethnology, (b) Comparative odontology incl. paleontology, (c) Anomalies of the teeth of animals. 2. Normal macroscopical anatomy of man (anatomy and development of the head, jaws and teeth incl. specimens of the jaws and teeth). 3. Normal microscopical anatomy. 4. Anomalies of anatomical development (anomalies of the development of the head, jaws and teeth). 5. Physiology.

II. Pathology and Bacteriology.—1. General pathology. 2. Special macroscopical pathology including comparative pathology. 3. Special microscopical pathology. 4. Bacteriology of the mouth.

III. Surgery of the Mouth and Jaws.—1. Surgical therapeutics including narcosis and local anæsthesia. 2. Surgical prothesis including obturators.

IV. Orthodontia.

V. Preservative Treatment of the Teeth.—1. Fillings. 2. Root treatment.

VI. Prosthetic Dentistry. 1. Plate work. 2. Crown and bridge work including ceramics.

VII. Photography in Dental Surgery as Means of Investigation and Instruction.—1. Macroscopic photography. 2. Microscopic photography. 3. Stereoscopy. 4. X-ray photography. 5. Photography in colors.

VIII. General Dental Education, Post-Graduate Instruction, Educational Appliances.

IX. Hygiene of the Mouth and the Teeth.—(a) from the scientific. (b) From the social point of view.

X. History of Dentistry (instruments, pictures; in short, everything of historical interest for dentistry).

XI. Dental Jurisprudence.

XII. Literature.—(a) Original works. (b) Periodicals.

An active and universal participation in the exhibition is most desirable, as special stress will be laid upon its international character. Nothing is more conducive to a clear understanding of the development of dentistry and to the creation of a lasting impression as the actual presentation of the object. Seeing is believing.

The committee of the International Exhibition of Dental Science is

composed of the honorary president, the honorary members, the executive committee and the sub-committees.

The executive committee of the exhibition desires, even at this early date, to be notified by all intending to contribute, and requests a short list of the specimens they mean to send, all such communications to be directed to the chairman, Prof. Dr. Dieck, Berlin, Potsdamerstr. 113, Villa 3.

The object of this preliminary announcement is to gain a general idea of the space required for the exhibition in the Reichstags building, as well as the distribution and mounting of the specimens and the number of tables, shelves, glass cases required.

At the same time there will be in the Reichstag building a dental industrial exhibition.

THE EXECUTIVE COMMITTEE,
PROF. DR. DIECK, Chairman,
Berlin, Potsdamerstr. 113, Villa 3.

Members: Dr. Konrad Cohn, Prof. Hall, H. J. Hamlok, Ober-Medizinalrat Dr. Overlach, Prof. Dr. Schroder.

FIFTH INTERNATIONAL DENTAL CONGRESS, BERLIN, GERMANY, AUGUST 23-28, 1909.

The Fifth International Dental Congress will be held in the Reichstagsgebäude (House of Parliament).

The honorable president of the congress is Geheimrat Prof. Dr. Waldeyer, director of the First Anatomical Institute.

Honorary members—Dr. Naumann, chief of the Medical Department of the Kultusministerium; Geheimrat Prof. Dr. Kirchner.

The business of the congress is conducted by the following committees:

1. Committee on Organization.
2. Berlin Local Committee.
3. Chairmen of the different sections.

(1) *Committee on Organization.*

The Committee on Organization consists of fifteen members.

President—Privy Councillor Prof. Dr. Walkhoff, München.

Vice-Presidents—Prof. Dieck, M. D., Berlin; Prof. Hahl, Berlin; Hiel scher, Coln o. Rh.

Secretary-General—Schaeffer-Stuckert, D.D.S., Frankfort a. M.

Secretary—Konrad Cohn, M. D., Berlin.

Treasurer—Blume, Berlin W.

(2) *Berlin Local Committee.*

The Berlin Local Committee is composed of thirty-eight members.

Presidents—Professor Guttmann, court dentist, Potsdam; Robert Richter, D.D.S., Berlin; Dr. P. Ritter, Berlin.

Secretaries—Weidmann, Berlin; Gutmann, Berlin; Pursche, Berlin.

Treasurer—Helm, Charlottenburg.

(3) *Chairmen of the Sections.*

The following twelve sections have been formed, all of which can hold sessions in the Reichstag building simultaneously:

Section I: Anatomy, Physiology, Histology. Chairman, Dr. Adloff.

Section II: Pathology and Bacteriology. Chairman, Prof. Dr. Römer.

Section III: Chemistry, Physics and Metallurgy. Chairman, C. Birgfeld.

Section IV: Diagnosis and Special Therapeutics; Materia Medica. Chairman, Prof. Dr. Michel.

Section V: Oral Surgery and Surgical Prosthesis. Chairman, Geheimrat Prof. Dr. Partsch; Prof. Dr. Schröder.

Section VI: General and Local Anesthesia. Chairman, University Lecturer Dr. Fischer.

Section VII: Operative Dentistry. Chairman, Prof. Dr. Sachs.

Section VIII: Prosthetic Dentistry, including Crown and Bridge Work; Ceramics. Chairman, Prof. Dr. Riegner.

Section IX: Orthodontia. Chairman, Heydenhauss, M. D.

Section X: Hygiene of the Mouth and Teeth. Chairman, Dr. C. Röse.

Section XI: Education and Legislation. Chairman, Dr. Ritter.

Section XII: History and Literature. Chairman, Hoffendahl.

During the week of the congress an official daily journal will be published in three languages (German, English, French). Editor: Konrad Cohn, M. D., Berlin, Potsdamerstr. 46.

An international scientific and industrial exhibition will be combined with the congress. Prof. Dr. Dieck, Berlin, Potsdamerstr. 113, Villa 3, has taken charge of the management of this exhibition, which is to be conducted on a large scale, and he will furnish further information regarding the same.

At the last meeting of the Committee on Organization it was decided that the fee for membership be fixed at 25 marks ($6.00), which sum will also entitle the holders of membership cards to a copy of the transactions when published. For participation in the social functions additional cards will be issued by the Berlin Local Committee at a very low price. A guarantee fund of 20,600 marks has already been subscribed, and it has been decided not to call upon foreign visitors for financial or administrative support.

A hearty invitation is extended to all foreign confrères.

Program.

The following provisional program has been arranged:

Sunday, August 22d.

Meeting of the Federation Dentaire Internationale. Evening: Reception of guests at the Reichstagsgebäude.

Monday, August 23d.

Morning: Opening session. After the official addresses of welcome, four orators (German, English, French and American) will speak on subjects chosen by themselves and important for the entire profession. The National Committees of the respective countries have each been requested to nominate their orator.

Evening: Reception given by the City of Berlin at City Hall.

Tuesday, August 24th.

9 A. M.—2 P. M.: Sessions of the Sections.

Evening: Banquet in the halls of the Zoölogical Gardens.

Wednesday, August 25th.

9 A. M.—2 P. M.: Sessions of the Sections.

Evening: Fiftieth anniversary of the Central Verein Deutscher Zahnärzte (Central Association of German Dentists) in the halls of the Rheingold.

Thursday August 26th.

Second general session in the great hall of the Reichstagsgebäude. Subjects and questions will be discussed by speakers appointed by the different countries.

Evening—at the disposal of the congressists.

Friday, August 27th.

9 A. M.—2 P. M.: Sessions of the Sections.

Evening: Reception in honor of the congressists given by the confrères of Berlin and of the province of Brandenburg.

Special train to Wannsee.

Saturday, August 28th.

9 A. M.—12 M.: Sessions of the Sections (passing of resolutions) and meeting of the Federation Dentaire Internationale.

3 P. M.: Closing session. Acceptance of the resolutions of the Congress.

Evening: Farewell banquet at the Halensee Terraces.

On Sunday and after, groups of the congressists will visit German cities and universities.

The Bureau of the Congress will be opened four weeks before the opening of the congress. A postal, telegraph and telephone office will be established, also refreshment rooms.

The size of the Reichstagsgebäude will render it possible for the different sections to meet simultaneously, so that the participants may hear lectures in different sections on one day.

In order to facilitate conversation between men of different nationalities, those confrères who speak English will wear a blue badge, those who speak French a red badge.

The Hamburg-American Packet Company allows to members of the congress a reduction of 25 per cent except during the height of the season.

The Berlin Local Committee will be pleased to procure lodgings for foreign colleagues and supply them with all information concerning their journey, their sojourn in Berlin, etc.

The prices of rooms in hotels vary from 2.50 to 30 marks per day ($0.60 to $7.00). All questions regarding this subject should be addressed to the president of the Local Committee, Professor Guttmann, Potsdam.

In order to make the visitors acquainted with the sights of Berlin and its environs, ably conducted excursions have been arranged for. The scientific institutions of importance will also be open to visitors.

BOARD OF DENTAL EXAMINERS OF THE STATE OF MINNESOTA.

The Minnesota State Board of Dental Examiners will hold a special meeting for the purpose of examining applicants for license on June 7, 1909. Meetings will be held at the Dental Department of the State University in Minneapolis, Minn. All applications must be in the hands of the Secretary by May 28th. For blanks and further information address Dr. George S. Todd, Secretary, Lake City, Minn.

THE

DENTAL REVIEW.

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WHAT POINTS IN CROWN CONSTRUCTION ARE ESSENTIAL TO THE PRESERVATION OF THE HEALTH OF THE PERIDENTAL MEMBRANE?*

BY J. H. PROTHERO, D. D. S., CHICAGO.

When the crown of a tooth has been removed by accident, disease or design, the restoration of the lost portion by artificial means, so as to restore normal function and preserve the health of the tissues involved, is a procedure requiring a high degree of technical skill.

That too little attention is devoted to the subject under consideration is apparent from the many failures observed in practice. Briefly stated, some of the most potent causes of failure are as follows:

1st. Traumatic injury in the preliminary steps.

2d. Impingement of some portion of the crown on the tissues.

3d. Imperfect adaptation of crown band to root or periphery.

4th. Incorrect form of substitute.

Reference will now be made to these causes of failure in the order mentioned. Traumatic injury of the tissues at the gingivae in root preparation is in most cases unavoidable, but the extent of such injury depends largely upon the skill displayed by the operator and the character of instruments used.

The peripheral ring of enamel remaining on a root after removal of that portion of the crown projecting beyond the free margin of

*Read before the Chicago-Odontographic Society, January, 1909.

the gum, can readily be removed when due care is exercised, by means of cleavers, files and stones, without serious injury to the dental ligament or gingival plexus. The blood vessels of the peridental membrane that pass from the apex of the tooth gingivally anastamose freely at the border of the alveolus with corresponding vessels from the gum tissue, and while this gingival plexus, as it is called, may be disturbed to a considerable extent without serious injury to the peridental membrane, excessive injury permanently reduces the blood supply to this organ.

The dental ligament is formed by fibers of the peridental membrane as they emerge from the alveolus. They coalesce and form an elastic band which supports the free margin of the gum, and holds it in close contact with the tooth, preventing the ingress of foreign substances. Reckless injury to, or needless severing of, this ligament, often deprives the gingivae of its elastic property, and opens up an avenue for the ingress of food and foreign material that no amount of skill in crown construction can effectually overcome.

The second cause, impingement of band or crown on tissues—is a common and serious one as well.

When crowns of the banded type are made use of, the band is frequently too broad, particularly on the mesial and distal sides, and in fitting to the root it is often forced against the alveolar process and peridental membrane, where it becomes a source of constant irritation and annoyance. In such cases unless the crown is removed, the irritation so induced will sooner or later result in the loss of the root.

The third cause, imperfect adaptation of crown band to root or periphery, is perhaps the most frequent of all those mentioned, and may be the result of imperfect removal of the peripheral enamel ring, or carelessness in securing correct root measurement. In either case, the result is a crown band which projects more or less peripherally beyond the root, thus forming a shoulder for the lodgment of foreign substances. While bands of this type may not produce immediate discomfort, their presence is even more insidious, and the results just as serious, as in the case of those where immediate pain is experienced.

The fourth cause, incorrect form of substitute—is fully as important as any of the three mentioned.

A study of the forms of the teeth shows in most cases a con-

striction of the gingival enamel margin, thus producing a recess, so to speak, which affords some protection to the gingivae against the excursions of food. This form of development is quite marked in the cingulae of the incisors where the gingival border is exposed to constant action from the incision of food.

In constructing crowds, whether band or bandless, if this form be given them, greater protection will be afforded the gingivae and peridental membrane than if the sides of the crown are parallel. By restoring proximate contact, the tissues in the interproximate spaces are protected, while correct occlusal requirements obviate undue stress being brought upon the peridental membrane in mastication.

To recapitulate, it may be said that the preservation of the health of the peridental membrane depends upon a number of essential points, prominent among which are:

1st. Treatment and filling of the apex of the root.

2d. Careful root preparation effected with as little injury to the gingival tissues as is consistent with thoroughness.

3d. The use of narrow bands extending beneath but not impinging upon the gingival tissues.

4th. Accurately fitted bands or perfectly adapted peripheral outlines in bandless crowns.

5th. Crowns corresponding as nearly as possible with the natural forms, the securing of proximate contact, and the restoration of correct occlusal conditions.

HOW WOULD YOU RESTORE A LOST UPPER LATERAL IF THE CENTRAL AND CUSPID HAVE VITAL PULPS AND NO DECAY?*

BY F. E. ROACH, D. D. S., CHICAGO.

How best to supply a lateral incisor between a perfectly sound cuspid and central incisor is indeed a problem in many cases not easily solved. Three distinct classes of procedure may be resorted to, viz., Fixed bridgework, some form of removable appliance, or implantation. The existing conditions will in a measure govern the selection of the method to be employed, but in almost any event the treat-

*Read before the Chicago-Odontographic Society, January, 1909.

ment of these cases calls for radical measures if the highest degree of efficiency, permanence and cosmetic effect is obtained.

Under the first class of procedure—fixed bridgeword—there are a number of methods in vogue, and each has its advantages and disadvantages. The supplying of one tooth between two sound teeth in any part of the mouth by means of the fixed bridge necessitates the mutilation of the adjacent teeth for anchorage and the conscientious operator who has the best interests of his patient at heart will think twice before he will sacrifice two good sound teeth in supplying one—and in my opinion the crowning in any form and in any part of the mouth of two such teeth for this purpose is wholly unwarranted and can not be too severely condemned.

The partial plate may be resorted to, and if properly constructed and cared for as it should be by the wearer, fairly good results may be obtained, but the dangers of injury to the lingual surfaces of the other teeth and gums incident to the wearing of any form of partial plate must not be lost sight of.

The implantation method has been advocated from time to time, and while its employment may be accompanied with very gratifying results in many cases, there are, on the other hand, such a large per cent of failures that to recommend it as a system of practice would be the rankest of folly. My answer to the question is this: Let every man supply this missing tooth in the way that he feels that he can do it best, but personally I have preference for one of three methods of fixed bridgework, the choice of which is determined by conditions noted when making the examination.

The methods referred to are the staple semi-jacket or Carmichael, the lingual plate with pins or the cast gold inlay with dowell into pulp canal. The three methods mentioned are well known to all of you, but since so much depends upon the judicious selection and application of the one to be employed, a failure to call attention to the essentials of each, and to differentiate between the cases best suited to each method would be equal to a failure to answer the question.

The semi-jacket is admirably suited to cuspid abutments and by the casting method is comparatively simple in construction, and when properly made is one of the strongest and in every way is one of the most satisfactory abutments that can be made. As stated, the cuspid is most favorable for this form of abutment, and in many instances will serve alone as a means of support for a lateral incisor

dummy. Where the bite is not too close and the patient will submit to the removal of a portion of lingual surface of enamel, and drilling two or three small pin holes into the dentin between the pulp and the periphery of the tooth, a very satisfactory piece of work can be done in this way. This method will necessitate anchoring to both central and cuspid and requires a high degree of skill in its successful application. While the cast gold inlay with dowell involves the removal of the pulp, it is nevertheless more easily done in most cases than either of the other methods, and owing to its great strength and universal application, may be adopted as a system of practice with perfect safety. I would emphasize the importance of pins of some sort in connection with all inlay abutments. The anchorage of most inlays without pins is insufficient to resist the torsion exerted by the average bridge.

In conclusion I want to enter a strong protest against the very common practice of making a slipper crown for the cuspid and allowing a spur to rest on the lingual surface of the central incisor, or vice versa. The lingual spur invariably results in decay of the tooth upon which it rests and the slipper crown is an abomination that should not be tolerated for a minute.

THE COMPARATIVE STABILITY OF BRIDGES ANCHORED WITH INLAY OR CROWN ATTACHMENTS.*

BY DR. H. N. ORR, D. D. S., CHICAGO.

Mr. President and Members of the Chicago-Odontographic Society:

Question—What is your opinion of the comparative stability of bridges anchored with inlay or crown attachments?

I will endeavor to answer this question to the best of my ability, although it would be impossible to do more than touch upon a few of the most important points in the short time allowed.

It is generally conceded that the cast gold inlay is the strongest attachment we can use in the construction of bridge work, but the strength of the attachment has to do to a certain extent only with the stability of the bridge. I have seen a number of bridges removed

*Read before the Chicago-Odontographic Society, January, 1909.

with roots intact, the crowns apparently as firmly attached as the day they were set.

The stability of a bridge depends to a very great extent on the judgment of the operator, and there are very definite indications in each case as to the kind of attachment to be used.

For instance:

No. 1. A case presents with upper cuspid, first and second bicuspids and first molar missing, second molar elongated extending into space below, upper central and later showing large gold restorations leaking badly and teeth discolored. In this I would use the cast base crown without band on central, lateral and molar.

No. 2. A young lady twenty years of age, both upper laterals missing, skiograph shows no teeth in space; centrals and cuspids not fully erupted. I would consider it criminal to cut off these four beautiful teeth and crown them in order to restore the missing laterals, neither would I consider it good practice to devitalize in this case. The laterals were placed with inlay attachments and no gold showing.

No. 3. Case presents with lower second bicuspid, first and second molars missing, first bicuspid inclined distally, third molar tipping mesially into space, teeth firm and free from caries, the angles such as to preclude the placing of a banded crown or a crown with posts. Here the cavities for the inlay attachments may be prepared in such a way as to overcome the inclination of the teeth to the extent of allowing the bridge to go to place easily.

The inlay for the posterior abutment in this case would have a hole drilled through the occlusal surface corresponding in position to the distal groove, and in line with the long axis of the tooth. Into this a grooved 16 gauge iridio-platinum post is fitted, and when the bridge is placed and before the cement begins to set the post is inserted and pressed to place—excess cement escaping up along the groove in the pin. The pin not being grooved it would be impossible to press it to place without unseating the bridge.

I have cited these three cases from practice, they are not unusual, and have given you a brief outline of how they have been treated, and a few of the reasons why.

There are cases where it is absolutely necessary to use crowns for attachments, such as Case 1, where it is necessary to shorten teeth and open the bite.

The right side presents ideal conditions both above and below

for inlay bridge construction, but this method is not feasible on the upper on account of opening the bite and supplying teeth for the lower left side.

I believe, in cases where practicable, that the inlay with or without post, is far better as an attachment than the crown.

The whole secret of success in inlay bridge construction depends on the preparation of the cavity. This is a subject in itself, on which a lengthy paper might be written—I will touch on a few points only in passing.

The first in importance is the extension bucco-lingually; it is well to remember the size and shape of the tooth that approximates this surface, the cervical margin should extend under the free margin of the gum, and that the margins must be far enough removed so that they will be self cleansing, this not only insures a clean condition but gives the greatest stability to lateral stress. Carry the cavity well over the occlusal and deepen it in the distal pit enough so that you have a definite hold on solid dentin, having the walls of the pit tapering slightly. Above all, be definite in the preparation of the walls of the cavity—do not think because cement is going into it that you can be careless about this point. Do not depend on cement as a retainer. Cement is only used as a sealing material in a properly prepared cavity. The base should be square and at right angles to the axial wall, not deep, but extending bucco-lingually to the margin. The occlusal should be flat and at right angles to the axial wall extending into the distal pit, so that when cast we have an attachment that is absolutely definite in outline, a hook that grasps the tooth and flat bases that are securely seated. An inlay made on these lines will withstand the stress of mastication and will furnish anchorage for a bridge that compares favorably with the crown, and without the many disadvantages of the latter.

In conclusion let me say that I believe more harm has been done by the crowning of teeth and the use of shell crown attachments than any other operation in dentistry, and that the cast inlay if properly made and judiciously used will go a long way in remedying this evil.

WHAT ARE THE CHIEF CAUSES OF FAILURE IN BRIDGE WORK, AND WHAT PERCENTAGE OF ALL BRIDGE WORK LASTS FOR FIVE YEARS?*

BY E. H. ALLEN, D. D. S., FREEPORT, ILL.

On account of a misunderstanding on the part of the writer, and the short time given by the committee, I have had no time to look up this subject in our literature, and will have to answer mainly from an experience extending from the first general adoption of bridge work by the dental profession, which occurred in the early part of the '80s, up to the present time. That bridge work is a great blessing to humanity no one will in this day deny. Like gold and porcelain inlays, amalgam. cement, and even gold fillings (and just at the present time, Ascher's artificial enamel), bridge work was pushed to the limit of its application. Now we think the time is here when the rational and conservative dentist will use bridge work in such cases as are plainly indicated, and secure a restoration that will give a reasonable compensation to the patient for the time, nervous energy and money expended incident to the application of a bridge. That we have failures no one will deny. I have endeavored to arrange them in the following classes:

First. Failures by breaking of the structure. Facings break out either by reason of checking by heat or cooling, incident to soldering the piece, or undue force exerted by mastication. Breaking of some part of the span or abutments caused by strain beyond the limit of resistance of the bridge—sometimes if a crown be used for abutment that has a pin extending into the root, and if the bridge is improperly fastened into place, and the force of mastication causes a continual bending of the pin, we find the pin will break by reason of crystallization of the metal—abutments made of the shell crown are less liable to braek than any other form of abutment used.

Second. Failures from fracture of roots used for the foundation of abutments. Here we have a most serious condition to meet. This happens generally where the abutment is a crown made with a pin extending into the enlarged root canal, which enlargement very seriously weakens the root. There are two ways of fastening a bridge into place—by use of cement, or by guttapercha; the former is used

*Read before the Chicago-Odontographic Society, January, 1909.

very much more than the latter, and the fractures of roots occur more frequently with the use of guttapercha than with cement, because it is not possible to attach a crown or bridge quite as securely with the latter material as with the former, and the least chance for movement of the bridge independent of the root is dangerous.

Third. Failures from loosening of roots and becoming detached from their sockets by inflammation caused by poorly fitting bands and shell crowns. I have said all that I need say under this heading. You can readily imagine the rest.

Fourth. Failure from an esthetic point of view. A bridge may be a howling success from a utilitarian point of view, but a howling failure from the esthetic point of view. We can see them everywhere—in the pulpit, on the bench, in our legislative halls, among our college faculties, on the right and left hand we see these glittering and glaring failures.

I will only mention one case that I see every day (I did not make this bridge, an anterior bridge where two large shell gold crowns fastened to the upper cuspid roots, and carry four small narrow incisors, the incisal edges of which are tipped with gold; the shade of the porcelain is a blue-white. The individual chews tobacco, and the color of the natural teeth is rather dark brown. This bridge has given good service for years, and may continue to do so for years to come, but it is a failure, just the same.

Fifth. Failures from a sanitary point of view. The best possible bridge from every point of view is to a greater or lesser degree unclean. What must some of them be? Much depends on the care given by the patient. We have self-cleansing spaces that do not cleanse. We have the saddle bridge, which it is claimed no food nor debris can get under. Did you ever take off a saddle bridge and find an accumulation of what-not there? What percentage of bridge work last five years? I will not undertake to say. I don't know. I could only make a guess, and I have only one coming. Notwithstanding this rather pessimistic strain I have been going on, the bridge "wherever it is indicated" is a great blessing for our patients, but where it is not indicated, it is a curse. Best of all is to save the natural teeth, so that crowns and bridges are not needed.

WHAT IS THERE NEW IN DETACHABLE PORCELAIN CROWNS AND FACINGS AS A RESULT OF RECENT METHODS OF CASTING?*

BY J. A. BULLARD, D. D. S., CHICAGO.

The individual who is able to appear before a dental society at the present time and say that he has something new to offer must speak quickly or it will be old before he can get it out of his mouth. There are so many little things being done to improve upon and shorten the methods we have been using that they only seem to be limited by the ingenuity of the operator himself. Probably one of the most satisfactory things resulting from the present methods of casting gold is that of casting the cap for the end of the root prepared for a crown, and the cup for the reception of a replaceable porcelain crown, in one piece around the post which is to attach it to the root. I think that during the last few years there has been quite a swing towards the use of bandless porcelain crowns, especially for the anterior six teeth. The method most used previous to the present casting of metals is to prepare the root, take a compound impression of the face of it, make a cement or amalgam model and swedge a cap, or place a thin disc of platinum, 34 to 36 gauge, over the face of the root, push the post through it into the enlarged canal, remove and solder, then place back on the root and burnish and mallet the floor until it is closely adapted to the face of the root, edges trimmed so as to just turn over the edge of the root and under the gingival border. In this way a cap can be made to fit the root very closely and still not have the disadvantages of the wide band passing up around the root to cut and destroy the attachment of the tissues to it. But now by means of casting, the fitting of the cap for the root and base for the crown, is done away with. The root may be prepared in the way you see fit, it may be V-shaped, sloping to the labial and lingual, or ground out to a concave surface, to correspond to the cervical curve of the gum, or formed in any way so as to present a resisting surface to prevent the rotating of the crown. The root canal is enlarged for the reception of the post or pin, the porcelain ground to fit the labial cervical margin of the root and gum. With the post in position in the canal, the crown is ground away so as to

*Read before the Chicago-Odontographic Society, January, 1909.

leave a V-shaped space between it and the root, opening to the lingual. After the crown is fitted to your liking, place a ball of warm inlay wax over the pin on the face of the root, place the crown and force it to its position. Trim away the surplus wax, remove the crown, invest wax and post and cast in metal. This gives a base for the crown which fits the root as accurately as an inlay does a cavity, and is simply a continuation of the root. The crowning of roots hollowed out by decay or fractured so that a part of the base for the crown has to go far under the gum, is a much simpler operation now than it used to be. In cases where on account of the condition of the bite, or the root is malposed so that you do not wish to use the porcelain crown, you can cast the metal part for a Richmond crown, waxing up the crown remove the facing, cast, replace the facing and rivet the pins. Or you can use a Steele facing maybe, by casting to its backing. The Williams facings are useful, for they can be ground thin at the incisal edge so that the metal backing protects the porcelain and still does not show as much as it does with the Steele facing. These facings are the same molds as the ordinary facing, only the pins are not baked in. The holes for the pins in the back of the facing are countersunk and the pins are headed on each end. The facing can be ground the same as for a Richmond crown, the pins placed in position, crown waxed up, facing removed, crown cast and the facing cemented into place afterwards. And when finished no more gold will show than would on a nicely constructed Richmond crown.

INLAY PRACTICE.*

BY J. G. REID, D. D. S., CHICAGO.

As an introduction to the remarks herein presented I am prompted to say that I esteem it a great personal gratification to be able to stand before this body tonight and in a very humble manner express to you my acknowledgement and deep appreciation for the many benefits I have received from its past records since I have been connected with it. I regret deeply my inability to give as bountifully as I have received, but I assure you that though my efforts

*Read before the Odontological Society of Chicago, February, 1909.

be feeble in the very brief presentation of my subject at this time it will nevertheless express in some measure a desire to fill a place that I am sure could be filled by other members to better advantage.

Therefore, being in a receptive mood, I am hoping to be benefited and governed by your discussion of this subject. I am sure we are all anxious to know the best methods of practice and the reasons that govern the same. I strongly imagine that we think we are sometimes drifting along on a tide of wonderful advancement—and a little later find that we have only been chasing a shadow.

It is now two years since the art of casting metals was made known for the purpose of inserting the same into cavities of human teeth as a means of arresting the progress of dental caries. The word-pictures that have thus far been painted in relation to this subject become of interest—both to the believer and the unbeliever. The go-betweens or those in the middle of the two extremes are tenderly debating and watching the "what of tomorrow."

Encomium and condemnation have already been sounded to an extent that would outrival the blasts of a fog-horn, and this leads me to say: "Verily, verily, I say unto you, I am much interested."

The idea of using an inlay as a stopping for cavities in decayed teeth is by no means a modern innovation; but the technic of construction, addition of materials, and concomitant with these cavity preparations may be regarded as in the light of recent origin.

I firmly believe beyond any question of doubt that the modern advent of the inlay has served the purpose of intensifying and stimulating much greater advancement in cavity preparation than almost any other one thing that might be mentioned along the lines of operative dentistry.

It is true, and must not be overlooked, that "extension for prevention" has served an immeasurable purpose in this direction. It may be stated, by way of comparison, that the preparation of a cavity for the reception of a gold filling and the preparation of a cavity for an inlay is not universally alike; and right here to my mind is where the cavity preparation for an inlay has been the means of forcing the unobserving operator to extend the outline form into districts of immunity.

Much adverse criticism has been advanced against the undue sacrifice of tooth-structure which of necessity must be indulged in if a cavity is presented that fully carries out the ideas involved in the

practice of "extension for prevention;" but I believe that experience and time have fully convinced us that irrespective of all harsh criticism the practice now remains a substantial victory in favor of its advocates.

If the above is logical then we will not stray very far away in advancing like arguments to support the efforts of the ardent and enthusiastic practitioner who may desire to indulge his fancies in the alluring practice of using cast metallic inlays as a means of preserving teeth.

There is an unspeakable facination connected with the practice of inlay work, and it is not at all surprising why one becomes so thoroughly infatuated with it; with all the vicissitudes that one will naturally encounter in order to fully master the problems involved, seems to provoke encouragement rather than discouragement. This feature of the subject, however, will only apply to those who are imbued with good understanding and the full exercise of skillful judgment which will enable the individual to apply its principles judiciously.

Just here is where a very important question arises in my mind, and must not be passed without some consideration.

Where does the indication of inlay practice begin and where does it end?

The first part of the question does not strain the imagination very greatly to answer, but the latter part of the question presents one phase at least, the importance of which can be discussed with propriety at this time.

There is some important signification attached to the query as to what effect the present craze of inlay practice will have upon the development of the prospective dentist in the direction of handicraft. It has been strongly intimated to me that already the student-body today is much more interested in how to make an inlay than in how to make a gold filling. To what extent this is true I am not prepared to say; but supposing there may be even a semblance of truth attached to the rumor, then there naturally arises some apprehension as to what extent such an influence will be on his subsequent manipulative ability.

The student is far from the zenith of manipulative dexterity at the time he has reaped his reward in the due course of scholarship, and if he has received the impression that inlay practice is going to

be an easy road to travel, the trend of his ambition will be to satisfy such a desire, the result of which will without question eventually lower the standard of skill which has so long been the pride of the American dentist.

We must not lose sight of the fact that it is an easy matter to be inveigled into chasing after ephemeral methods of practice, and herein is where we can rightfully say, "Make haste slowly."

To further the effectiveness of this argument, I need only refer briefly to the change brought about in prosthetic dentistry by the introduction of vulcanite as a base for artificial dentures. Prior to this memorable event the handling of metals occupied the attention of the dentist in prosthetic procedures.

The preconceived ideas of our dental ancestors, as applied to this department, furnish suggestive lessons today along the lines of mind and finger training. If we are to be classed as artisans, we must constantly and distinctively cultivate and practice the underlying principles contained therein if we expect to maintain that appellation. Therefore, insofar as vulcanite has seemingly wielded some important influence in the general lowering of prosthetic skill, so in proportion do I believe that the already prevalent impression gained regarding inlay practice will have a marked tendency in polluting the reputation of skillful dentistry. It may be difficult just at this time for any one to attempt to define clearly what might be the legitimate limitations of inlay practice, for the reason that there is such variance in the opinions of different individuals. Insofar as my own views and opinions are concerned, I will say that the use of the inlay in my practice is almost exclusively confined to the following conditions, and I herewith present a few models containing cavities from which metallic inlays have been constructed and are now in practical use, varying in a period of time from two years down to the present. I have been able to observe and examine these inlays at intervals, the presentation of which confirms my belief that they will continue to be comfortable and useful for a long time to come.

My trials in attempting to apply inlay practice to conditions previously determined to be inadvisable—solely for experimental purposes—invariably brought disappointment, and I have profited by the experience to the extent that I shall continue to find abundant opportunities calling for the insertion of gold foil fillings in the future.

I predict that many failures will occur if too much dependence

is placed upon inlays as a means of anchorage for bridges. However, these questions, like all others that have gone before, will have to pass through a series of experimental stages before they are finally settled.

CONSERVATION OF NERVE FORCE.*

BY DR. S. T. BUTLER, SULLIVAN, ILL.

Nature has stored up a certain amount of nerve force or energy for each of us, to be drawn upon as needed. We can use this supply of force judiciously or waste it, as we choose.

Water stored and controlled is useful for many purposes, such as power for operating machinery, irrigation, etc., but the river that overflows its banks, or the contents of a reservoir whose bank or dam gives way, leaves ruin and desolation in its path and its force is worse than wasted.

So our store of nerve force may be kept under control, and made to serve the purposes for which it is intended, or we can turn it loose, let it waste itself and leave nothing but ruin in its wake.

To make myself plain, I will mention some of the drains on the store of nerve force, both necessary and unnecessary, and suggest methods for controlling the former and preventing the latter. During our working hours, which are often too long, there is necessarily a constant drain of energy in the planning and execution of our work. Outside of office hours we engage in reading and many other things that draw more or less heavily from our nerve supply. It is certainly right to draw moderately for these legitimate purposes, but good judgment must be used as to the amount of the draught, and the length of time continued. The authority of the will must be supreme. It must be remembered that dead water becomes stagnant and a breeder of disease, and the same thing is true of the nerve supply. Unless it has an outlet, is used and kept in operation, it becomes stagnant, and laziness, carelessness and general stupidity prevail. So it is certainly the advisable thing to draw from this store of nerve energy, but it should be done in moderation.

There are conditions under which this stored up force becomes dangerous in the extreme. In fact, if turned loose in certain ways,

*Read before the Macon-Moultrie Dental Society, January, 1909.

it is sure to leave wreckage and ruin in its path. Some of these ways I will mention, as follows: First, hurry. Second, worry. Third, anger.

If we habitually allow ourselves to hurry, we use nerve energy under high pressure, get our work mixed or tangled up, and have to go back and untangle it; so we use a great deal more nerve force than is necessary to accomplish a given amount of work. This continued leads us to the point where we fling open the door of worry. Our store is then being drained by both hurry and worry. At last when our supply is almost exhausted, there is a sudden explosion of anger, and the whole business is a wreck. Under these conditions, we are absolutely unfit to properly attend to any of the duties of a dentist.

As a business proposition, worry and anger do not pay. We use up valuable time and nerve energy, make ourselves so disagreeable as to drive away patients, and gain nothing but remorse.

Some say: "I can not keep from getting mad." I believe that with a proper exercise of the power and authority of the will it is possible to regulate ourselves so that our supply of nerve energy may be used judiciously, and a waste of it in the ways mentioned above be avoided.

Look ahead at the inevitable results that must follow anger, and count the cost, and that will certainly stimulate the will to an extra effort to control the situation. I should emphasize the fact that the will must be commander-in-chief, supported by sound judgment and good business sense.

In conclusion I shall suggest a few dont's, as follows: First, don't work too long hours. Second, don't work at night. Third, don't work seven days in the week. Fourth, don't think you can't afford to take a vacation when you need it.

CONSERVATION OF NERVE FORCE.*

BY DR. A. D. KYNER, MOWEAQUA, ILL.

Mr. President and Gentlemen: Back of the title of this paper the essayist has opened up a whole college course, the macro and microscopic anatomy of organs and tissues and their normal and ab-

*Discussion of a paper by Dr. S. F. Butler read before the Macon-Moultrie Dental Society, January, 1909.

normal functions. He has presented for the consideration of this society the most mysterious thing in the world, which he has pleased to term "nerve force." It goes by other names, vital force, soul, spirit, ego, etc., but this name is as good as any of the others, and is that something that has so successfully eluded the scientist from the first chatper of Genesis, first verse, to the present time. So great an interest and importance is attached to this nerve force that men have attempted to photograph it as it departed from the dying body. Men have contrived delicately balanced scales to weigh it as it took its flight. The physiological chemist has attempted to analyze it, only to find that the means employed destroyed its identity. In the little protoplasmic cell (which has been termed the physical basis of life) this same nerve force is that something which gives the cell the power to perform certain functions, and as the functions of any body are made up of the functions of its cells, we have this evening to deal with the specialized nerve cell whose inherent property of irritability at once places it in control of all the functional activities of the body and is as important to the human economy as the line wires are to the electric arc light. So it is in this little nerve cell that is stored up a certain amount of nerve force and energy to be used in the phenomena of life. I agree with the essayist that nature did intend to store up a sufficient amount of nerve force to meet our needs and believe that it may be within the power of every individual to influence nature's efforts in this direction one way or the other.

It has been said that one of the greatest gifts is to be well born. To escape heredity taints, not to inherit a type of tissue that succumbs to influences it should normally resist. Types of bad inheritance are familiar to all of you, and such an individual starts out poorly equipped for the struggle of existence. In these persons, something is wrong in the big chemical laboratory, it is poorly equipped, badly managed and the chemicals won't work. Somebody, away back in the Garden of Eden, and ever since that time, is to blame; but it can't be remedied, the damage is done and probably could not have been prevented unless the lemon tree had been left out of the creation. To say that these are properly endowed with ample nerve force and of the right quality, is contrary to experience and observation. But as the essayist probably meant normal beings and as I have before me only magnificent specimens of the human

race, we will briefly consider some of the external influences that have to do with nerve force. If it were possible to maintain an equilibrium between cell repair and cell waste, we would remain in a normal condition of health, and this might be attainable if there were not so many microbes, no alcohol, no nicotine, a human stomach in an ostrich or a goat, human beings with heads like an owl, up all night, etc., and the essayist's hurry, worry and anger. Some of these things we could escape if we were wise, some of them are beyond our control. You might swallow a typhoid fever bacillus in an innocent drink of water. You could not control that. You could drink enough whisky in an all night's carouse to float a ship and tax nature to the limit. You could control that. You might accidentally contract syphilis at the chair from an infected instrument. May be you could not control that. You could contract syphilis going down the line. You could prevent that. So in the struggle for a maintenance of reasonable health, it is essentially necessary that those things should be avoided which have a tendency to abort nature in her efforts to supply us with this energy and nerve force. And while it is possible to abuse nature almost beyond belief, it will surely follow sooner or later that her bill will be presented for payment. As for instance, a hard drinker stands a small chance to recover from typhoid fever. His cells have been stimulated to the point of exhaustion and their powers of resistance and recovery are gone. In such a person, nature's store of nerve force has been expended, and perverted nature cannot supply the loss. As mentioned before, the chemical laboratory is worn out, the factory shuts down and there is nothing to store up.

If this paper has been given the attention it deserves, the members will have noted that it is a masterpiece of description. The essayist has said a world of things and put them on two little sheets of paper. He has thought out a whole life's conduct and condensed it in a few short paragraphs. Everything he has said is a golden rule. He must be a remarkable man because he has written some wonderful things. I take it that he has self-control, because he says the "will must be supreme." Everyone here will say amen to that. Who has not witnessed instances of will power that challenged our admiration, and who has not noted its total absence, sometimes with pity, sometimes with disgust. If your will is supreme, you are the master at all times of any situation, no matter how trying. The

essayist's treatment of the dentist out of the office is unfortunate. Among the many things that he might do, he specificallly mentions only reading. I wish he had said, "maul rails." The rail splitter needs to read, that would be rest for him, but the dentist needs exercise. The three splendid dont's that the essayist has given us should be sworn to by all of us. Don't "hurry"; no, make haste slowly. Keep your reception room empty and try to educate your patrons to make and keep appointments. Nothing is so likely to make one hurry as people waiting. The genial essayist tells us not to "worry." No, dont; join a don't worry club, and let the other fellow worry. I don't believe Dr. Butler does worry, or else he wouldn't have advised us not to. But I'll not advise that, I say don't borrow trouble. Borrow everything else but trouble. You don't have to borrow it. Some kind friend will donate it to you, and gladly, too. I am pessimist enough to assert that there never will come a time so long as human nature is constituted as it is, so long as charity does not suffer long and be kind that men will not worry. But I'll admit the straw men are set up to be knocked down and many bridges are crossed that we never reach. And, lastly, don't get angry; no, don't do that, you might hurry and worry and look all right. But if you allow yourself to get mad it is an open confession of weakness, and you make a sorry looking sight. Remember the essayist's "supreme will." If your will is all right, look to your liver.

When I specified the essayist's paper as a masterpiece of description about a world of things, it was no idle compliment, for I have no doubt but that the general discussion to follow will bring out numerous don'ts and do this and that to conserve the dentist's nerve force.

I have dealt mostly with guarding the source of supply of this force, and have left untouched how to intelligently use it to the best advantage, only commenting on the three don'ts named in the paper.

So there is much material left for you, thanks to the broad nature of the paper, and you are fortunate this evening in having a wide field to browse in and surely everyone will find something to his liking.

THE MODERN DENTIST AND HIS EQUIPMENT.*

BY DR. R. F. ROWDYBUSH, DECATUR, ILL.

It has been said that to train a child one should begin one hundred years before it is born. However that may be, we know the value of home influences taught during our young days while the mind is very susceptible, and the lasting effect through life.

The educational and social advantages of youth directed in the right channel place one to a much greater advantage in the great struggle for supremacy in one's chosen field of activity.

The amount of literary acquirement the prospective dentist should have before entering upon his professional studies is one open for debate. Knowledge of the right sort is power, and while he may not be more skillful than his brother practitioner or even so much so, surely he must have a broader culture, which is acquired with the gaining of knowledge, securing for him greater confidence and ease in meeting and mingling with people who enjoy a liberal education.

History will prove this statement, that good soldiers were good boys at home, and that those who were trustworthy at home could be counted on in the field.

Our whole professional life is truly soldier's life. We are guardians of the public's health, and he who is truly in earnest and loyal to his patient's best interest will spend much time in study, both in and out of office, as to how he may serve their interests best.

Dentistry is one of the most exacting professions there is. To do work which calls for the highest skill requires greater nerve energy than almost any other vocation, aside from the tact necessary for the proper managing of a great number of patients, all of whom differ in temperament.

Our offices should be cheerful and pleasing to the eye, with the very best light obtainable, both for operating and prosthetic work. The equipment should be well selected instruments of the proper proportion, shape and quality. The dental furniture, chair, cabinet, bracket, engine and cuspidor should be as nearly faultless as possible.

The reception room should be tastefully arranged with furniture that will stand hard usage and as nearly sanitary as possible—

*Read before the Macon-Moultrie Dental Society, January, 1909.

all should be done that can be done for the patient's comfort and that which will enable the operator to work with ease and dispatch.

General adaptability to one's work is a great benefit and blessing. You have all seen the square peg in the round hole, and vice versa. Happy is he who has found his calling, and is thoroughly in love with his work. There are two kinds of dentists, broadly speaking—one is mechanically inclined, the other is the imitator. The former might be further subdivided into the mechanically inclined with high ideals and love for his profession and work, and the careless, shiftless kind, with little ambition and no adaptability for his work outside of the mechanical.

Among those American practitioners who have been pre-eminently adapted to their calling are the names of Harris, Atkinson, Bonwill, Allport and McKellops. There are many others that might be mentioned.

In our recent inventions science has given us what to my mind is the greatest benefit the profession has enjoyed for years. I refer to the method of casting fillings, bridges and crowns. We may look forward from this time on with gratification at its results, with lasting benefit to mankind and the alleviation of much suffering.

It has been said poets are born, not made. This is applicable to the modern dentist in a sense only; he must have certain definite qualifications and inclinations, and these must be his natural bent of character. That peculiar quality which makes the successful surgeon, combined with mechanical ingenuity, dexterity, studiousness and the patience of Job.

Another quality and for lack of which many dentists sink their good craft on the shoals and rocks, is lack of conservatism. In the middle course lies the greatest safety. Do not be the first to try the new, nor the last to lay aside the old.

"Build today, then strong and sure, with a firm and ample base,
And ascending and secure shall tomorrow find its place."

A dentist may have great mechanical ability, but little or no artistic sense. Possibly a small proportion have a true idea of proportions and feeling for color; this in a sense is inborn, as with the artist. Artistic ability should, therefore, be among the first requisites for the study of dentistry. In fact the dentist of today must be, as Dr. Marshall says, thoroughly conversant with physics, with mechanics and with metallurgy.

He must acquire a delicacy of touch and a manipulative skill of the very highest order; his eye must be trained to a very keen perception of form, color and harmony, and his hand to execute the thought of his brain; in other words, he must be an artisan, artist and physician, all in one.

It has been said that if the nose of Apollo had been shortened one-sixteenth of an inch, the god of physical beauty would have been destroyed. This fact alone would lead us to be very cautious as to the duty of our calling, and remember that the perfect restoration of the countenance with the original power of expression by art is to defy detection.

The restoration of facial contour and expression by means of artificial dentures or crowns and bridges, is one of the greatest fields in dental art. The teeth selected should be so true to nature in shape, color and position, that they will not produce discord, but that they will harmonize both in temperament and age. There are no two noses or faces the same, nor two sets of teeth. There is, however, a harmony in each individual case, and any important change would alter the individuality of the original. There are certain rules which may aid in producing general outlines, but it is the soul and feeling of the artist that works out the detail. A mechanic pure and simple may construct a set of teeth or a bridge and make it serviceable, but only he who has the artistic feeling and skill will be able to so select his materials and so adapt them to the mouth that they will harmonize and restore the facial expression and general contour of the face. From infancy to old age there is harmony in contour and color, and there is a change and adaption of one to the other in all stages of life.

The color of the hair changes in keeping with the face, and the same is true with the teeth. There is a general harmonious change in nature all down the path of life, and how quickly the trained eye detects inharmonious changes incident to disease. What can be more ghastly than an old decrepit personage with a bad complexion who wears a double row of splendid white teeth? The fact that in a given case we do not have ideal teeth would lead one to suspect that possibly there were other defects in facial contour and complexion which were far from ideal, and the insertion of an ideal crown where the surroundings are such would destroy that harmony which prevails even in ugliness and renders it more evident. It requires a high concep-

tion of art to thoroughly appreciate these principles and apply them successfully in practice. The countenance, individuality and harmony must be successfully retained in each case. Nature in all her irregularities has retained a harmony which the artist can only imitate.

Watch the waves, then experience the storm at sea; in calm or storm a beautiful harmony. No artist can ever paint the waves so that one can have any conception of their beauty and grandeur from the canvas.

John Ruskin says, "but the sea was meant to be irregular!" Yes, and were not also the leaves and the blades of grass; and, in a sort, as far as may be without a mark of sin even the countenance of man?" Or would it be pleasanter and better to have us all alike, and a number on our foreheads that we might be known? If such were the case we could buy our teeth as we do shoes and then dentistry would be purely a commercial calling, as some prefer now to practice it.

One of the great reasons for the dental profession not occupying a more commanding position as a specialty of medicine or as a separate and distinct profession, as some would choose to call it, is due to the lack of the proper enlightenment of the general public as to the character of the services rendered and the skill required—the time and expense gaining the requisite knowledge—the cost of office equipment and maintenance. It is no uncommon thing to hear the laity talk of tooth pulling and false teeth as if these were all a dentist was expected to know.

Realizing that time is money, that in the few short hours at the chair we are to earn our livelihood and that we do not have the time to enter into extended conversation on any subject, it is my belief that proper publicity could be given to the patient, describing the character of dental operation and services rendered by the modern dentist, and the care of the teeth, through the medium of a neatly printed booklet authorized by and credited to this society, and that each member shall keep a generous supply for distribution.

The laity are very badly in need of such enlightenment, and it is our fault today that there is so much ignorance in dental subjects. It is the duty of every member of the profession and the public has a right to expect the knowledge that we can give them on the subject of preserving their natural teeth, or the replacement by

substitutes when lost. And we can never hope to occupy that high position we are rightly entitled to unless we are living up to the very highest ideals.

Few people comprehend and fewer still thoroughly appreciate the many benefits the dental profession bestows upon suffering humanity. We all know, as Dr. Holmes has so aptly expressed it, "the dental profession has established and prolonged the reign of beauty; it has added to the charm of social intercourse, and lent perfection to the accents of eloquence; it has taken from old age its most unwelcome features and lengthened enjoyable human life far beyond the limits of the year when the toothless and purblind patriarch might exclaim, 'I have no pleasure in them!'"

While the professional man has not the financial advantages of the commercial man, neither has he the temptations of the man in the vast struggle for commercial supremacy, but instead he has more time and opportunity to develop those higher qualities of mind and heart, as Dr. Van Dyke has said: "To be glad of life because it gives you the chance to love and to work and to play and to look up at the stars; to be satisfied with your professions but not contended with yourself until you have made the best of them; to despise nothing in the world except falsehood and meanness, and to fear nothing except cowardice; to be governed by your admiration rather than by your disgust; to covet nothing that is your neighbor's except his kindness of heart and gentleness of manner; to think seldom of your enemies, often of your friends and every day of Christ; and to spend as much time as you can with body and with spirit in God's out-of-doors—these are little guideposts on the foot-path to peace."

THE PORCELAIN JACKET CROWN.*

BY HARRIS J. FRANK, D. D. S., CHICAGO, ILL.

Mr. President, and members of the McLean County Dental Society: It affords me much pleasure to come before your society today for the purpose of addressing you on a subject that is perhaps of more interest to me than any subject in dentistry: Preparation, manipulation and baking of a porcelain jacket crown. And I might add that I believe the time is not far distant when it will be as necessary for the

*Read before the McLean County Dental Society, June, 1908.

members of our profession to be as familiar with the construction of this type of crown as they now are with the construction of an ordinary gold crown.

For single crowns or a small bridge, the porcelain jacket or shell crown is not only universally applicable, but it is one of the most practical and cosmetic means of restoring the teeth, and while a high order of skill is required in this type of construction, it will surely come into much more general use than it is at present.

You will find that the high fusing porcelain, when properly manipulated and thoroughly condensed and fused is one of the most serviceable materials that can be used wherever indicated.

A badly broken incisor, for instance, where porcelain inlays would be contraindicated and where the ordinary crown would necessitate its devitalization and a pin in the canal with its ever present danger of splitting and perforating the root, can readily be restored to its former life-like appearance by means of the jacket crown.

The jacket crown may also be used to bring into proper alignment the teeth in cases of malocclusion, without moving the roots, by properly grinding them and by so building up the jacket crown and contouring it that it will take its place in the arch in perfect alignment.

Many cases of malocclusion that ordinarily would require the services of the orthodontist for one or two years have been treated in this manner in a very short time without devitalizing the pulps and with satisfactory results.

The porcelain jacket crown is also indicated in cases where there is a missing tooth in the arch. One of the adjacent teeth is covered with a jacket crown, a porcelain tooth made to fit the space, and the two are then fused together, making a bridge that is not only beautiful and life-like in appearance, but very durable as well.

About one year ago I constructed a bridge of that description for one of my patients who happened to be the head nurse in one of the hospitals in Chicago. The bridge consisted of a jacket crown on the upper right second bicuspid with a porcelain tooth fused to it to take the place of the first bicuspid, which was missing. In order to satisfy myself as to the strength of a bridge constructed in this manner, I asked my patient to make a special effort to break it while masticating her food, and at the end of ten days she reported that she was unable to do so. The bridge is still doing good service and I am now satisfied as to its practicability.

In describing the technique in the preparation of a tooth for a porcelain jacket or shell crown I shall select an upper central incisor so that the description may be followed and grasped more easily, although there is very little, if any, difference in the preparation of the remaining teeth.

With a very thin stone, and with a small jet of cold water or compressed air playing on it constantly, the tooth is ground on the mesial and distal surfaces, removing all undercuts and contour that there may be from the neck to the cutting edge, then likewise with small stones on the labial and lingual surfaces, removing as little of the tooth as possible consistent with alignment to the adjoining teeth and the bite, which leaves the tooth in a sort of a square and cone shaped appearance; then with sharp fissure burs the corners are rounded and a square and distinct shoulder is cut all around the neck, slightly above the free margin of the gum, so that the adaptation of the crown to the neck of the tooth may be perfect, leaving absolutely no shoulder at the junction of the crown and root after the crown is adjusted permanently.

I might add here that while economy in the use of material is in some cases commendable, it is very much out of place in preparing the teeth for a jacket crown, because to get the best results and with as little loss of time as possible, the stones must be absolutely true and the fissure burs perfectly sharp, so that the tooth may be prepared without any misdirected manipulation on the part of the operator. It is sometimes advisable to use as many as five or six new fissure burs in preparing one tooth, and the moment the stone is not absolutely true, discard it and get a new one, as it is money well spent.

The next step is to take the impression of the prepared tooth; a shell crown made of German silver or copper, approximately the size of the root in diameter and sufficient in length, is selected and trimmed to fit about as closely as that of a gold crown, and with that an impression is taken in modeling compound, great care being taken that the square shoulder appears distinctly in the impression. It is then chilled with cold water and removed, and if the tooth has been prepared properly there will be no distortion in its removal.

A wax impression is next taken of the tooth and a few adjoining teeth, including the corresponding tooth on the opposite side of the arch, so that the jacket crown may be built to correspond with it, chill this impression thoroughly and remove, also being careful not to

distort it. Next take an accurate wax bite in the usual manner showing perfectly the occlusion of the upper and lower teeth.

A shell crown is then formed of gutta-percha and fitted on the prepared tooth. This crown not only shields the tooth from thermal changes, but it at the same time brings pressure on the gum margin, preventing it from growing down about the shoulder at the neck.

After the color and shadings of the teeth are carefully noted, the patient may be dismissed. To reproduce the tooth that has been prepared, the modeling compound impression is filled with a stiff mixture of cement, leaving enough excess to form a root about three-quarters of an inch in length. After the cement has thoroughly hardened, heat the modeling compound and remove; then trim the cement root to a cone shape, being careful to remove all undercuts and having it perfectly smooth, but without touching the shoulder, as that must be left in exactly the same condition as when removed from the impression.

The cement tooth is then carefully placed in the impression that was first taken and a model poured in plaster; after the model has hardened the wax impression is removed, and it will then be found that the cement tooth may readily be removed and replaced at will on account of the cone shape of the part representing the root. The model is then placed in the bite and the upper and lower teeth articulated, when we are ready to begin the construction of the porcelain jacket crown.

The gauge of platinum usually employed to form the matrix in this work is 1-1000 of an inch, and a piece sufficiently large is cut and wrapped about the tooth and by digital manipulation made to hug the tooth and particularly the shoulder very closely. The platinum must be very fresh and thoroughly annealed and without having previously been subjected to any manipulation, as that would cause it to become springy, and it would then be impossible to get it to hug the tooth closely. The excess of platinum is cut away just beyond the shoulder and it will then be found that the matrix may be removed and replaced at will without becoming distorted.

It is a good practice to buy the platinum in ounce lots direct from the manufacturers, in that way being assured of a minimum amount of handling. The best grade of platinum is as adaptable and soft as tin foil, but with a very little manipulation it becomes harsh and hard and is then unfit for this kind of work.

It is my experience that the best results may be obtained by the use of the high-fusing porcelain and I therefore buy the highest fusing body on the market, and although I always have on hand all the shades, I seldom have any use for more than four.

Having determined on the shade or shades to be used, a sufficient quantity of porcelain is placed on a glass slab and with distilled water a mixture is made of the consistency of thick cream, and then with a small steel spatula a small quantity is placed at the shoulder on the matrix and gently, but firmly, pressed and spatulated down until the mass is packed solid, then a little more is added and spatulated in the same way, and this is continued until the entire gingival portion and shoulder is covered and well spatulated, after which the entire matrix is covered with porcelain in the same way, always remembering that each mass must be well spatulated and packed before the next one is applied.

The cement tooth is then placed in the articulated model and the building up process continued in the same way until the entire tooth is constructed to conform to the adjoining teeth and to the corresponding tooth on the opposite side. The root and tooth are then removed and the tooth again carefully spatulated on the entire surface until it is perfectly smooth, and by that time it is dry enough to be placed in the furnace. You will find that if the porcelain has been well spatulated to the greatest density possible there will be very little shrinkage in fusing it, and you will have a dense, strong and beautifully life-like tooth. For any of the anterior teeth it is rarely if ever necessary to fuse more than once.

The different electric furnaces on the market vary in the length of time necessary to fuse the high-fusing porcelain. I use the Hammond furnace and in them the porcelain is fused at a temperature of 2,560 degrees Fahrenheit, and I get the best results in letting it run up to that degree of heat in about fifteen minutes. After the tooth has passed through the furnace and cooled the matrix is stripped out and it is then ready to be adjusted and cemented on the tooth.

PROCEEDINGS OF SOCIETIES.

CHICAGO-ODONTOGRAPHIC SOCIETY.

A meeting was held January 13, 1909, with the president, Dr. Fred W. Gethro, in the chair.

The subject for the evening was a symposium on "Prosthetic Dentistry."

Dr. J. H. Prothero read a short paper in answering the following question:

"What points in crown construction are essential to the preservation of the health of the peridental membrane?" (See paper.)

DISCUSSION.

Dr. George C. Poundstone:

In discussing a paper like Dr. Prothero's one finds nothing to take exception to, and can but approve and emphasize the points he has made. I shall, therefore, confine my discussion more to some of the essential details in crown construction for the preservation of the peridental membrane. Most of us are from Missouri and broad general statements and theories are not readily assimilated.

In regard to traumatic injury in the preliminary steps, Dr. Prothero says that the peripheral ring of enamel can readily be removed by means of cleavers, files, etc., providing due care be exercised. I will add another proviso, which is that the cleavers and files be cleaned, sharp, and of proper shapes to accomplish the work in hand. I have seen dentists trying to drag enamel from a tooth with cleavers that were about as effective as a butcher-knife would be to shave with. Such instruments slip and gouge into the surrounding tissues and cause no end of trouble.

The impingement of the band upon the tissues cannot be too carefully guarded against. I have seen so much trouble from this cause that I have discontinued the use of the band unless it be absolutely necessary, for even with the greatest care one may force a band upon the peridental membrane and not know it at the time.

In making a bandless crown, there is also less danger of injury to the soft tissues in the preparation of the tooth, as there is no necessity for using instruments around the periphery of the root, all work being done from the occlusal or incisal surface, but if you must have a band, make it narrow, very narrow, because it is of very

little use anyway, and the less of it the better. Imperfect adaptation to the root is much more common in shell crowns than in any other variety, and while I do not approve of a shell crown that does not quite reach the gum margin, I know that much less injury will result than if an imperfect joint be hidden underneath the gum. Then, too, some tooth workers would not have the nerve to leave an ill-fitting margin where the patient could see it, while their consciences would be at perfect rest if they could hide it beneath the gum, where it was not visible.

When you make a shell or banded crown, remove enamel and some dentin, if need be, until you can get a perfect fit at the very edge of the band, not half-way up, and see that this edge drives tight against the root and does not rest upon the membrane at any point.

If you cannot do this, or will not try hard to do it, turn your crown work over to some dentist who does do it.

With regard to the incorrect form of the substitute, Dr. Prothero has placed emphasis on preserving the interproximal spaces. This important procedure cannot be too carefully attended to. I would also urge more care in reproducing the lingual contour of upper anterior crowns, thereby preventing food from being forced directly against the margin of the gum and eventually causing its destruction.

Dr. E. H. Allen, of Freeport, Ill., answered the following question in a short paper:

"What are the Chief Causes for Failures in Bridgework, and What Percentage of. All Bridgework Remains Five Years." (See paper.)

DISCUSSION.

Dr. J. F. F. Waltz, of Decatur, Ill.:

I regret I have been unable to prepare anything in the nature of a discussion, owing to the fact that Dr. Allen did not furnish me his paper until about one o'clock this afternoon, hence my remarks will be of a general nature.

I should say the main reason for failure in bridgework is incompetency on the part of the operator, and that that incompetency takes the form, first, of lack of judgment. I believe that all teachers are agreed that a dentist to be a good one must have a mechanical sense the same as a musician must have a musical sense, if he is a real musician. During some years as a demonstrator in the infirmary I

became very firmly convinced of the fact that unless a student possessed markedly the mechanical sense he could never be a high-grade dentist, and I believe that as we evolute and improve the time will come when the supervision in our dental colleges will be such that a student not possessing this mechanical sense will be excluded from further pursuit of the course.

Again, one's judgment may be faulty in a number of other features. First of all, the esthetic side of the question. As Dr. Allen has so well pointed out, in the case of a bridge with shell crowns upon the cuspids, carrying incisors of poor color, with heavy tips of gold over the incisal edges; I think that is not an uncommon spectacle to any of us. We so often see bridges of that general description which seem to indicate a fair technique on the part of the operator, but which are certainly glaring failures from an esthetic standpoint, and these failures must be charged up to a lack of judgment on part of the operator.

Again, the sanitary side of the question must be considered. I do not believe that a dentist should ever construct a bridge for a patient who is very uncleanly and unsanitary in regard to his mouth, because it is certainly rendering that patient liable to a very improper general condition to put in his mouth an agency which can only act to make his mouth more filthy than it already is. We often say that a bridge should be used where it is properly indicated. That is a kind of loophole for a good many kinds of work. We say they are proper where they are indicated. Well, that means a great deal, or it means nothing, unless it is modified. We are all witnesses of bridgework which has been made to restore perhaps a missing bicuspid tooth, when the adjacent teeth are perfectly sound, and we see a sound molar, or a sound cuspid mutilated to give the patient something that he has very little need for, unless it be from an esthetic standpoint, and unless the technique is of a very high order, the work is usually an abomination when made for such cases.

The next cause of failure, I should say, is inability on part of the operator to properly execute the technique involved. There can be no question but that our work requires great accuracy, and in no part of dentistry do we find the details requiring greater accuracy than in the construction of bridgework.

As to the percentage of failures in bridgework after five years, it can only be an opinion on the part of anyone unless considerable

time is spent during which some statistics have been collected. But my observation extends over some ten years, and I did not have to build up a practice before I began to observe, because my father and I are associated in practice, and I began my observations as soon as I went into the office. During that time, so far as I can remember, I do not consider we have had a failure in bridgework. As I hear men talk that statement will be taken as a very broad one. We have had the wearing-out of bridges. I have observed abrasion of the cusps of shell crowns go on to such an extent that they were worn through, even though the cusps were solid and heavy originally. Especially is this the case where the opposing teeth are artificial, as porcelain, and act as grindstones in masticatory movements. A broken facing is not an uncommon experience, and yet careful technique will minimize such accidents. I have observed in some cases, where open-faced or slipper crowns were used, what might be termed failure from the solution of the cement under some portions of the crown and decay setting in there, eventually forming a cavity which loosened the attachment; nevertheless, that was considered good practice at one time, but now most of us, I believe, have abandoned it, having observed such conditions. In some cases it has been necessary to reconstruct the bridge, so far as the abutment was concerned.

I am not pessimistic. I try to follow Dr. Noyes' bent of being as optimistic as possible. You will remember that one of the essayists stated last night he had observed four gold inlays from four of Chicago's best practitioners with the margins so faulty that a cat might be thrown in. With a group of friends at dinner that sort of remark was condemned this evening. I think such exaggerated statements do a great deal of harm. I do not think that the inference from such a statement is good, for if the younger members believe that the best practitioners in Chicago construct such work we naturally infer that we can go a little bit further and construct a little worse work; so I do not like to hear that sort of statement, and I do not feel like saying such things in regard to some of the adaptations of the bands and abutments to their roots which we see in our bridges. We know they are often faulty, yet I am optimistic, and believe that as time goes on and we improve in our methods, the technique will become so generally better that a very decided improvement will take place in carrying out proper principles.

Dr. F. E. Roach read a paper in answering the following question:

"How Would You Restore a Lost Upper Lateral if the Central and Cuspid Have Vital Pulps and No Decay?" (See paper.)

DISCUSSION.

Dr. George W. Haskins:

Dr. Roach has covered the subject so well and our views are so nearly in accord, that I am compelled to elaborate upon some of the points which he has made, in order to find something to say. When well done, considering the comfort of the patient and the permanency of the operation, the Carmichael attachment on the cuspid, and the inlay with small dowel pins in the central incisors, offer the best solution of the question, and I would add to this, the use of some such easily replaceable tooth as the Steele tooth; but the use of inlays with or without pins, for the purpose of abutments, demands perfection of fit, and it is safe to predict that if such a bridge when tried in place without cement is not perfectly firm and immovable, no power of cement will hold it long in place; the stress upon the tooth on the bridge is far greater than that upon the tooth on a partial plate. The first is rigid and takes the full force of the shock, and the latter dodges it.

I do not approve of the attachment on the cuspid alone, for in too many cases the forces in the mouth will cause the cuspid to either tip or rotate. We must not forget that when we have lengthened our lever by attaching a tooth to the cuspid we greatly increase the power of these forces.

The spur resting upon the central incisors, as it is usually made, I have found fully as objectionable as the essayist, but when the bite will permit, it can be made so that the objections made do not exist. Iridio-platinum round wire, 10 to 14 gauge, is used. The end is rounded, so it is shaped like the half of a sphere; if the wire is then bent so that the rounded end rests upon the lingual surface of the incisor, half way between the distal border and the middle line of the tooth, it will give all the support needed, and decay will not take place under it, for it has no under-surface.

I did not know that the slipper crown had a friend left, but the essayist evidently thinks it has, and worthy of censure, and I agree with him heartily. The best that can be said of it is that it is easy, destructive and nasty.

Beyond question, the use of the dowel pin in the root, with cast inlay, affords the strongest possible form of abutment we can use; but when this method can be avoided, I prefer to avoid it, for I must confess that even in the single-rooted teeth my root fillings have not reached 100 per cent perfection, and if these are faulty the bridge is faulty.

The value of the small plate must not be ignored in these cases, but not as they are commonly made. They should not be made to fit closely to the lingual surfaces of the necks of the incisors, but be cut away so it fails of touching them by at least $\frac{3}{16}$ of an inch. It need not be over ¾ of an inch wide at the widest point, and that it may be rigid and not bulky, it should be made of one piece of clasp metal, gauge No. 28. This will not be easy to form so it will fit the mouth, but it will be just as difficult to get out of shape by use.

A well-fitted clasp in the bicuspids offers a good form of attachment, or, if the bicuspids are missing, a bicuspid tooth on each side, filling the space well, will give all the retention necessary.

Dr. H. N. Orr read a paper in which he answered the following question:

"What Is Your Opinion of the Comparative Stability of Bridges Anchored With Inlay or Crown Attachments? (See paper.)

DISCUSSION.

Dr. H. F. Methven, of Chicago:

Mr. President and Members of the Chicago Odontographic Society:

I wish to compliment the essayist on the paper he has presented to us this evening, and will say, as far as the cavity preparation is concerned, it is in accord with the views of the most eminent men in the profession, so I will have to pass this phase of the paper. He cites several cases, which, according to his explanation of them, are quite feasible, but in my opinion he has rather evaded the most important point of the question, "that comparison of the stability of the bridges in regard to the two kinds of attachments." He speaks of removing and seeing bridges removed where the roots of the abutments were intact and as soundly set in the artificial crowns as they were the day they were set. Now, to my mind, that demonstrates the fact that the anchorage was not at fault. The cause of the loss of these teeth proves that it was not due to any fault with the sta-

bility of the abutments, but showed the faulty construction of the crowns used as such.

As a rule the shorter the bridge with inlays as abutments, the more apt it is to become loose on account of the movement of the teeth in their sockets. The thicker the peridental membrane, the greater the need of crowns as abutments, on account of the greater amount of movement of the teeth. In the case of a thick peridental membrane, a bridge where inlays are used as abutments would be more liable to displacement than the other. This movement I have noticed in several cases. One in particular which I call to mind where the cavity preparation is according to accepted methods of practice and the bridge is correct in form and occlusion, yet the patient cannot masticate his food on account of the pain produced by the pressure on the membrane, caused by this movement, and the bridge becomes loose quite frequently. Except in limited number of cases bridges constructed with crowns as abutments will prove more serviceable than where inlays are employed. In my mind the bridge with crowns as abutments is by far the more stable.

In closing I should like to say a word, not on the paper, but on inlays. Everybody admits the ease with which cast gold inlays are made, yet you hardly pick up a journal that does not tell you some easy way to repair the margins or make the inlay fit the cavity. Now, if it is so easy, why not make it over at once and have it right?

I thank you.

Dr. J. A. Bullard read a paper answering the following question: "What Is There New in Detachable Porcelain Crowns and Facings as a Result of Recent Methods of Casting?" (See paper.)

DISCUSSION.

Dr. R. E. MacBoyle:

In order to make the discussion of a paper exciting and interesting one should be able to take issue with, and oppose at least a few of the ideas set forth, but I find myself in the position of agreeing with the essayist in everything that he has said. I am not surprised at finding myself in this position, because I know Dr. Bullard so well and know that whenever he presents a subject he does it in such a thoroughly practical manner that there is little chance of an argument in opposition.

I want to emphasize the idea brought forth regarding the possibilities which the casting method presents in the construction of

crowns and bridges, and at the same time I believe it wise to throw out a word of warning, by impressing upon all the fact that in order to get proper results the most careful manipulation and exacting attention to every detail is necessary.

I take the position regarding the casting method, whether for fillings or crown and bridge work, that in order to obtain the desired results as to permanence, etc., the adaptation must be as perfect as is possible for the human hand to make it.

There should be no different grades of this work if it is to be successful in its purpose; perfection is the only standard, and when we have worked hard enough and long enough and acquired skill enough to get perfect results, which I believe is possible, then you need not fear but that the casting method will have a high and permanent place in dentistry.

There seems to be a tendency on the part of many to accept the casting method as something easy, but let me repeat that this is a grave mistake, and the most exacting painstaking is absolutely necessary if we would get proper results.

I cannot refrain from referring to a statement that was made last night regarding four inlays that has been inserted by four of Chicago's best dentists, and that the margins of these fillings were wide enough to admit a cat.

I challenge the correctness of this statement in its entirety, not doubting the statement that the margins were faulty, but if they were, the fillings were not inserted by Chicago's best dentists, and I believe that such statements do considerable harm.

I do not believe that the casting method for crowns or bridges should be adopted entirely to the exclusion of the older methods.

I believe the method of fitting bands, the burnishing and soldering in the good, old, reliable way, still has a wide and indicated use in crown work. But I am also convinced that the casting method is in many cases an improvement over the older method, and it seems to me that it has made possible good result in some cases which now seem almost impossible under the older method. In this I refer especially to badly decayed and broken-down roots.

It is not the most simple thing in the world to properly adapt a separable dowel crown with a cast base, and I have found in some cases it is an advantage to cast the metal base separate from the dowel or post.

You adapt your porcelain as is desired to the root, adjust the dowel to root and crown and cement the crown onto the dowel, then place wax onto base of the crown and press to place on the root, trim away the surplus wax, remove from the root, slip off the wax and cast. To accomplish this the dowel used must be smooth and coated slightly with vaseline. The advantage is in having the crown and dowel cemented together and adjusted in this rigid form before pressing to place with the wax. The metal can then be soldered to the dowel if you wish or mounted without soldering, as the parts fit together accurately and will hold when cemented onto the root.

I do not believe that we are at present time supplied by the manufacturers with the ideal porcelain tooth to be used in the casting method, but the demand for such a product will no doubt encourage the production of molds of teeth which will be more universally adaptable than the ones at present on the market. I believe that a porcelain crown with the countersunk portion of sufficient size to allow pressing of the wax into and casting instead of extending the dowel into the crown would be an advantage and would allow a greater scope of adjustment in this kind of a crown.

The idea of casting backings and cementing the facings to place by means of threading the pins I believe has some advantages, and an item in this connection which may be considered is what effect on the shade or color of the facing will the cement have.

In conclusion I would like to impress upon you the fact that until we acquire the skill to obtain perfect results with the casting method, just so long will our work fall short of being what it should be, and just so long will the casting method be open to criticism.

GENERAL DISCUSSION.

Dr. William Conrad, of St. Louis, Missouri:

As I will leave you shortly, I feel that if I did not take advantage of the opportunity now, I might not have a chance to thank the officers and members of this Society for the many courtesies you have extended to me during this meeting, and for the great pleasure it has given me to be here.

With reference to the question of cement and gutta percha, the frailer a crown or bridge, or the frailer a support, the greater the indication for gutta percha, in my experience, because the cement becomes rigid and loosens to a certain extent the roots, while the resiliency which is in the gutta percha favors that giving and taking

process which is known to be so very, very beneficial in the automobile tires.

There has been a great deal said about the celebrated cat (laughter), consequently I cannot resist the temptation to speak of the aforesaid cat. If you will just consider this matter for a few moments, you will realize that the cat margin is oftentimes the most durable one, because the cement that is placed there is of sufficient density to be of service. The more perfect the margin, the thinner the cement, the more likely the inlay is to fail.

A very distinguished dentist in St. Louis some twelve years ago made the statement that bridgework would almost be a lost art at the end of twenty years. He made that statement in good faith at that time, and I believe the use of bridgework is very, very much less than it was fifteen or twenty years ago.

In connection with the subject of crowns and bridges, I wish to present to the Society a little communication, and I do not want all the members of the Chicago-Odontographic Society to claim proprietorship, but all those who are the owners of this method and of this advertisement will recognize it: Gold teeth, the latest fad. Fill your own teeth; gold crown plated that fits any tooth, easily adjustable; removed at will. Looks like regular dentists' work. Fools them all. Over two million sold. Everybody wants gold teeth. Price, 10 cents; four for 25 cents; twelve for 50 cents." I present this advertisement and the tooth to the Society. (Laughter.)

Dr. C. N. Johnson:

On behalf of the Society I wish to thank Dr. Conrad for bringing that information from St. Louis. (Laughter.)

Just one other thing while I am on my feet. Dr. Conrad said last evening that it was a reflection on the Program Committee to bring before this Society the question of a pulp exposed in the tooth of a child eight years of age. I want to inform Dr. Conrad that here in Chicago we sometimes get patients who come from St. Louis. (Renewed laughter.)

Dr. L. H. Arnold:

In the three minutes allotted to the discussion of these subjects, I cannot do better than to say the same thing over and over, and it is this: In three years' use of cast gold in daily practice, I have found that gold that is cast as we ordinarily cast it, and to the edges of a shell crown, is one of the most frail things that can be used. Cast

gold is not and cannot be made as strong as the ordinary gold plate by any means, any more than cast iron is as strong as wrought iron of the same thickness. Bear this in mind: A thin cast shell crown going over a properly tapered root, the shell being filled with soft cement and crowded to place, is exceedingly liable to split, and is a very treacherous support for anything; it won't do, gentlemen, it has not the strength.

Dr. G. W. Dittmar:

Regarding the statement made by the last speaker, I want to say that I have been on the program in various places to clinic on the cast gold crown, and inasmuch as these crowns have been mentioned I want to say a word or two in their defense.

I think a man ought not to make an entire cast gold crown. I believe it is impossible to cast a gold crown in its entirety, using only wax for the whole substitute, and make a perfect crown; consequently I do it this way: I make a thimble which fits over the end of the root, using 34-gauge pure gold. Over this I make a casting of 22 K. gold as thick as is necessary to give the crown the proper form. The crown, being firm and having sufficient reënforcement of gold over the gold thimble, is one of the strongest substitutes that can be placed on a root. For a detailed description of the technique see page 763, *American Dental Journal,* December, 1908.

Let me say one or two things regarding the paper of Dr. Orr. He spoke of the inlay and the crown and the relative use of them. As has been said, it depends entirely upon a man's judgment, and the conditions that surround the case, as to whether an inlay or a crown should be placed. I do not believe that an inlay placed in a tooth is always the proper thing, although it may be indicated from a mechanical standpoint. One must consider certain conditions. To begin with, the age of the patient, the health of the patient, the general condition of the mouth, the susceptibility to caries, the condition of the peridental membrane, the occlusion and a number of other things. Every dentist should consider these things before he decides positively what he ought to do.

With reference to bandless crowns for the anterior teeth; as a general thing on the centrals and cuspids they are indicated, but on lateral incisors in certain types of occlusion the roots are likely to

be fractured if the crowns are made without lingual support. Oftentimes, especially on narrow roots, we need support on the lingual to support the post, and there I would use a partial band—never a band on the labial, but a partial band on the lingual, and reënforcing that with cast gold, or with solder if I made it the old way.

Regarding the cementing of facings or detachable porcelain crowns to cast work, I find Evans gutta percha cement is a nice thing and often indicated. It seems to be strong enough, it is easy to place, and easy to remove in case you wish to remove it. Evans' gutta percha cement, I believe, has a place for this class of work.

Regarding Dr. Haskins' clasp metal plate, he says it is hard to make a partial plate and get good adaptation with clasp metal. I believe at the present time, with our casting method, we can make a most beautiful and well-adapted clasp metal plate without very much trouble.

Dr. Frank H. Skinner:

The essayists of the evening have presented the subjects in such a boiled-down, concise, common sense sort of way that it leaves little room for discussion, unless a man wishes to emphasize some of the points brought out, and that has been done so ably by those who have preceded me that my only excuse for getting up this evening is to show a root preparation which impressed me very favorably, suggested a few months ago by C. M. Carr.

To me, a crown made without a band flavored of careless dentistry, until recently, but as I go deeper into pyorrhea and prophylactic work, especially the latter, I see less use for a banded crown, for in the majority of cases there is always more or less irritation, until the gum tissue has receded up to the top of the band. I believe that as the profession becomes more interested in pyorrhea and prophylactic work and sees the benefits derived therefrom, the banded crowns will be gradually relegated to the rear; and besides that, it is impossible, in the majority of cases, to properly treat, for pyorrhea, a root which wears a banded crown.

In the V-shaped root preparation, every time a strain is put upon the crown the lingual bearing of coping tends to act as a cam to pull out the pin, and, once started, the next step is either loosening of the crown or else splitting of the root. This latter condition is made impossible by this preparation, which consists of cutting a

notch on lingual side of root. The pulpal wall of said notch is made parallel with pulp canal, as shown at "A."

Looking at the end of root presents the appearance "B."

The cope can be burnished directly to the root, cast from a wax model, or swaged, using the method demonstrated by Drs. Wassall and Knowles. I prefer the latter. If the fitting of the cope is carried out accurately the crown seats perfectly, and when set and polished down is a perfect continuation of the root, and when we reproduce what nature in her ideal state intended us to have, and stop there, making it strong enough for legitimate use, we are doing the best service for our patients that human hands can produce.

Dr. Hart J. Goslee:

It is awfully hard to sit here two full evenings and listen to a program such as we have had last night and tonight, and not say anything, and still, after having listened to the program last evening and tonight, it is hard to say anything, because there is so much that might be said. I think, ladies and gentlemen, without question this is the second largest meeting of dentists, outside of an international dental congress, that we have had in this country, and the first one was the Fifteenth Anniversary meeting of this same society. I think, also, the essays and discussions which we have listened to for two evenings have perhaps exceeded in importance and general interest any we have ever had before at any one single meeting, no matter how long it lasted. We have all been profited by what we have heard very much indeed. We have learned that Dr. Johnson still believes in the gold foil filling, and I am very glad that he does. We have learned that Dr. Byram still believes in porcelain just as much as ever. I am glad that he does. We have learned that Dr. Conzett does believe in gold inlays to an extent, and I am glad that he does. We have learned that Dr. Pruyn and Dr. Conroy believe in amalgam, and I am very glad they do, and by way of analysis I am only leading up to this, that everything that has been said to you shows you this, that, after all, it depends upon the personal equation of the operator (applause), and that, after all, the proper thing in the proper place

is the thing, and that cannot be disputed. No one would gainsay that Dr. Johnson can put in a gold foil filling as well as anybody that ever lived. No one can say but what Dr. Pruyn can put in an amalgam filling as well as anybody that has ever lived, and that does not mean that gold inlays need necessarily be put in with margins into which you can throw a cat. (Laughter.) Not at all, and I want to say to you, when you have such margins as that, it is not the fault of the method or the material, but of the operator every time.

We have had some papers tonight that are of particular interest to me, because they touch upon a subject which I flatter myself that I know something about, crown and bridge work, and I am going to begin with the splendid paper, and the still better discussion of the last paper, the essay of Dr. Bullard and the discussion of Dr. MacBoyle, confining myself briefly to them.

There is not, at the present time, anything that is really new, to my knowledge, in the line of replaceable teeth for crown and bridge work; but I am confident that the progress of the profession is such, at the present time, that there will be something new in the not distant future, because the demands of the present make it necessary, and I want to prophecy again, as I did over a year ago, that the time will come when we will not use in the construction of fixed bridge work anything but a replaceable type of tooth. Dr. Williams, of London, has been talking through the dental journals, pointing out the advantages of porcelain containing platinum pins, and of porcelain without platinum pins, and some one made the assertion not long ago that a porcelain tooth or facing which did not have platinum in it was one-third stronger than a facing that did have it, and the tooth suggested by Dr. Williams, with a socket or countersunk hole in it, instead of a tooth with a plainum pin in it, is the coming method, and we can fit pins subsequently easily, and by casting a backing we have a stronger piece of work than we would have with an ordinary soldered tooth of anykind.

I want to say a word or two in reference to the remarks made by Dr. Roach, and followed later by Dr. Haskins, to this effect: Dr. Roach referred to the casting crown, such as he designated, and as is commonly designated, as the Carmichael attachment for a cuspid tooth in supplying a lateral incisor between a good sound central and cuspid. It is not possible for Dr. Roach or anybody else to make a

Carmichael attachment or similar form of attachment to a cuspid tooth with the same degree of accuracy that he can make an inlay that will be just as secure in the attachment that it forms to the tooth, and if you make the so-called Carmichael attachment you will destroy the tooth a great deal more than if you put in a simple inlay. The thing I want to emphasize in particular in this connection is this: Where we have such a conspicuous tooth, for cosmetic reasons, as a lateral incisor, missing, we are justified in mutilating the tooth, if you please, or two teeth, if you please, to supply it; just in proportion to our ability to restore that tooth in a more or less permanent manner, if we mutilate the tooth or teeth and resort to casting we can do that.

One other word. A rest was mentioned by Dr. Roach in his paper, using a secure means of attachment to one tooth in supplying a small tooth of that kind, a lateral, and a rest to prevent or to overcome torsion against the adjacent teeth on the opposite side. I do not know of anything I have used in the past ten or twenty years in such cases more than I have a rest against the lingual surface of adjacent teeth where I have had one good support. The rest must be so adjusted to the tooth against which it rests as to be self-cleansing, and that means minimum contact point, leaving it free at every other point, and if it is so employed it will be successful, and no injury will result to the tooth upon which it rests. After all, it depends upon how well we execute the work after we have used good judgment in deciding what we will do in the individual case.

Dr. Koebel, of Germany:

I wish to say a few words in reference to the first paper that was read this evening. When you speak of making a gold crown and having it fit perfectly, has it ever occurred to you that if you had a perfect fit it would be impossible to set it with cement at the time you close it upon the tooth. You close it outside of the cement, and, in addition, you have to make a hole for the outlet of the excess of cement. There is always a slight misfit of a crown around the edges. When we consider that it is not always possible to have perfect adaptation of a crown we must look to the edge of the crown. In order to have an edge blunt enough so that the crown will not cut into the gum, will not show a knife-like cutting into it through the cleaning of the teeth, we have to take gold which is thicker than No. 32 or 31 gauge, as is used now. I use No. 29 gauge, and I am told that

I am the only one who buys No. 29 gauge; others use No. 30 or 31. Of the many crowns I have taken off, I have not found a smooth edge, but a kind of saw-like edge, because the edges have not been finished off; they have been hammered, and they cut into the gum, even though the crown fits well. Cleaning the teeth or masticating would force the gum against it and start an irritation which would spread around the tooth afterward. I would, therefore, make a plea for stronger and thicker material than we are using now, because otherwise the destruction of teeth will go on as of yore.

In regard to inlays, if we put an inlay in a tooth, we put a wedge in that tooth, and as soon as mastication works on that wedge it is liable to split the tooth, and the bigger the inlay the smaller will be the tooth left standing, and, therefore, it is more liable to sustain a fracture.

Dr. J. H. Prothero (Closing the discussion on his part):

I have nothing further to add other than to state in connection with the remarks made by the last speaker concerning bands about teeth, that too much carelessness is displayed in the construction of the bands that pass under the free margin of the gums, and much of the difficulty that arises from crown work is due to carelessness and not so much to the banded crowns as to the manner in which the work is done. If more care were exercised in the removal of enamel and the proper adaptation of bands to roots, and in making bands which will not impinge upon the peridental membrane and gingival tissues, more banded crowns would be used than are used at the present time. I am in favor of bandless crowns, because I think they are a good thing, and there is a place for them, and we will continue to use them in anchorages for bridges to a considerable extent.

A word in regard to inlays as anchorages. I am not heartily in favor of the indiscriminate use of gold inlays as abutments for bridges. We use them to a certain extent, but we use care and discrimination in the selection of cases. I feel as if an inlay used as an anchorage does not afford sufficient support for the stress which is brought upon the posterior bridges in most cases, and while these bridges constructed with inlay abutments may give satisfaction, there will be decay back of them that we will discover later on.

Dr. F. E. Roach (closing the discussion on his part):

Had it not been for the remarks of Dr. Goslee, there would not

have been anything for me to say. However, in view of what he has said, it is necessary for me to answer him.

I think Dr. Goslee answered in a way I would have answered with reference to the matter of personal equation. In regard to the use of the Carmichael attachment, in my hands it has proven one of the most useful means of anchoring my anterior bridges to cuspid teeth, and today I know of no method, where it is done properly, that is stronger, that is more cosmetic, that is less destructive to cuspid teeth in favorable cases, if done carefully, and I am willing to take the time and think I can show Dr. Goslee and others how it can be done successfully. I know it is done successfully, and I would not have you believe that it should be adopted as a system of practice, but it is a useful method and one that may be used successfully.

Dr. Goslee mentioned the little spur I referred to in my paper in connection with the slipper crown which we commonly use. These spurs may be placed on the lingual surfaces of the teeth in such a way that they will not produce decay if constructed so that they are self-cleansing. These slipper crowns are so often constructed in a way that they induce decay in the teeth on which they rest, and I called attention to that in their use in this respect only .

I do not know whether the remarks of Dr. Conrad were made in the nature of a joke or not, but for fear some one may take them seriously I will say that we had not better leave cat-holes around inlays, by reason of the inaccurate fitting of the inlay. I will say to Dr. Conrad that our inlays are not constructed in this manner.

Dr. H. N. Orr (closing the discussion on his part) :

The question assigned to me was—What is your opinion of the comparative stability of bridges anchored with inlay or crown attachments?

Dr. Methven in discussing my paper opposes the inlay and believes that the crown is the strongest attachment.

The question refers to the stability of the bridge and not necessarily the strength of the attachment.

I believe that the same operator can construct and fit an inlay attachment with a greater degree of accuracy than he can fit a band to a root, and as for strength, the inlay if properly made is as strong as the crown. The most careful operator may fail in the perfect

adaptation of a band, but there is no excuse for a poorly fitting inlay.

A shell crown should be made with a floor, or in case of a cast crown the band should be crimped over the end of the root to furnish a stop, as suggested by Dr. Meerhoff.

A beautifully adapted band may be made a useless misfit by being forced beyond the point where the measurement was taken.

Dr. Bullard (closing discussion):

It is getting late and you want to get at the business you still have before the Society, so I will not have much to say upon the discussion of my subject.

In the preparation of the face of the root for the casting of the base for a crown, as I said, it can be shaped in any way to suit the whim or idea of the operator. Where the root is given this V-shape, a great amount of the stress the crown will stand depends upon the rigidity of the post. If the post is of soft material, platinum, or any material which is not rigid, it will bend, and the crown will be pulled off in the manner that has been described on the blackboard. But, on the contrary, if the post is rigid and unyielding, say of platino-iridium (15% or 20% iridium), the post will not bend, allowing the crown to be displaced.

It has been difficult to get a stiff post material for the last few years, as the platino-iridium wire sold by supply people does not contain enough iridium to harden it. The platinum wire sold now is cold drawn, which hardens it, but as soon as the wire is annealed in the process of soldering it becomes very soft and pliable. A 14-gauge square wire will bend as easily as annealed german silver.

For the last ten or fifteen years the average man who has been trying to do his best for his patients, upon seeing a Logan crown in a mouth would look at it with disdain and criticise it, and then crown the tooth next to it with a nicely constructed Richmond or banded crown. In all probability, if he were to see the case a few years later, he would find the banded crown with the gum receded from the band and the root loosened, caused by the irritation of the tissue, while the old Logan crown would still be doing business, even though there was a space between the crown and root on the lingual from which the cement had dissolved.

Now, since the bandless crown has given the results it has, notwithstanding the abuse it has received, it does seem to me that with

the method of combining metal and porcelain we have today the bandless crown will become one of the most permanent operations in dentistry.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held February 2, 1909, with the vice-president, Dr. J. W. Wassall, in the chair.

Dr. J. G. Reid read a paper entitled "Inlay Practice."

DISCUSSION.

DR. W. V. B. AMES:

I am always extremely interested in the threshing at this subject, and from Dr. Reid's presentation of it I have made a mental note of a few spots as he has gone along. I wish I might be able to make myself plain in words of what I would consider the limitations of inlay practice. I think Dr. Reid meant to convey the idea that it is easier to discuss the limitations in one direction—that is, of extreme destruction of tooth structure—than it is the borderline cases in the other direction, where the question of conservatism comes up, and where the destruction of tooth structure has not been so great, and I shall leave it for some one else to try to limit the practice in that direction, and will say that in my application of gold inlays particularly it would be hard to draw the line. But as an illustration I can only cite actual cases of crowns having been constructed for the loss of tooth structure where it was possible to remove, say, a defective crown and bring about a very satisfactory condition by the construction of a gold inlay, even after the tooth had been once prepared for a sort of crown.

This question of the loss of digital dexterity is being very often brought up, and I feel sometimes it is a pitiful argument that the dental profession has to suffer because of loss of digital dexterity in the direction of one certain thing, and because that procedure happens to answer a useful purpose for, we will grant, a very long time. If for the procedure which calls for this particular digital dexterity we can substitute one which promises to be very much more valuable to mankind, and to the long-suffering dentist, I believe that there is yet sufficient call for the cultivation of digital dexterity in many of the operations still called for. The opening of pulp canals, and the proper treatment of pulp canals; the removal of concretions

from the roots of teeth in remote locations, and other operations which might be mentioned, I feel will sufficiently tax the ingenuity and the hardihood of the dentist without his continuing to practice what might rationally be called an obsolete practice. And this word "rational" brings to my mind a paper which Dr. Johnson recently read in New York entitled "Rationalism in Dental Practice." I am sorry Dr. Johnson is not here tonight to speak on this subject. This is a question which seemed open at the time as to whether there was not rational conservatism and rational radicalism, and it was just a question of opinion, and that opinion founded on the clinical experience of different men as to what constituted rational conservatism, and what constituted rational radicalism, and it is up to every man from his own clinical experience to decide for himself wherein he can best serve the public.

Dr. Reid brought up the question of inlays as anchorages for bridges. I believe I can say something definitely on that as much as anyone can convey by words, and I believe that a suitable anchorage for a bridge depends upon having just a happy combination of destruction of tissue with a happy remaining amount of tooth structure, giving proper retentive form, along with a proper amount of tooth structure to give strength to the anchorage, and if you have those you have a mighty good bridge abutment; and if you have a cavity which can be enlarged to that extent, or if a sound tooth, for instance, can be cut to give a cavity to just this extent, you have a happy combination. If the tooth happens to be already too much weakened by destruction of tissue, you have not the opportunity to utilize it as an inlay anchorage. That is a very patent condition, I think.

Dr. E. A. Royce:

I feel that dentists are beginning to find to some extent the dividing line between the proper place to use an inlay and the proper place to use a gold filling, because I understand the sale of gold foil and pluggers has revived considerably within the last few weeks from what it has been in the last sixteen or eighteen months. That line, it seems to me, is drawn by a number of factors. I have not abandoned the gold filling, and I try to decide which I think is better in a cavity, and in so doing I find I have to take into consideration the operator first, the patient second and the cavity third, as a rule. I have a great many patients that I put gold fillings in for,

where for some other patients in the same cavities inlays would be made, and I find sometimes I will put in a gold filling where at another time I would put in an inlay in the same cavity for the same patient. I think the individual operator is the man who must draw the line. We cannot lay down a hard and fast line between the inlay and the gold filling, or between the inlay and the crown. I believe today the inlay is doing a greater service in protecting us against banded crowns than it is in helping us with the fillings. I do not know of anybody who is much more enthusiastic about inlays than I am; but I find many places where I am not satisfied to put in inlays. I prefer gold fillings, on account of not having to sacrifice quite as much tooth structure, and get my patients through, get them out of the chair and get them almost finished up while I was thinking about an inlay.

As to the use of an inlay as an abutment for a bridge, it seems to me that is another place where the individual judgment comes in very strongly. Some seem to be successful in using crowns for anchoring bridges, while others seem to be absolutely unsuccessful, and some seem to be able to use inlays for anchorage and others cannot.

In regard to the loss of the manipulative ability of the dentist, I believe that the use of the inlay is going to find its place, and it is going to be a large place; at the same time, I believe there are going to be enough gold fillings required to develop the manipulative ability of the dentist for a good many years to come, if they will do what will serve their patients best—preserve the teeth the best possible.

Dr. J. E. Hinkins:

I am not enthusiastic on inlays and never have been, and I have my reasons for it as much as others have reasons for putting in inlays. I believe there is a place for inlays, although it is limited. I would not go so far with inlays as Dr. Reid has gone, judging from the specimens he has exhibited tonight.

One of the principal objections I have to an inlay is the material with which we have to set it. I have been convinced for several years that we cannot get a cement thinner than one seven-hundredths of an inch, because if we get it any thinner than that the center of the molecules will separate. If you press the cement flat, there is an air space left in the center, and if you mix the cement thin, to get a certain consistency, you also get an excess of the acid, to the extent that you have a soluble cement. I have put in some inlays

and expect to put in some more, but I do not expect to go to the extreme that a good many of you do, because I believe I can do a better operation for my patient, an operation that is more satisfactory to me, and one that can be done in less time, with my pluggers and gold foil, than I can with an inlay.

I have recently been looking up the question of metallurgy, going into the bridge part of it, or the anchorage inlays for bridges. I have heard some gentlemen claim that the atmospheric pressure in a gold inlay made the inlay fibrous. In the process of casting an inlay, in the case of a bridge or a crown, they have compared it to the casting of steel. While I have reviewed metallurgy with considerable interest in respect to the cast gold inlay, from what I can learn from metallurgy it is similar to the casting of iron; but the cast gold inlay is not similar to gold foil or steel. Why? Because gold foil is a fibrous substance, while cast steel is a crystalloid substance. They claim that the atmosphere being forced in with the casting of gold inlays is the same as the carbon forced into the forged drop steel. While it is forced in there with a pressure, in casting your forged drop steel you have a certain amount of carbon. In casting a gold inlay you insert only atmosphere, which is only hydrogen and nitrogen. There is no carbon there. And so I cannot draw any intelligent comparison between the statements I have heard made by some of the leading inlay advocates for inlay abutments in bridgework. And while I have never put in a bridge with an inlay abutment up to the present time, and I do not know that I ever shall, for my reasons have been drawn along certain lines, which show that it was not sufficient for strength, and the ones which come to my practice for repair, and I find the inlay abutment was not sufficient to hold the bridge of any size. There are men who can do better practice along the line of inlay work than they can along the line of filling or of inserting gold foil fillings, and there are other men who will do better practice, which is more satisfactory to themselves, more satisfactory to their patients, by inserting gold foil fillings, than they can by inserting inlays, and it happens to be my forte that I am satisfied in my practice, that I am giving my patients better service by inserting a larger number of gold foil fillings than by inserting a larger number of inlays.

I was somewhat amazed in reading a paper presented by Dr. Head on the cementation of inlays. You have probably all read it.

He claims that an inlay that is cemented in, with the edge of the inlay and the wall of the tooth just coming together on the surface, and having a large body of cement back of it, is a much stronger inlay and will last much longer than one which will fit universally throughout the cavity, and I think in a degree he is right, because I have seen some inlays cast so perfectly to the cavity and fit so perfectly, it was almost impossible to get any cement in between the walls of the cavity and the walls of the inlay. In a few cases I have made such inlays as those myself, but to see the extent to which Dr. Head has advocated this by his drawings and models is really very ingenious the way in which he brought it out. While I am deciding how to put in an inlay I can usually prepare a cavity for a gold filling, and not cut away as much tooth structure, and fill the cavity with gold foil, and dismiss my patient before I can make the inlay, and in my own mind I am better satisfied with the results of such work.

Dr. C. S. Case:

As you all know, I have had no practical experience in this work. Of course, I am always interested in anything pertaining to operative dentistry, and in fact to all branches of dentistry.

Dr. Reid has given us a fine paper on this subject, and Dr. Ames has mentioned the paper which Dr. Johnson read in New York along the same lines. I was interested in that. It seems to me to be along the true lines, that would be the final result. Almost everything in dentistry that has amounted to anything at all has come in with so much of a rush that the pendulum of its true worth has been swung far beyond its normal poise, and soon commences to come back, often going beyond its proper place on the other side. Take, for instance, amalgam and other filling materials. At one time they were advocated almost to the exclusion of other materials, and it took years before they found their proper places.

Dr. Ames struck a happy note tonight in his reference to the difference between rational conservatism on one side and rational radicalism on the other. Dr. Johnson mentioned the same thing in his paper, read at the last meeting of the Odontological Society of New York City. If I were to give my opinion in a full discussion of Dr. Reid's paper, as I would like to do, upon this subject, I should take the remarks of Dr. Royce and say, "These be my sentiments," with one exception. It is the man behind the gun, after all, who is

to decide what he shall do in a given case, and a very good idea is to think of the patient first, the operator second, and finally the cavity. But, of course, there are certain pretty large cavities, as illustrated in the specimens shown by Dr. Reid tonight, that ought to be filled, according to my knowledge and study of the mouth, with gold inlays in every instance. Large fillings of that kind would require hours to insert with foil, and I do not believe that there is any operator but that if he will take hold of the methods presented for casting gold, and the opportunities at hand with the different machines, especially Dr. Taggart's, he will make a most perfect filling, and do it in less time and with less trouble and cause far less suffering to his patient. The question simmers itself down, in my estimation, to small gold fillings. Where you can put in the gold foil rapidly and easily with a plugger, I believe you can make a better filling and at times do it while you are getting ready to cast the gold.

Dr. Elliott R. Carpenter:

Dr. Reid has sounded a note of warning in his paper which, I think, at this time is most timely. Dr. Case has spoken of some dentists who have gone foolish over inlays to the exclusion of gold foil entirely. Differentiation is what we are coming to. I believe the inlay is here to stay. I believe it has many splendid places and ought not to be overlooked even by the gold foil enthusiasts. I have been a gold foil enthusiast, so I can say this sincerely. I believe in nearly all large compound proximal cavities in bicuspids and molars the inlay is the only filling. By differentiation we will have to pick out for ourselves the individual filling in the individual case.

In speaking of fissure cavities, I will name one as a differentiation against a foil filling, the case having presented itself to me yesterday. A foil filling, in a lower third molar, was inserted by me carefully six years ago, and ground by mastication nearly out of its cavity. A low karat gold inlay would have been 50 per cent better, because it would have worn better.

In regard to the loss of manipulative skill that foil has undoubtedly given to the dental profession for years, I would make this suggestion in regard to colleges, that no student be allowed to make a gold inlay until his third year; that compound proximal cavities and all cavities that call for gold be filled with foil in order that he may advance in manipulative skill, allowing his last year for inlay work. If he becomes proficient in the use of foil, he will soon be-

come proficient not only in his judgment as to where to place them, but in making them.

Six years ago I began the use of inlays for two reasons. First, because they were promulgated by some of the soundest and best operators we had in the profession; and, secondly, because I had come into my practice at that time two or three patients who had been previously treated by our dearly beloved Dr. Ames. I was obliged to remove one inlay he had placed in there of the burnished type, and, I want to tell you, they were beautiful and perfect. The only cause for its removal was death of the pulp. I began at that time to use the inlay.

To sum up my experience with inlay work to date, after two years of the cast gold inlay, I find, as nearly as I can figure now, that ninety-odd per cent of my failures have been due entirely to faulty cavity preparation. I have been fortunate enough to have a number of these failures come back into my hands instead of the hands of other dentists, and I have had the pleasure of being able to correct these mistakes. I have seen a goodly number of these failures, and hope at some time to present them to you, which I will do within the next month or two, giving you a short analysis of these failures.

I believe the question of retention of inlays, whether in bridge abutments or in single inlays to begin with, is largely one of cavity preparation, and that cavity preparation is a question of angles. I believe the profession will have to recognize that one point. They have no undercuts to hold; they have cement, and cement will not hold alone. There must be preparation back of the whole thing, with angles and flat seat—bases which will take stress without tilting or rocking the inlay out of the cavity.

My next cause for failure, aside from improper cavity preparations, has been a question of bevels at the margins, occlusal and incisal. My first thought in making inlays was to make a hard filling and I made it of low karat gold, because I wanted the strength of low karat gold; I left my cavity margins at the occlusal surfaces with small bevels, and I found a goodly number of these failures that came back to me were caused by so doing. I did not bevel the enamel margins enough. I have done a great deal of inlay bridge work in the past six years; I have done treble the amount in the last three years, and I am satisfied with it because I believe angles

will hold, and all failures I have had come back to me of my own and a few of others I could see at once were due to lack of angles in the preparation of the cavities.

Dr. George W. Cook:

I think that the inlay problem, the gold filling problem, is further back than the mere cavity preparation always. Of course, that is essential; but the question of why microorganisms can get around and destroy tooth structure is one that always involves dental practice. Some of you perhaps may remember the experiments Miller made a good many years ago, with reference to bacteria growing in close proximity to metallic substances, and there producing their deleterious effects, and a thing that was never before thought of in regard to bacteriology was brought out by Miller, and that was that bacteria never grew as luxuriantly near teeth in close proximity to metals of any kind, and especially that of gold. We do not know yet whether that is true in reference to cements—that is, we do not know to what extent cements may invite the presence of bacteria in and around the margins, and especially the gingival lines of fillings. We often see very imperfect foil fillings placed in teeth that do a good service, and yet they are quite imperfect around the margins, and my idea of that is, it is due probably to the electrolytic effect that gold has in the presence of organic fluids.

Something like a year ago I made some experiments to determine this by filling some teeth with foil, placing inlays in teeth, embedding them in culture media about where the gingival line of the filling would come in the culture media to find if bacteria grew around inlays as they do around the other portions of the teeth, while in gold foils they do not. I mention that simply as an observation which seems to me worthy of further study. If one will take a good gold foil filling and place it in culture media in the manner just described, they will find the tooth will decay in almost every part—that is, you can produce artificially decay around the tooth, with the exception of the part in close proximity to the filling. But it does not appear in the case of cements or inlays, and there, I think, lies one of the important features for further investigation and further study. It matters not to us so much always whether we are going to preserve the teeth for twenty-five or forty years with fillings; we can do that sometimes by keeping the teeth clean, thus avoiding further decay. I have, and everyone else has,

seen teeth where the decay has become arrested entirely in a tooth, and that tooth or teeth have gone on for a great many years without any further decay having taken place, especially after the decayed dentin has been removed. There seems to be a lack of some of the elements that are essential to the progress of decay, or to the action of the microorganisms in that locality, and what that is I am not prepared to state. There is no question in my mind but that the inlay and the cast gold inlay is a practice that will be followed by all progressive practitioners for a great many years.

Dr. Reid mentioned a fact that has come to my notice as a college man, and that is the question of students losing their manipulative ability. There seems to be a tendency on the part of the dental student to leave, if possible, the placing of the gold foil in a cavity wherever he can persuade the patient to have an inlay put in, and almost every demonstrator in a dental college has been persuaded in the last two years that inlays are the very things to be put in most cavities. Many of them have tried to perfect their technic of inlay work, and have accomplished a great deal for themselves, but it is a very hard matter for a student to know and to realize the importance of the gold plugger. I think everyone who has gone through a dental college realizes some of the difficulties of putting in gold foil fillings, and what a task it was. But it was really the hard task that made them good operators. The skilful inlay worker would not be the skilful inlay worker that he is today if he had not been thoroughly taught operative procedures in his college course.

Dr. Carpenter made a suggestion with reference to the student not being permitted to put in inlays until his senior year. As the college curriculum now is, the majority of students very seldom do a great deal of operative work, such as putting in gold fillings, until their senior year. Of course, he does some dummy work, and he is permitted sometimes to put in a gold filling if a patient is assigned to him who requires it. He is ready to go ahead in the latter part of his junior year and do that work, but the first work of the student is in the proper removal of calcific deposits, and the proper hygienic care of conditions of the mouth, and then he is given some fillings to do, such as the insertion of cement and amalgam fillings, in order to get somewhat familiar with this work in the mouth. It is only in his senior year that he does any actual, extensive gold filling work. But almost immediately he seeks a cavity that he can put a

gold inlay in. He wants to try to perfect his technic on his gold inlays, and it is easier, and the question in colleges, especially the one I am connected with, is if we are not liable to lead the student astray and for him to be more liable to want to put in inlays everywhere instead of learning the real routine work that is necessary to put in good gold fillings. Let us take the work of Dr. Royce and Dr. Hinkins. I doubt whether anyone could excel them in their gold foil operations, and I can see wherein they would probably be very conservative in the use of gold inlays because of their familiarity and skill in the manipulation of gold foil. Such men can put in gold foil fillings and make large restorations with gold while they were preparing themselves to put in gold inlays. But that is not going to affect, in my opinion, the real place of gold inlays. The real place for gold inlays is where they are indicated, and the real place for gold foil is where it is indicated. It is largely a question of judgment on the part of every practitioner as to what he can do and what he cannot do in a particular case. As Dr. Royce has said, every man must be his own judge, and he judges by certain things that have gone before, by certain theoretical knowledge that he possesses, and he comes to a conclusion what to do very quickly, and usually performs the operation he thinks best, the same as some surgeons operate on cases of appendicitis before they really know whether the appendix is affected or not. The individual operator must decide for himself whether in a given case he wishes to put in a gold inlay or a gold foil filling.

Like Dr. Royce and Dr. Hinkins, I am inclined to adhere closely to gold foil fillings. I have accomplished more with them than I have with inlays, and the only question with me is I want to learn more about inlays and observe more cases in which they have been used, hoping I may be able to use inlays to better advantage in some cavities where I now put in gold foil. As to the gold inlay, I want to refer in this connection to the work of Dr. Ames. I do not want to embarrass him, but I know a gentleman in this city who has a gold inlay in a distal surface of a second molar in the lower jaw that Dr. Ames put in more than twenty years ago, and it is there today as good as the day it was placed there, apparently. The patient, when I first saw this inlay, some ten or twelve years ago, had difficulty in convincing me that it was a gold inlay. I had to look to see, and today it would be a difficult matter to tell whether it was

foil or whether it was an inlay. If operations of this kind can be done with the success that has characterized this particular case, we have got to acknowledge that there is a place for inlay work, and we have got to assign this work to men who can do it just as Dr. Ames did it, and others, perhaps, are doing it today.

I would say that the real brilliancy of this paper is in the conservatism of its author. He tries to point out the places where we can and the places where we should not attempt to use gold inlays. Dr. Reid has been practicing inlay work to my knowledge for several years; he has acquired a great deal of skill in this work, and it is not because he cannot put in a good foil filling. Therefore, his discussion of the gold inlay problem is entirely unbiased. He has not given us one of those pyrotechnic papers on where we can use inlays to the exclusion of other filling materials; nor has he advised us to put aside our pluggers and never look at them again. He does not talk to us in that way, but tells us of what he himself has accomplished, and if we can draw any good from it, certainly it is our duty to accept what Dr. Reid has said in his paper, and take it for what it is worth on the face of it, because it is sound, and for myself, I believe that this paper will do a great deal of good to a certain class of dentists. There are a lot of young men coming into the profession, and when there is a clinic given on inlays they are present and stay there. They get the idea from experts in inlay work that there is no place where you cannot put an inlay, and one which will always remain where it has been put. These experts say, "you must do as I tell you, and you will meet with success," and those same men are not meeting with success any more than a lot of others, but they do not own up to it.

Dr. Hinkins had something to say with reference to the cement question. I think we all get back to the idea that a filling is no stronger than its anchorage. Dr. Carpenter tells us we must anchor and not depend on our cements, and I believe this is the only point wherein we are going to meet with success in the placing of inlays, namely, not to depend altogether on cementation for the retention of these fillings. We must have proper cavity preparation, and that cavity preparation is just as hard for inlays as it is for gold foil fillings.

Dr. J. W. Wassall:

I am somewhat surprised that there are so many here who still

cling to gold foil, and do it so tenaciously. I am among the foolish class that Dr. Case has referred to who make a universal practice of inserting inlays, and I have done so for many years. I think the members present will agree with me that as they have new patients come into their office, seeing them for the first time, who have had dental operations done for them by other dentists, there is a growing proportion of inlays found in their teeth; and they will also agree with me that the results of the use of inlays, as shown in the preservation of teeth, are much better than those found previously when there was nothing but gold foil used as a filling material. We do not find the recurrence of decay around inlays which we are accustomed to find around even the splendid operations done with foil by the old masters. That is a convincing argument to me that the inlay filling, that the cemented filling is going to be the only filling as time goes on. We can see the handwriting on the wall. If this paper were read three years ago, it would have been impossible for Dr. Reid to have received anywhere near the unanimous approval of inlays that he has tonight. Not many more years will pass before it will be the universal practice. The teaching of gold foil filling operations will be abandoned in our colleges. There is no doubt of it in my mind, and, I am sure, if you will look back at the history of the last five years, or ten years, you cannot help but see it yourselves.

As regards the loss of technical ability or skill which seems to be threatened by the disuse of gold foil and the plugger, I see no danger in it. We claim to be a profession, and we ought to be one, and the more we can get away from the slavery of technic, this drudgery we were accustomed to twenty years ago, the better men we will be: the better operations we can do, and the better we can conserve the teeth of our patients, if we know and have time and leisure to devote ourselves to the study of diseased conditions. If we have more time to devote to the preparation of cavities which, as Dr. Cook has said, is more difficult for inlay than for gold fillings, therein you have the salvation of what skill in technic was displayed by the old masters in dentistry. Let us give more time and more care to the preparation of the cavities. There is certainly plenty of work for the demonstrators in our colleges and opportunity for every man's own efforts to perfect themselves in the preparation of cavities, so that they will hold stoppings and prevent recurrence of

caries. And Dr. Carpenter has said the less arduous work would give time to increase our skill in the treatment of root canals and pulpless teeth. There is no greater crying need in our profession than greater knowledge and skill in the management of pulpless teeth. No greater crime is committed by dentists today than their lack of knowledge to manage pulpless teeth.

As I have intimated, the practice of inlay work has entirely excluded the use of foil in my practice for many years, and I am sure that the service I have rendered to my patients has been very much better since I have confined myself to inlay work. It is true I have had my failures—that I have committed errors in inlay work, but I have not corrected them with foil fillings, but with better inlays.

I have had some experience in fastening bridges by inlays, and it all leads me to the conclusion that gold inlay abutments in teeth with living pulps are not advisable. In pulpless teeth, of course, we can always attach a dowel, and then you get a splendid anchorage. As a rule, if you want to anchor a bridge with an inlay the pulp should be removed and a post added. A pulp is not invaluable in a tooth, as a rule, to a patient who has reached an age where he requires bridge work.

Dr. Reid (closing the discussion):

In my paper I stated that it was practically impossible to cover the entire field of inlay practice in a reasonable length of time, and I only selected that part of it which I thought would most interest you. I am satisfied that the practitioner of today, who has been passing through a period of dental practice for twenty or thirty years, is well qualified at this time to be able to satisfy his judgment to a great deal better advantage than the man who is preparing for the future of dentistry. In the past years he has been brought to a state of perfection that enables him to do things better than probably the future man, who is inexperienced, and who is falling into the habit of doing things along the easy roads. We must not overlook the fact that every year we are having turned out into the profession from 1,800 to 2,000 dentists, and if they become imbued with the idea of doing things easily, without having the proper skill, without cultivating the skill necessary to do good work, it will inevitably debauch the best uses of dental practice.

I stated that the man who comes from college is not prepared to determine what is the best thing to do, and if he goes along in

that way for ten or fifteen years, and finds out that he has beeen making this grave mistake, and has to resort to other methods, he is up in the air. He has never been trained to do it, and it is awfully hard to train a man to do things skilfully and well later in life. The impression is being conveyed broadcast that the inlay is the only way of filling a tooth. I do not believe that it is good sound religion to allow such an impression as that to be so generally disseminated. There should be some curb put upon it, and it was this thought I dwelt on more than any other in my paper. I believe that a free expression of opinions among the members of this body will impress dental practitioners in such a way as to do much good in the direction of what inlay practice may do in the future. I take it that the members of this Society use good judgment in their dental practice universally, and that whatever goes out from this organization is a good sermon to be well followed. I think the question is timely, and one well worthy of a free discussion. I do not believe in being radical on gold inlays, and I think the impression has been conveyed here that while the practice is good, there is ample opportunity for further progress in the future in other directions.

THE DENTAL REVIEW.

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EDITORIAL.

THAT $8,000 FEE.

So much comment has been created over the announcement in our editorial columns last month that a Chicago dentist had received a fee of $8,000 from one patient that it seems necessary to refer more in detail to the circumstance. There appears to be an impression that some mistake was made by the editor in the figures, several readers having suggested that he probably erred to the extent of one figure. Others have gone far enough to say: "Oh, probably the patient handed the dentist a check for $8,000, but was it ever cashed? Was it *bona-fide?*" Another has said: "The real amount of the fee the dentist received was $2,400." It has even been intimated that the editor was made the victim of deception on the part of the dentist, and that the most improbable part of the story is that the dentist failed to talk about his fee to his fellow practitioners, etc., etc., etc.

All this conjecturing is very interesting, but the facts are these: Some months ago a patient applied for services to this Chicago dentist and when the work was completed paid the dentist a fee of $2,500. Shortly after this another member of the patient's family applied for services and the character of the work was such that when finished, on the patient's computation based in relation to the previous case, a fee of $8,000 was tendered and accepted. Please remember that this was $10,500 for dental service for two members of the same family, that the checks were *bona-fide,* and that the editor is neither mistaken nor deceived. And the most significant thing about the entire transaction is that full value was given for the money received. This cannot be too strongly emphasized, because if such fees were accepted for indifferent services it would be a disgrace to the profession.

The fact that the dentist is diffident about being known in the case is the strongest evidence of his true professional character. He is determined to shun any of the notoriety which might attach to such an incident, his sole aim in professional life being to do the best service for his patient irrespective of the fee. As an illustration of this, at the very time when he was in receipt of the fees mentioned one of his poor patients needed a crown but had no money to pay for it. The dentist gave the patient an appointment and made a beautiful crown, and when asked for the bill put the patient off with the remark that the matter would be attended to later. The bill has never been sent and never will be, because the dentist knows it would be a hardship for the patient to pay it.

Another instance is worth relating. This same dentist made a crown for a patient and charged a regulation fee for it. The patient lives about 350 miles from Chicago and one day wrote the dentist that something had gone wrong with the crown. The dentist immediately sent word to the patient that he would pay railroad fare to and from Chicago and all the patient's expenses while here and fix the crown free of charge.

It is standing back of one's work in that way which makes for solidity of reputation, and renders it possible and legitimate to demand good fees. Let no man think that this dentist got the $10,500 fee for two cases without earning it. It was earned through the closest application to the minutest details from his student days up, and by the most painstaking and conscientious effort in carrying out the highest principles involved in the particular cases in hand. And the incident is worthy of the widest publicity as an incentive to our young men to emulate this kind of dental practice. The profession may do more good to humanity than it ever has in the past by providing better service, and the character of service will improve immeasurably as men are better paid for it.

THE ILLINOIS STATE DENTAL SOCIETY.

The meeting of this society May 11 to 14, 1909, at Danville, promises to be a great success. The membership will soon reach 2,000, and each meeting is becoming more and more important as the membership increases. The reorganization movement in this State has proved most advantageous in every way and it is no longer in its ex-

perimental stage. The dentists of the State are better acquainted with each other as a result, which means that they are becoming better informed on the science and art of their profession. This unerringly leads to better service for the people of the State, which is after all the chief end of any professional organization. The preponderance of members over non-members in the State is becoming so great that no reputable dentist can afford longer to remain out of the society. There is a warm welcome for every eligible dentist in this organization, and now that it has developed to such proportions numerically it must not stop till it has embraced every eligible practitioner within its folds. It is already a great power for good, and if it keeps on with its system of fostering the component societies and pursuing the postgraduate study courses throughout the State the extent of its service to the people will be beyond computation.

Let every member who has an acquaintance in the profession with the material in him to make a good society associate not cease till he has his consent to attend the coming meeting and apply for membership. There is room for all worthy men in the society, and it will soon be so that there is no room outside for such men. This meeting should be the banner meeting of this organization in appropriate recognition of its President, Dr. Arthur D. Black, to whom the greatest measure of credit is due for the present prosperous condition of the society. Let us all rally around Dr. Black on this occasion and show our appreciation of his services by making the meeting the greatest success in the history of the society.

THE PITY OF IT.

At the time Dr. W. H. Taggart introduced the cast gold inlay to the profession he emphasized the importance of the most painstaking care in carrying out the technique of the process, and at every occasion since then he has reiterated the caution that it was not a careless man's process if good results were to be obtained. Everyone who has witnessed the most perfect specimens of this work has been impressed with its wonderful possibilities, and yet all over the country the process is being abused and the work brought into disrepute through careless and faulty methods. If this is to continue a most beautiful process will be dragged in the dust, and in the end prove a curse to the profession and the people instead of a blessing.

The inevitable clamoring for the short cut is working havoc with this process as it does with every other method requiring perfection of technique. In fact in this case it is more prone to do damage on account of the fascinating character of the work and its apparent simplicity. But simple as it is there was never a method introduced into the profession which is so inexorable in its demands so far as attention to details is concerned if good results are to be obtained.

Instead of elevating the profession and adding to its efficiency, it is in danger of lowering it and of being made the scapegoat for slipshod and slovenly practices unless men are willing to take the process more seriously and to give the necessary study and time for perfection of its technique.

The fact should not be forgotten that with any new system of work much thought and experimentation is necessary to bring it up to its highest efficiency. It took a long period of years for the profession to bring out the best methods for gold foil filling, amalgam filling, and in fact for nearly every established method of practice, and why should we expect any exception with cast gold inlays?

The casting process on so fine a scale as that necessary for inlay work is very exacting in its requirements, and it seems a pity that so beautiful a process should be in danger of degradation through carelessness.

THE EDITOR'S DESK.

AN UNWORTHY TRICK.

I had always supposed that Dr. Garrett Newkirk of Pasadena, California, was my friend. He has claimed to be, and I have taken him at his word. But what is a man to think under such circumstances as these? I am in receipt of a letter from him as follows:

Pasadena, Cal., March 8, 1909.

Dear Johnson:

I wish I might show you the picture I see this Sunday afternoon in March, as I recline upon my "invalid" chair (which is equally comfortable for a well man) before the south window of our "living" room. In the immediate foreground, looking down the gentle slope is my little patch of oats, with some young trees—pine, acacia, peach, apricot, fig and prune; now in leaf and bloom. Beyond those a low

broken forest of trees with much variety of foliage, with glimpses of bungalow roofs, green, brown or gray. Then a half open country for a mile or so, groves, houses and green fields. Then Pasadena, stretching out three to four miles, east to west, north to south. Lying lower, from 400 to 700 feet, the city looks like an undulating dark green forest, with only hints of buildings peeping through. To the right, southwest across the arroyo are the San Rafael hills, the highest 1,800 feet, all their ravines in shadow. In the south part of town rises a hill, crowned by the Hotel Raymond. It seems to loom high, but in reality it is 600 feet below our house. Beyond, to the south, rise the South Pasadena Heights, 500 feet perhaps above the valley level. Eastward and higher the Puenta Hills quite bare of trees, and, at this season, clothed in most delicious meadow-green, yet in some rugged portions deap seamed,

"A thousand shadows creeping down,
Along their steep inclines."

Over the hills and beyond where lie Los Angeles and Whittier, of which cities we have but a glimpse, stretches the joint valley of the lower San Gabriel and Santa Anna rivers, visible for 50 miles east and west. Beyond the valley is the sea—the great Pacific. Southwest I view a stretch of it, ten miles perhaps of shining silver, beneath a sky of delicately tinted pink.

Now east stretch out San Pedro heights between us and the sea, which comes in sight again with the towns of San Pedro, Terminal, and Long Beach along the shore—then Signal Hill, from which in ye olden days messages were flashed to the Los Angeles military post.

East from this again the valley stretches into the indefinite haze of space where the traveler goes toward San Diego, and the border line of Mexico. Is this not enough? But one thing more—beyond San Pedro and Long Beach—over and across 30 miles of sea looms Catalina Island, clear and distinct, with its low western "Isthmus," its two central peaks, 2,000 feet high, the dip of its valley wherein lies the city of Avalon, then the eastern end where the land drops quite abruptly a thousand feet to the water's edge.

The Burdettes have at their home, "Sunnycrest," a northern windowframe like one made for a large painting. The guest is taken upstairs and at the proper point is told to pause and look through this at "our million dollar picture." And it is a picture indeed that no artist could paint, of valley, mountains and sky.

And so I look upon my picture, not set in dull unvarying pigments, but ever changing, new touched and tinted every day and hour by the master painter of the universe.

On some rare days at sunset he paints a landscape on the sky of clouds that look like islands crowned with forests, bordered with bays and inlets set in a golden sea.

Again the master gives an electric touch to the atmosphere, and lo, the island seems to approach the mountains by thirty miles, and the ocean comes in view with other isles beyond—far and away, near to a hundred miles. And then upon another day a full rigged ship with all sails set and white, comes forth against the dark horizon; or a steamer with its plume of smoke moves swift across the canvass of the sea.

Do I ever tire of my picture? or of that other I have from my operating room, where sun and cloud reveal the ever changing wonders of the mountain slopes? I trow not—no, not in one lifetime, even though it were that of Methuselah.

Yours,

GARRETT NEWKIRK.

For a man to receive such a letter as that when he is condemned to spend his time cooped up in a small 9x11 operating room with the roar of the elevated trains deafening his ears and the smoke and dust of a big city blinding his eyes, is nothing short of maddening. Dr. Newkirk apparently selected a time of year for this description which added subtility to the torture. It was a low-down, underhanded advantage to take of a poor pilgrim of the city, and it was done by a man who should have known better. He and I have often "kicked shins" under the table at luncheon in the days gone by before he deserted Chicago, and he is sufficiently familiar with my temperament to know the effect of such a description on my nerves.

Some time during the dry season in California when the dust-laden breezes are sifting the sand into his ears and eyes and mouth and nose, I am going to write him the most beautiful description I can pen of the delights of the north shore in Chicago where the cool breezes from Lake Michigan carry the very breath of life into one's nostrils, and where the beautiful rolling landscape with its varied green and—but I must wait till it is a little drier in California before I write this. If Dr. Newkirk ever sends me another bit of description like this again I shall straightway publish it to get even with him.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

My Dear Mr. Editor:

The New York Institute of Dental Technique held a meeting March 23 at the Hotel Flanders, 137 W. Forty-seventh street, where Edward H. Angle, M. D., D. D. S., discoursed about "Some Misunderstandings Regarding the Classification of Malocclusion."

The doctor said during his remarks that eleven or twelve years ago he succeeded in classifying irregularities in accordance with some simple rules formulated by himself and he has never been able to make any changes since, in fact as time goes on he feels confirmed in the belief that all cases naturally fall into the several divisions or classes he has described and which system is so well known.

The lantern was used and a number of his wonderfully perfect slides were shown in which he pointed out how simply each case through certain distinguishing features regularly fell into its class and its subdivision. It all appears so simple that it seems the entire profession cannot but accept the deductions as final—but we all know that Dr. Case and others have ideas of their own and thus we find disagreements.

Dr. Angle gave to the Institute and tried to convey to us what he meant by the line of occlusion! He says it is the Alpha and Omega of the whole subject of regulating. It seems from my understanding, to be the relationship of the line in its rhythmic, symmetric curve beginning mesially at the incisors, inclined at a varying angle in each case under the incisors and cuspids where it rights itself horizontally and undulating posteriorally is ended at the third molar.

He called it the poetry of orthodontia. To understand it was to have the grasp on classification and on the treatment that one can get in no other way.

It is something one must feel. All description or attempt to define it is futile—"Nature's architectural line I would call it." It varies in every case just as every physiognomy is different from another, but Nature had a plan, so until you interpret her aright you will fall short of proper correction.

That line has the embryology and histology wrapped up in it.

There was not much discussion of the subject and the meeting adjourned with a hearty vote of thanks to Dr. Angle.

This evening the First District Society of the State of New York met at the Academy of Medicine for the purpose of electing officers for the ensuing year. Dr. W. W. Walker, chairman of the executive committee, reported that the section on orthodontia established last fall for the purpose of instructing the members in the various systems in vogue ended recently. It has been remarkably successful from the beginning. The average attendance has been thirty.

Next fall the class will be resumed and another in crown, bridge work and inlays will be established and probably other special subjects will be taken up. If not then, when there is a demand for the subjects.

Dr. Walker also announced that the program of essayists for the next season had been arranged, which comprised the names of Drs. S. G. Perry, I. N. Broomell, E. C. Kirk, Black, Bulkley and George A. Bates.

The election of officers resulted as follows: President, James W. Taylor; vice president, Benjamin C. Nash; secretary, Herbert L. Wheeler; treasurer, H. R. Armstrong; librarian, Martin C. Tracy. The meeting then adjourned to convene again in October.

Yours truly,

THE BOROUGHS.

A DEFENSE OF THE INGRATES (?) WHO CAST.

The profession of dentistry has ever been ready to accept anything of merit from the fields of chemistry, medicine, surgery and mechanics and we believe has honored the men who have brought to notice any discovery of importance from any source.

Many are the discoveries of great value upon which it is impossible to place valuation in dollars and cents and recompense the men who have given up time and money for the great good of their profession, their investigations in many cases extending over their life periods.

In some of our recent magazines are articles from the pen of our esteemed Dr. Edmund Noyes, championing the cause of Dr. Taggart and his casting process and endeavoring to place upon the members of his profession the obligation to purchase a Taggart machine. If users of casting machines other than Dr. Taggart's are, in the

light of Dr. Noyes' writings, thieving the privilege, then every dentist is on the same plane and under monetary obligation, the value of which it would be well nigh impossible to compute, to a great many of our greatest researchers. Who is there among us who can estimate the value to him of discoveries made by our Dr. G. V. Black? Who is there who has not derived benefits from such men as our present orthodontists and Dr. Atkinson in mechanics, and has any word from any of these venerated gentlemen been forthcoming in reference to commercial obligations on the part of the profession?

Dr. Taggart has brought to prominence a discovery of great value, but whether he is the only member of the profession who developed the knowledge of casting remains to be seen. A number of dentists have been casting under pressure, crown cusps and bridges in plaster moulds after burning out and otherwise getting rid of wax, long before anything was heard of Dr. Taggart's methods. It is true that the same ideas will occur to a number of minds many miles apart at the same time and it not infrequently happens that patents are set aside through claims of priority. Be that as it may, Dr. Taggart should have the honor of bringing to the notice of the profession the process of accurately casting inlays and he has a machine to sell for $110 which is a very perfect machine. The dental profession of the United States is large and the financial conditions of many practitioners differ. There are those to whom $110 looks very large and to them a simple method and as effectual, such as a small bucket with bail, twirled on a long round nail with a large head, or a tomato can or shoe blacking box filled with wet asbestos is a boon. Then there are other machines which for convenience in country towns excel Dr. Taggart's. Not every dentist wishes to feel that his practice hangs on whether he can get nitrous oxid on the instant or not. Would the profession be justified in acknowledging the Taggart machine as being the only one and smothering the other conveniences? Does Dr. Taggart wish to cut off his generosity to the profession at the completion of his machine and say "I wish to smother all other methods and progress along this particular line"? Has any of our men of eminence looked with jealousy on the investigations of others along similar lines and expressed desire to curb them? Eight months' time was a very short period in which to give the profession an opportunity of deciding the merits or demerits of a new process and expecting it to make up its mind concerning its attitude toward the dis-

coverer and particularly when very few machines could be had during that time. Even at a recent date we have heard Dr. Noyes make the statement that it was almost impossible to get an inlay to suit him.

We are glad to note that Dr. Taggart has been gracious enough to resist the exploiting of the dental profession by a company who offered him $100,000 and a fourth of the stock. If he values his professional appreciation he did the right thing but subsequently we understand he has formed a company which may have been selected from outside the profession or from a favored few of his professional friends and under these conditions we believe few dentists care to hand over to Dr. Taggart $110 of which he is probably not the sole beneficiary and of which it is understand $10 on each sale goes to the fund for fighting the users of any other system of casting.

If Dr. Taggart desires to show a benign attitude toward the profession the only way he can do so is to withdraw his suit. No other construction can be placed on his attitude than one of "give no quarter" so long as a lawsuit pends demanding the purchase of his system. Let him name a rational price for turning over his patents to the profession, now that the value of cast inlays is known and give sufficient time to raise the money, then will be time enough to determine if there still remains a germ of gratitude in the breasts of his fellow practitioners.

FREDUS A. THURSTON, D. D. S.

356 E. Fifty-seventh street.

EDITOR OF THE DENTAL REVIEW: April 23, 1909.

Dear Sir—In reading over the paper presented by Dr. Florestan Aguilar, of Madrid, Spain, at the American Dental Society meeting in Rome, 1907, I am at a loss to understand how this wonderful formula of Benesol was ever made. The only drugs in the whole lengthy prescription which would dissolve in the water are the phenol and cocain ingredients. I also fail to see why it is amazing "that a hypodermic injection of this mixture should produce anæsthesia." The water alone would do that by pressure, but to it has been added phenol and cocain (the action of the cocain being greatly fortified by the addition of adrenalin). I am somewhat surprised that such a paper should be read before such a body without commenting upon the points.

H. H. SCHUHMANN.

FOREIGN CORRESPONDENCE.

DENTISTRY IN SWITZERLAND.

In THE DENTAL REVIEW for February there appeared an article with the above title containing several statements which are misleading in the extreme and as one of the dozen of American dentists here I have been asked to answer it and to correct some points which might lead to disappointment should an American dentist come here and expect to find the conditions as described by the writer.

The article reads, to an old resident of Switzerland like an English magazine article on America by an English tourist who spends two weeks in "the States" and writes up America.

It is difficult to enter into a detailed answer and one may say in substance that almost every statement relating to dentistry is misleading. It's a pleasant article, intending harm to no one and the only reason for answering it and stating the real state of affairs in Switzerland is to give an accurate and true statement of the requirements of the dental law in the country and the status of dentistry.

The dental law is very strict and almost prohibitory to foreigners. A few dentists here consider it too strict and the majority demanded it as a protection from competition, and the state protects the native industries with paternal care. Our most radical state righters in America can hardly conceive of the efforts made to retain "Switzerland for the Swiss." This is a natural and rather common law of the states of Europe for self protection against the inroads of their neighbors.

During my twenty-six years of practice here I have remained an American citizen and have made repeated efforts to secure the admission to the country of American dentists, but have had to see the wall built higher around the country as the years have gone by. I once had a conference with the highest authority in this department and among other things stated to him that the proposed new law seemed quite prohibitory to Americans.

"Ah! my dear Doctor, this is our McKinley bill," he replied! And that was the end of intervention. Our protective tariff against Swiss ribbons and other products is as severe against the Swiss as their dental law is against foreigners. Still they sell us most of their ribbons but import no more of our dentists.

The old guard of Americans of former years is disappearing one by one and no new recruits are now able to enter the field.

Mason, Field, Doremus, Elliott, Ferry, McDowell, Putnam, Wright, Williams, Chas. Jenkins, Van Marter and Adams have either left the country or have "joined the majority." Only the two Pattersons in Montreux and Geneva, Hurlburt of Lucerne and Wayne, as associate of a Swiss professor in Zurich and Achard, those now remain as real Americans, while there are 80 Swiss who have secured the coveted D. D. S. in America and practice as American dentists with success and generally do honor to the degree.

The candidate for the Swiss license must now pass examinations beginning with the "materia," which is rather more difficult than our Bachelor of Arts, and as it requires a perfect knowledge of French or German this is the most difficult part for English-speaking candidates.

This is sometimes "given" to Swiss, but never to foreigners. That is, Swiss are occasionally not required to pass it and can pass the other requirements. After this preliminary examination the studies are practically *medical* and are pursued as a branch of medicine under medical professors. Two dental schools have been established to provide what is considered necessary in addition to the medical studies, and students of dentistry either attend certain courses in these schools at Zurich, in German Switzerland, or at Geneva, in French Switzerland, or serve a certain pupilage with a dentist to get the necessary (?) knowledge of dentistry.

The state board examination is written, oral, and operative, one or two gold and other fillings and plate work being required. Examinations can be passed in several large cities like Zurich, Basel, Bern and Geneva, in either German or French. We of the advisory board are accustomed to give candidates going to America a certificate that they have complied with the "minimum requirements" of the N. A. D. F. and they enter the senior class, but I personally have felt that though their scientific attainments and medical knowledge are perhaps superior to the average American second year student, it would be more credit to our D. D. S. in Europe if their studies of operative and mechanical dentistry could be continued in an American college for two years instead of one, so that their manipulative ability could be developed up to the best American standard. Our college professors are, however, lenient and favor the foreigner, excusing his possible short-

comings in the theoretical, practical, written and oral examinations on the ground of his want of a thorough knowledge of English; while the languages here are the first thing required and the means of excluding Americans from the country! I struggled for years to get the N. A. D. F. through the foreign relations committee to require the same knowledge of English of the candidates as the European examiners require of foreigners in German or French, but without avail. The competition for these foreigners between the colleges resulted in the acceptance of candidates constantly who, when they come to me for their certificates, can not carry on any conversation in English. How they, thus handicapped, can fully appreciate a few months' lectures and then pass a scientific written and oral examination on those lectures in English can only be explained by the examiners. Even on their return and with their plate reading "American Dentist" some are unable to speak English and carry on a conversation. They are, however, apt at languages as a rule and some who have spent a few months only there are able to speak good English.

Still, a two years' course would put these capable and enterprising young men who cross the sea to get the best in dentistry more into the spirit of American Dentistry and give them, besides the Doctor title they go for, better operative ability and a chance to study the numerous specialties of today as taught in America more thoroughly than they can in a few months in a strange land and with a stranger language. However, if one college in the east takes them in the senior class the other colleges will do the same, it seems.

As a practice with a first class clientele is more remunerative here than the same skill would command in America and rents are cheaper, the first class and even second class practices are in large and commodious rooms and with large laboratories, most offices consisting of from three to six rooms, an extra room almost always being provided for the office girl. Swiss dentists can have assistants without the Swiss diploma or license, but he cannot open an office of his own without a license to practice independently, if the principal is in regular attendance, and an assistant often carries on the practice for a short time.

One thing I have enjoyed here in Switzerland is the honesty of all classes of people and the certainty of getting 98 per cent of one's fees when the bill is sent.

It is a pleasure to work if one is sure of one's fees being paid.

A certain diploma mill of Chicago used to do a good business in "diplomas" in Switzerland and Germany until I conceived and organized the advisory boards of Europe and submitted resolutions to Dr. Barrett for a Foreign Relations Committee, which he had passed by the N. A. D. T. and then with the help of Consul-General Worman in Munich we went for these men and they are no more!

Still, last month I had an official inquiry from one of the cantonal (state) authorities asking me if the "diploma," a copy of which was enclosed, was recognized by the authorities in the states and if they should allow the owner to use the doctor title as he had petitioned to.

The "diploma" was from the "Cosmopolitan Post-Graduate School" in Chicago and was signed years ago by Weil and others!

Some time ago I figured out, when applying to the authorities for a more liberal law for Americans, that there were just three hundred registered dentists for three million inhabitants, making one dentist to ten thousand. Besides the registered dentists there are mechanical men who can by law do plate work and, of course, they do extracting and other dental work in spite of the law.

Say fifty years ago, American dentists were the only ones in Switzerland that filled teeth on modern lines and they had the cream of the practice and high fees. Then the natives went over and got the same training. The American set the standard of work and fees and when the Swiss returned with his American degree he conscientiously followed the example as to fees and the result is that dentistry is generally well paid. It is only a pity that more young men do not study dentistry, for the overworked dentist cannot get assistants. The studies for dentistry require almost the same time as for medicine now and the medical man's social standing with his degree has in former years been looked upon as superior to the dentist, who gets no title or doctor degree. The conferring of a degree such as the lawyer, the chemist and the doctor get would remedy this evil and more young men would enter the profession. It would require, however, a full dental faculty to confer the degree and such a faculty is not available.

The present generation of young dentists are, however, taking their social stand which they have earned for dentistry since they have made a profession out of what used to be a perquisite of the barber, who was the only one to operate on the teeth (with forceps) not more than two generations ago.

In regard to fees for tourists being as high as the Swiss mountains, quite the reverse is the case. The dentist of the larger towns and particularly of the tourist centers has, one may almost say, unfortunately to wait for the tourist. Instead of the dentist with a good clientele wishing to have the tourist, he would as a rule prefer not to see them. He has his regular fees usually per hour, which his patients know and pay without a word.

The tourist is, however, always suspecting that he is being overcharged, be it in a hotel, in a shop, or at the dentist's. Dental fees being higher than in America, the tourist immediately believes he is being fleeced when his bill is presented.

To avoid this difficulty the dentist who has to treat tourists has his appointment card printed on the back with a clear statement of his list of fees and a patient has time to look over these before submitting to treatment.

The dentist does not have these fee cards as an advertisement, but as a warning to the tourist patient that if he does not intend to pay these fees he is to notify the dentist that he is not willing to pay them and the appointment is canceled. These cards form the basis of an agreement between the two parties and protect the dentist from those scenes which are so painful to a professional man when the patient refuses to pay without a reduction and claims almost invariably to have been imposed on because he is a tourist.

The tourist is generally the most unsatisfactory patient to treat. He or she usually wants a toothache treated, a plate repaired or a temporary stopping put in till they can get back to their regular dentist. They have a long story to tell about the case and take up the time of the dentist for which they do not want to pay.

The desirable tourist patient is the exception. The dentist prefers his regular patients, whom he knows and understands, and whose cases he can follow from year to year and see the results of his work.

Almost invariably the English tourist takes out a partial upper and lower set of teeth as a preliminary to treatment, disclosing a woeful lack of conservative dentistry and prophylaxis in his oral cavity.

LYMAN C. BRYAN, D. D. S., F. B. C. D.

FOREIGN DENTAL COLLEGES.

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FOREIGN DENTAL COLLEGES.

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PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

To Make a Good Flux:—Take common borax and heat it until it is all melted down. When it becomes cooled, grind or pulverize it *very fine.* In soldering, use as small amount as possible. Place it where you want the solder to flow. This makes the best flux I have ever used.—*L. E. Eaton, Sturgis, S. D.*

Insertion of Amalgam:—It should be used as stiff and dry as possible, and packed with small instruments at first, reserving the use of the larger ones for completing the operation. The first pieces should be a little softer than those subsequently used, so that with small instruments and rotary motion and direct force it may be brought into absolute contact with the walls of the cavity and all air spaces obliterated. It is not an easy thing to do this, and it cannot be done in a careless, hurried manner.—Charles P. Pruyn, Chicago.

Requisites of a Porcelain Inlay Worker:—He must have a keen observation, a thorough knowledge of the principles of inlay work and of the properties of porcelain, a mastery of the technique and some knowledge of the principles of color formation, with the eye trained to detect the delicate hues of colors. He must be able to carry tooth form in the "mind's eye," and to use the eye and hand in unison. If the limitations of porcelain are properly recognized and it is judiciously used as a filling material for incisors and cuspids, it can be recommended more strongly than ever, for the principles of cavity preparation are understood better.—*John Q. Byram, Indianapolis, Ind.*

Preparation of Wax Models for Hollow Inlays:—We were very much interested with the Practical on "Hollow Inlays" by Dr. C. A. Hintz, which appeared in the March number of THE DENTAL RE-

VIEW, and should like to inform you that we find a Gates-Glidden drill, slightly warmed, exceedingly useful for the same purpose. The slight warmth causes the wax, as it is cut away from the model, to lodge in the spiral grooves of the drill, from which it can be removed after the hollowing-out is completed. We shall be amply repaid should the hint prove of service to your numerous readers, if you care to insert this in your "Practical Hints" department.—*Claudius Ash, Sons & Co., Ltd., London, Eng.*

Casting Gold on Porcelain:—At last I have been successful in casting against porcelain without checking. I use a flask, the dimensions of which are one and one-quarter inches in diameter and the same height. After coating wax with silex and plaster, I fill balance of flask with Brophy's imperial investment compound and after drying I place in a coal stove and leave till it is all red hot. Then it only takes a few minutes to melt gold and force home, and as there is quite a body of investment around the tooth, it has not time to cool before the gold comes in contact with it. I have made a four-tooth bridge by this method and all facings were intact.—*Emerson Cunningham, Parry Sound, Ont.*

Gold Fillings in Children's Teeth:—I have made many fillings in first molars with gold in patients at eight years of age, and the results have shown that I did the best thing. We cannot do that with every child. We must discriminate carefully, and we must not undertake to make a gold filling unless the conditions are such that we can do it well, and without breaking down the fortitude of the child. Preserve the child's courage always, but when the conditions are such that we can make a gold filling, we should not hesitate to make it, if the child is eight or fourteen, for it is the best thing. When you cannot do that, do the best you can with a temporary operation.—*G. V. Black, Chicago.*

Starting a Gold or Amalgam Filling:—I might suggest an improvement on the method of Dr. J. S. Marsh, published in the February REVIEW, page 202. I place in the bottom of the cavity, whether gold or amalgam is used, a little white cement and while it is still plastic, packing the gold or amalgam into it. It is the easiest

way of beginning a gold or amalgam filling and the results are usually much better than can be obtained otherwise. Less cutting of tooth for anchorage is required, frail walls are strengthened and protected, tight sealing is secured, and thermal changes and discolorations are avoided. If you have not tried this means, do so at once, being careful not to use too much cement.—*Charles A. Brackett, D. M. D., Newport, R. I.*

Porcelain Crowns:—I regard the Justi crown as being fully as easy of adjustment as the Logan or Davis crowns, and at least a little bit stronger in the attachment between crown and pin than the Davis and less apt to be sprung from its position than the Logan crown. I do not band the root for any kind of porcelain crown, as a rule, which means that I rarely make use of a Richmond crown. There are exceptions to all rules, however, and in cases where it seems advisable, the root can be banded with a Justi crown as easily as with any other with which I am familiar. Success with it, as with all other bandless porcelain crowns, depends largely on the condition of the root, the accuracy of adjustment and the use of a reliable cement.—*H. N. Donaldson, Belleveue, Ohio.*

Capping Pulp in First Permanent Molar:—A portion of cement powder, sufficient to generously cover the floor of the cavity, is mixed with camphophenique to the consistency of "country cream," dropped in and gently patted to place with a piece of spunk. This is covered with a layer of cement, mixed, neither thick enough to cause pressure in placing or thin enough to cause pain from the presence of free acid. Whether to cover the cement with a filling of amalgam or to fill the entire cavity with cement should be determined by circumstances. If the child is likely to become a regular patient, I would fill the entire cavity with cement. The prognosis in these cases is doubtful, but in my judgment a sufficient number do well to justify the attempt to retain the pulp alive.—M. L. Hanaford, Rockford, Ill.

Oil of Cloves:—Oil of cloves is what I consider to be an ideal disinfectant, if you are dealing with live tissue. If live tisue is infected, you can come about as near sterilizing that tissue with iodine and oil of cloves as anything I know. Oil of cloves is just sufficiently

irritating to act as a stimulant and if you stimulate the animal cells of tissue which is invaded by vegetable cell (microbe), you give to the animal cell new life; and the animal cell will kill the vegetable cell. Where you are trying to kill the vegetable cell in the dentine of a tooth, where that vegetable cell is removed from the animal cell, and where, by stimulating the animal cell, there will be no effect as to destroying the vegetable cell, then I say the oil of cloves is in the very lowest scale of antiseptics.—*J. P. Buckley, Chicago.*

A Few Points in Regard to Acolite:—If a bicuspid root be broken off so far beneath the gum margin that it is impossible to fit a band and build the tooth up with amalgam in the usual way for the reception of a gold-shell crown, acolite may be used for the tooth restoration in the following manner: Remount the root, for the reception of an iridio platinum pin, roughen the end of the pin which protrudes from the root, for the better attachment of the acolite. Imbed pin in inlay wax, force down over the end of the root, trim wax to correct shape and cast. Casting should be cemented to root and crown made in the usual way. After the acolite has been cast, do not be in too great haste to invert flask, as the metal stays fluid in the mold for some time, and if given a chance, will run back through the sprue-hole, leaving a spoiled casting.—*F. T. Weeks, Neillsville, Wis.*

Pyorrhea Treatment:—The patient should be instructed as to the curative value of brush friction on the gums, and absolute cleanliness. Until the pockets are healed, an atomizer should be used three times daily, at home. Prolonged brush friction with cold salt water, at least three minutes twice daily, will keep the pockets evacuated and prevent the formation of bacterial colonies at the gingival margin or in the unhealed pockets. Demonstrate how the brush is to be applied directly to the whole surface of the alveolus and the importance of brush movements only from apical ends to necks. The results of this extreme prolonged brushing with hard brushes and cold water have been so surpassingly successful in curing and preventing recrudescence of pyorrhea alveolaris that I am convinced that it has a more profound influence than mere asepsis and toughening of the soft tissues, which was the object first sought.—Joseph W. Wassall, Chicago.

Treatment of First Permanent Molar:—I would not take out the pulp in the first permanent molar because I found an exposure, where the ends of the roots had not perfectly formed. With the exposed pulp in a tooth where the roots have not fully developed, I would cap the pulp, with the understanding on the part of the patient and parents that the pulp would probably die, but that I want it to remain alive as long as possible to aid in the development of the ends of the roots. I think if you really intend to save the vitality of the pulp, you should always retain your remedy with cement, providing the cavity is exposed to occlusal stress. I look upon cotton or gutta-percha as not a good material to retain your remedy, for it results in a condition that allows the pressure of mastication to force the irritated properties found in carious dentine into the pulp. That is one reason I always employ cement in such cases.—*W. H. G. Logan. Chicago.*

Making an Open-Face Crown:—Whatever prejudice there may exist against open-face crowns, there are times when it is absolutely necessary to resort to the employment of them. The Taggart casting process can be utilized to advantage. I prepare the tooth as I do for any open-face crown, but, in addition, if the bulk of the tooth permits—and a larger per cent of them do—I cut a groove with a small inlay bur on the incisive edge. The depth of this groove depends on the bulk of the tooth. Then fit a band as we do for any gold crown. Cut out the labial and lingual part of the band, leaving it as narrow as we desire at the gingival. On the mesial and distal have the band flush with the incisive edge. Burnish the edge of the gold well to the tooth on the labial surface. Prepare inlay wax and cover the lingual surface and incisive edge to the desired thickness, forcing the wax well into the groove, attach sprue, and remove band, wax and sprue together. Invest for casting. The merit of this crown is in the ridge and groove attachment, which gives it additional strength that the ordinary open-face crown does not possess. In several instances I have deemed it advisable to extend the groove into the mesial and distal surfaces.—*C. A. Hintz, D. M. D., Springfield, Minn.*

MEMORANDA.

IDAHO STATE BOARD OF DENTAL EXAMINERS.

Idaho State Dental Board will meet for examination of applicants in Boise, June 21-23, 1909. Applicants bring operating instruments and engine.

E. L. BURNS, Secretary, Boise, Idaho.

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

The next annual meeting of the Wisconsin State Board of Dental Examiners will be held at the Dental Department of the Marquette University, Milwaukee, Wis., June 21, 1909.

F. A. TATE, Secretary.

IOWA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Iowa State Board of Dental Examiners for examination will be held at Iowa City beginning June 7, 1909, at 9 a. m. Practical examination will be held in both operative and prosthetic dentistry. Applications must be in the hands of the secretary by June 1. For further information address E. D. Brower, Secretary, Le Mars, Iowa.

INDIANA STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Indiana State Board of Dental Examiners will be held in the State House, in Indianapolis, beginning Monday, June 7, 1909, and continuing four days. All applicants for registration in this state will be examined at this time. This will be the last meeting of the year 1909. For further information and instruction address the secretary, F. R. Henshaw, Middletown, Indiana.

INTERSTATE DENTAL FRATERNITY.

The board of governors of the Interstate Dentral Fraternity will convene for the annual meeting of the order at Old Point Comfort, August 1, 1909. The annual banquet will occur during this week, and due notice thereof will be sent to the members as soon as arrangements can be made and the exact date fixed. It is hoped that the fraternity will meet in large numbers on this occasion.

DR. R. M. SANGER, National Secretary.

East Orange, N. J.

ROTTERDAMSCHE TANDHEELKUNDIGE VEREENIGING.

The board of the Rotterdam Dental Society, 115 Aert van Nesstraat, Rotterdam, makes hereby known, that the jury charged with the examination of the prize tasks "Gnathodynamometer" sent in, have not awarded the prize to any one of the competitors, as the instruments do not satisfy the demands put forth.

Kindly requesting you to publish the above decision in the DENTAL REVIEW, I am, the secretary of the R. T. V.

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OHIO STATE DENTAL BOARD.

The regular spring meeting of the State Dental Board of Ohio will be held in Columbus on June 15-18 for the examination of applicants for license. All persons wishing to enter practice in this state must make written application for examination. Applications must be in the hands of the secretary not later than June 5, and must be accompanied with the fee of $25. For

blank application and further information address F. R. Chapman, Secretary, 305 Schultz Building, Columbus, Ohio.

RECENT PATENTS OF INTEREST TO DENTISTS.

913184. Tooth brush, C. L. Alexander, Charlotte, N. C.
913210. Artificial tooth, M. F. Henle, Lyons, Iowa.
914501. Tooth brush, D. McEachern, Argyle, Ontario, Canada.
915349. Tooth brush, J. L. Hitz, Chicago, Ill.
915137. Dental plugger, W. Weichselbaum, Savannah, Ga.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

THE NORTHERN OHIO DENTAL ASSOCIATION.

The fifty-second annual meeting of the Northern Ohio Dental Association will be held in the Central Y. M. C. A. building, Cleveland, Ohio, June 1, 2, 3, 1909. The program as arranged offers a few timely papers, a large number of helpful clinics and a generous display of instructive exhibits. The place of meeting is convenient. Cleveland provides diversity of entertainment for the visitors. On the whole, everything is in keeping to provide a profitable three days for the men in attendance.

F. M. Casto, G. F. Woodbury, J. H. Wible, Executive Committee.

SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the South Dakota State Board of Dental Examiners will be held at Sioux Falls, South Dakota, July 13, 1909, beginning at 1:30 p. m. and continuing three days.

Both practical and written examinations will be required of all candidates, and all applications, together with the examination fee of twenty-five dollars, must positively be in the hands of the secretary not later than July 5; otherwise they will not be admitted to examination.

G. W. Collins, Secretary.

CALIFORNIA STATE DENTAL ASSOCIATION.

The California State Dental Association and the Alumni Association, College of Dentistry, University of California, will hold a joint meeting on July 6-7-8 at the College building, Second and Parnassus avenues, San Francisco. Arrangements are being made for a number of prominent eastern dentists to be present and contribute to the clinics and papers, in addition to members from the state. Manufacturers are being solicited to make exhibits, and, inasmuch as there will be a series of meetings on the Coast from June 28 to July 23, it is expected that exhibitors will find it to their advantage to make the circuit.

THE ALUMNI ASSOCIATION, COLLEGE OF DENTISTRY.

The Alumni Association, College of Dentistry, University of California, and the California State Dental Association will hold a joint session on July 6, 7, 8 at the College of Dentistry building, First and Parnassus avenues, San Francisco. Arrangements are being made which promise to make the session mark an epoch in dental work on the Coast. Dr. John Q. Byram has been secured and attendance at his clinic will be equal to a post-graduate course in porcelain. Negotiations are being continued for one other eastern clinician, with promise of success. Save these three days for a most profitable meeting! The knowledge gained will amply repay you.

INDIANA STATE DENTAL ASSOCIATION.

The fifty-first annual meeting of the Indiana State Dental Association, to be held at Indianapolis June 29-30 and July 1, will be a profitable meeting

to those attending; a meeting that will be noted for its many practical suggestions. C. D. Lucas, chairman of the executive committee, has completed arrangements for six excellent papers, four of these from our own state and two from special guests outside the state. W. S. Kennedy, supervisor of clinics, promises the largest, the best and the most practical clinic of our history. No dentist in Indiana who cares for his mental improvement can afford to miss this meeting. Mark off the dates. Do it now!

Otto U. King, Secretary.

AMERICAN DENTAL SOCIETY OF EUROPE.

At the thirty-sixth annual meeting of the American Dental Society of Europe, held at Wiesbaden, Germany, April 9, 10 and 12, 1909, the following officers were elected for the ensuing year:

President—Dr. M. J. Quintero, Lyons, France.
Vice-President—Dr. W. A. Spaulding, Hyères, France.
Hon. Secretary—Dr. T. G. Patterson, Geneva, Switzerland.
Hon. Treasurer—Dr. W. M. Cooper, Frankfurt-on-the-Main, Germany.
The next meeting of the society will be held in Paris at Easter, 1910.

T. G. Patterson, Hon. Secretary,
2 Quai des Eaux-Vives, Geneva, Switzerland.

MILLER AMERICAN MEMORIAL.

The following resolutions were approved by the National Dental Association at its recent meeting with the stipulation that no funds be solicited until September 1, 1909, by which time the international memorial fund, already under way, will be cared for:

At a meeting of the Columbus Dental Society, of Columbus, Ohio, held Tuesday, March 23, 1909, the following resolutions were adopted:

Whereas, The late Dr. Willoughby D. Miller, who devoted his life to untiring research for the benefit of dental science, was an American and an Ohioan by birth; and,

Whereas, It is desired to obtain an expression of opinion from the various dental societies and associations meeting during the interval pending the next meeting of the Ohio State Dental Society (December, 1909);

Therefore, be it resolved, That the Columbus Dental Society, of Columbus, Ohio, suggest the advisability of raising a fund for a suitable memorial by the dental profession of America to commemorate the life and work of the said Dr. Willoughby D. Miller; said memorial to take such form as may be determined by the consensus of opinion by the various dental organizations of this country.

Be it further resolved, That the Ohio State Dental Society, at its next annual meeting, be requested to take charge of the Miller American memorial matter and of such correspondence as may be received pertaining to the same.

NATIONAL DENTAL ASSOCIATION.

The thirteenth annual meeting of the National Dental Association, held at Birmingham, Ala., March 30 to April 2, was a most successful one, with a good attendance. The papers and discussions were exceedingly interesting and held the close attention of large audiences throughout. Official action was taken providing for a national dental journal, commencing October, 1910.

The committee on revision of constitution and by-laws presented a number of amendments embodying a liberal plan of reorganization. Copies carrying the proposed changes are to be printed and mailed to the membership at an early date, which will give ample opportunity to thoroughly understand same before final action is taken.

The following officers were elected: President, Burton Lee Thorpe, St.

Louis, Mo.; vice-president for the west, W. T. Chambers, Denver, Colo.; vice-president for the east, Charles W. Rodgers, Boston, Mass.; vice-president for the south, Thomas P. Hinman, Atlanta, Ga.; corresponding secretary, H. C. Brown, Columbus, O.; recording secretary, Charles S. Butler, Buffalo, N. Y.; treasurer, A. R. Melendy, Knoxville, Tenn.; executive committee, new members, for three years, C. M. Work (Ottumwa, Iowa), V. H. Jackson (New York City), W. G. Mason (Tampa, Fla.); executive council, H. J. Burkhart (Batavia, N. Y.), B. Holly Smith (Baltimore, Md.), A. H. Peck (Chicago, Ill.), W. E. Boardman (Boston, Mass.), C. L. Alexander (Charlotte, N. C.).

Denver, Colo., and the third Tuesday of July, 1910, were chosen as the place and date of the next meeting.

H. C. Brown, Corresponding Secretary.

THE INTERNATIONAL DENTAL EXHIBITION, 1909.

(Under the auspices of the Incorporated Society of Adaptors of Teeth.) Royal Horticultural Hall, Westminster, London, September 6 to 10, inclusive, 10 a. m. to 8 p. m.

Colonial and continental dentists are invited to attend the above important event, which promises to even exceed in size and completeness the record exhibition held by the Society at the Hotel Cecil, London, in 1908. The 1908 exhibition was by far the largest and most successful ever held in the history of dentistry, yet it is the intention of the organizers to eclipse the 1908 undertaking, which is insured by the fact that every dental manufacturer of importance will be represented. Every invention applicable to modern dental practice will be exhibited—the last word in dental equipment; the last word in dental furnishing; the last word in dental pharmacy; the last word in everything dental.

Every dental practitioner in the British Isles will receive a card of invitation admitting to the exhibition, but colonial and foreign dentists will make personal application for admittance ticket at the inquiry office attached to the exhibition, which will be granted on production of private card or an envelope bearing their address and postmarked, establishing their identity. The lay public will not be admitted.

The following are among the firms who will make special displays of a very extensive nature: Messrs. Claudius Ash, Sons & Co., Ltd., London; The Dental Manufacturing Company, Ltd., London; C. De Trey & Co., London; C. J. Plucknett & Co., Ltd., London; A. B. Walsh & Co., London; George Chalk & Co., London; the Midland Dental Manufacturing Company, Ltd., Birmingham; the American Dental Manufacturing Company, London; the Western Dental Manufacturing Company, Ltd., Bristol; the Pennsylvania Dental Manufacturing Company, London; George Keener & Co., London; The Meyer Sander Dental Supply Company, London; A. G. Taylor & Co., London; Cottrell & Co., London; Elliott & Co., Edinburgh; Saccharin Corporation, Ltd. (Novocain), London; Schneider & Co., Ltd., London; Francis Lepper, Ltd., London; Birmingham Dental Supply and Manufacturing Company, Birmingham; W. Edwards & Co., Ltd., London; Arnold Biber, London.

An interesting series of clinics, three and four progressing concurrently during the days of the exhibition, will demonstrate the most recent advances in prosthetic dentistry. Grill and tea rooms will be provided. Visitors may have their correspondence addressed to them in care of the Enquiry Office, Dental Exhibition, Horticultural Hall, London.

FIFTH INTERNATIONAL DENTAL CONGRESS, BERLIN, AUGUST 23-28, 1909.

To our colleagues of all nationalities we herewith extend a hearty invitation to participate in the fifth International Dental Congress, to be held in Berlin August 23-28, 1909, in the Reichstag building.

When, in St. Louis, in the year 1904, the highly appreciated and respected Professor W. D. Miller, as president of the Central-Verein Deutscher Zahnärtze, invited the congress to meet in Berlin in 1909 the German dentists were greatly pleased at the unanimous acceptance of their invitation.

The congress will be coincident with the fiftieth anniversary of the Central-Verein Deutscher Zahnärtze. The united German dental profession is, therefore, preparing to worthily celebrate this occasion, and to make the theoretical and practical results of this congress stand out as a landmark in the development of dental science.

Colleagues of all nations, combine and in friendly strife, giving and taking, learning and teaching, demonstrate to the educated world what great progress the science of dentistry has made in the last years!

Through well attended meetings, at which representatives of all nations will discuss theoretical and practical problems, dentistry will prove itself an independent science, worthy of being regarded as one of the numerous intellectual achievements of mankind.

The German organization committee, selected by the F. D. L., the Central-Verein and the Vereinsbund, have completed their preparations, and now turn to all colleagues, both at home and abroad for their esteemed support.

The Reichstag building offers ample space for the meetings of the congress, which is divided into twelve sections. The Berlin local committee will do everything possible to entertain the visitors in the German metropolis during the time not occupied by more serious pursuits.

An international dental exhibition to which the members are earnestly invited to contribute will in the widest sense demonstrate the progress of our profession.

Honorary presidents of the congress are: Geheimer Medizinalrat Professor Dr. Waldeyer; Wirklicher Geh. Ober-Reg.-Rat, Ministerialdirektor Dr. Naumann; Geheimer Ober-Medizinalrat, Professor Dr. Kirchner, and Geheimer Ober-Medicinalrat Dr. Dietrich of the "Kultusministerium."

An honorary committee is also to be chosen.

The German imperial government has decided that the governments of the nations represented shall be officially informed of the meeting of the International Dental Congress in Berlin.

Besides the meetings of the individual sections, the congress will hold two general sessions.

At these meetings time will be found, not only for lectures and demonstrations, but also for the discussion of subjects of general interest, proposed by the chairmen of the sections.

All progress in scientific, technical and operative dentistry, as well as the subject, development of dental hygiene, will be presented by the ablest authorities.

A meeting of the F. D. I. will take place at the beginning and at the end of the congress.

Colleagues, with your united support, may the great work succeed!

The invitation is most heartily given by your German colleagues.

With our united strength let us guide our profession to still greater success, for the honor of science—for the benefit of mankind.

THE COMMITTEE OF ORGANIZATION OF THE FIFTH INTERNATIONAL DENTAL CONGRESS, Walkhoff, President; Schaeffer-Stuckert, General Secretary.

REGULATIONS OF THE FIFTH INTERNATIONAL DENTAL CONGRESS, BERLIN, AUGUST 23-28, 1909.

1. The Fifth International Dental Congress will be held in Berlin from August 23 to August 28, 1909.

2. The congress will be devoted to the scientific and technical progress of dentistry and to the general interests of the dental profession.

3. Ordinary members of the congress are: graduated dentists who possess the diploma of the country in which they practice and instructors of dentistry in universities. Associate members of the congress are: (a) physicians, (b) foreigners who do not possess the diploma of the country in which they reside. The eligibility of persons not here provided for will be decided by the national committees (for Germany, the committee of organization). Participants are relatives of the members of the congress and students of dentistry. Ordinary and associate members have equal rights.

4. Applications for membership are to be sent to the national committees (in Germany, to the organization committee), together with name and address and the fee of 25 marks. For relatives of the members of the congress, as well as for students, the charge for admission cards will be 10 marks.

5. For admittance to the congress a card bearing the name of the member, as well as a receipt for the dues paid, is necessary. Visitors of the congress will receive the Daily Journal of the congress and the catalogue of the exhibition. Ordinary and associate members receive the transactions of the congress gratis. Lectures and demonstrations can be given by members only.

6. The congress will convene in the Reichstag building.

7. German, English and French are the official languages of the congress, other languages may be used with the consent of the chairman of the section. The congress is composed of the following sections: Section 1, anatomy, physiology, histology; 2, pathology, bacteriology; 3, chemistry, physics and metallurgy; 3b, scientific phtography; 4, diagnosis and special therapeutics; 5, oral surgery and surgical prosthesis; 6, general and local anasthesia; 7, operative dentistry; 8, prosthetic dentistry, including crown and bridgework, and ceramics; 9, orthodontia; 10, dental and oral hygiene; 11, education and legislation; 12, history and literature.

8. The congress will hold a general opening session Monday, August 23, 1909, and a general session Thursday, August 26, and a closing session Saturday, August 28. There will be sessions of individual sections, as well as meetings of several sections together. Discussions will not take place at the opening session.

9. Those wishing to give lectures, demonstrations, etc., should notify the chairman of the section before May 15, 1909. Notices sent in after that date can be considered only after the program has been arranged. Should circumstances permit of more papers being read the chairman has a right to select from those sent in after May 15. It is advisable to let the national committees send in all contributions, etc., to the chairmen of the different sections.

10. All lectures, etc., are to be delivered, ready for printing in the language in which they are to be given, with a summary of the most important points, to the chairman of the section not later than June 15, 1909. This summary will be translated by the management and placed before the members of the section.

11. Notice of practical demonstrations should be given to the chairman of the section before May 15, 1909, together with a list of utensils necessary for the demonstration. A short account of the purpose of the demonstration should be sent to the chairman before June 15, 1909. This account will be translated and communicated to the members of the congress.

12. The time at the disposal of a lecturer is fixed at twenty minutes; five minutes will be allowed for speeches in the discussion. A prolongation of this time is left to the judgment of the chairman.

13. Those taking part in the discussions should immediately note their communications on a printed form and give it to the secretary if they wish their views to be published in the transactions of the congress.

14. A pass for the various social functions will be issued at the price of 12 marks.

15. There will be an international dental exhibition connected with the congress.

INTERNATIONAL DENTAL CONGRESS AT BERLIN, AUGUST 23-28, 1909.
WORK OF THE BERLIN LOCAL COMMITTEE.

It is to be expected that the International Congress will meet with a large participation.

The task of the committee on organization and, above all, of the Berlin local committee is rendered very difficult, in so far as the number of participants cannot be even approximately estimated. The Berlin local committee will make it its special object to render the Berlin sojourn, from beginning to end, of each participant of the Congress, even though he is not versed in the German language, as agreeable and comfortable as possible. For this purpose, however, it is necessary for the Berlin local committee to become acquainted with the members beforehand; these colleagues will then receive all the printed matter in which the details have been accurately set down, so that each participant, before his arrival in Berlin, may be acquainted, on a large scale at least, with the plans of the site of the exhibition building, the arrangement of the scientifical meetings, the festivities, excursions, etc. I would therefore urgently request all colleagues who contemplate taking part at the Congress to send their announcements at once to the Secretary-General, Dr. Schaeffer-Stuckart, Frankfurt-on-the-Main, or to the chairman of the Berlin local committee, Court-Dentist Professor Guttmann, Berlin, Kurfürstendamm 24, and to mention whether they intend coming to Berlin alone or with members of their family.

The Berlin local committee will devote special care to making the stay of the ladies of the participants during the meetings of the Congress as pleasant and entertaining as possible. For this purpose a ladies' committee has been called into existence, of which the wives and the daughters of a number of Berlin colleagues are members. The management of the Congress earnestly desires that as many ladies of the colleagues as possible will come to Berlin, not only for the purpose of adding brilliancy to the Congress, but also, so as to become acquainted with the city of Berlin, especially its artistic, economical and other establishments. Besides this ladies' committee, the Berlin local committee has organized a number of subcommittees which will endeavor to provide all possible facilities for the participants of the Congress with regard to lodgings, interchange of languages, as also excursions, sight-seeing, etc., etc. For those colleagues coming from across the sea, a committee will be stationed in both Hamburg and Bremen for the purpose of offering advice and aid concerning the journey on the continent.

The Hamburg-American Packet Company has conceded a reduction in the price of passage for the participants of the Congress for any time outside of the principal traveling season.

As the management of the Congress has fixed the hours from 9 a. m. to 2 p. m. for the scientifical meetings, the participants will find ample time and opportunity to see Berlin and to participate at the festivities after the work of the day. Thus far the following festivities have been planned:

A reception evening in the Reichstag building. Then, the municipal authorities of Berlin have invited the participants of the Congress to an evening reception at the town hall.

The celebration of the fiftieth anniversary of the "Central-Verein Deutscher Zahnärzte," the largest scientifical association in Germany, will also take place in connection with the Congress.

Furthermore, the management of the Congress will arrange a festival, to be followed by a ball.

For another evening the colleagues of Berlin and of the Province of Brandenburg will invite all the participants of the Congress with their ladies to a steamboat excursion on the Havel Lakes and to a small banquet in the Swedish Pavilion at Wannsee.

The conclusion of the festivities is to consist of a parting-cup on the terraces of Halensee.

At the theaters reduced prices have been accorded. All the participants will have free admission, during the entire week of the Congress, to the Art Exhibition, the Exhibition Park, the Zoölogical Garden, etc. So that the preparations for all these arrangements may be properly carried out in detail, it will be necessary (to emphasize this fact again) for the participants of the Congress to send their announcements as early as possible. In continuation of the Congress week, trips for the participants of the Congress to German capitals and university cities have been arranged by the local committee, also, smaller daily excursions of parties with carriages, automobiles and steamers are planned for the purpose of showing Berlin and environs. The management and the local committee will make it their object to thoroughly satisfy all, so that each participant shall leave with the feeling of having spent a number of delightful days in Berlin.

In conclusion, I would again request the colleagues at home and abroad to appear with their ladies in great numbers and to send me a notice to this effect as soon as possible. Professor Dr. Guttmann, Berlin, Kurfürstendamm 24, will gladly furnish all desired information.

Dr. Med. Konrad Cohn, Secretary of the Congress,
Potsdamerstr. 46, Berlin.

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A SKETCH OF THE HISTORY OF DENTISTRY.*

BY CHARLES MC MANUS, D. D. S., HARTFORD, CONN.

It is rather difficult in the course of an hour and a half to present in any fitting manner, or in fact even to sketch, the development of such an interesting subject as dentistry, and to cover a period extending from many centuries before the Christian era to the present time. In the beginning, the dental art was closely associated with primitive medicine, for in those very early times, when the healing art was in a rudimentary stage, no divisions can have existed in it. The Ebers papyrus, the oldest medical manuscript known, treats of diseases of the teeth and gums, and in this interesting book of ancient Egypt, dating as far back as 3700 before Christ, no less than fourteen prescriptions for the treatment of several dental diseases may be found.

At this very remote epoch dental *medicine* was a part of general medicine, and we say this advisedly, for the papyrus of Ebers does not mention dental *surgery*. The initiator of this last science was undoubtedly the Greek Æsculapius, who flourished thirteen centuries before the Christian era, and according to traditions invented several important curative methods. In fact, Cicero says he invented the probe and was the first to skillfully bind up a wound, but it is particularly interesting to us to hear that he was the originator of the operation of the extraction of teeth. It may be that he was the inventor of the odontagogon, which long years after, we are told, was preserved in the temple of Apollo at Delphi. That this ancient forceps was made of lead may serve as a hint that no great force was to be used in the removal of the teeth.

[Read before the Chicago-Odontographic Society and illustrated with one hundred lantern slides.]

No mention is made of any operation upon the teeth by Homer (850 B. C.), minute as were his descriptions of the surgical processes employed in his time. The celebrated historian, Herodotus, writing some four hundred years later, states that in his time Egypt had a considerable number of physicians, who instead of treating all diseases, devoted themselves to specialties, and he particularly mentions "individual healers" who took charge of disorders of the teeth. Hence it is not doubtful that nearly five centuries before the time of Christ the dental art was cultivated in Egypt as a sort of specialty by men who were a sort of dentists. What degree of development it reached, unfortunately, we do not, as yet, know. All the assertions regarding artificial teeth, crowns, and particularly gold fillings, that are said to have been found in Egyptian mummies, are, as yet, devoid of foundation. It may be that their religious laws prohibited them from having recourse to it. Possibly the embalmer removed systematically all prosthetic pieces, for it is not possible that the Egyptians were entirely ignorant of this work when their neighbors, the people of Phoenicia, a country with which they had very intimate commercial relations, practiced it. This is proven by a prosthetic appliance found in 1862 in one of the most ancient graves of the Phoenician necropolis of Sidon. This piece, made with two human teeth united to the neighboring ones by means of gold wires, dates as far back as the fourth century before Christ. Several other pieces to be found in the museums of Italy are perhaps even older. All were made of gold and are simply shown that we may realize that a great many centuries ago men were trying in a primitive way to do a sort of dental work. That it was, in a measure, successful is proven by the patients carrying it to their graves with them—the most modern work can serve no longer!

The medical art, properly so called, was introduced into Rome by the Greeks, the first Greek doctor who went there being Arcagatus, in the year 218 B. C., but it would appear that dentistry was practiced there prior to the coming of Arcagatus. We have proof of this in the Law of the XII Tables, written 450 B. C., as to the lawfulness of burying or burning the gold with which the teeth may be bound together and also the various fines to be paid for causing the loss of the teeth, showing that the Romans as well as the Hebrews and other ancient people attributed great importance to the integrity of the dental organs. At the time of Aristotle, the Greek philosopher

(400 B. C.), the extraction of teeth must have been a common operation, as he speaks of it in his work on "Mechanics" and describes the forceps. Somewhat later Hippocrates, called "the father of medicine," gave a description of the teeth, recognized the importance of a systematic use of dentifrices, some of which were especially recommended for "fixing" the teeth. Now, while Hippocrates considered the extraction of the teeth an easy operation and one without much importance (probably because in his time only loose teeth were removed), Celsus, who flourished at the beginning of the Christian era, speaks of the serious dangers surrounding the operation. Notwithstanding the silence of Celsus in regard to dental appliances, it is probable that it was practiced in his time, for Horace, in his "Satires," and Martial, in a number of his "Epigrams," speak very clearly of artificial teeth. In fact, the latter poet speaks of a certain Cascellius who was in the habit of fastening as well as extracting teeth. This is the first dentist whose name has come down the centuries to us. I say "dentist," and yet we have no reason to believe that there were any class of persons dedicated to the exclusive care of dental diseases, but that there existed clever individuals that did such work we cannot doubt.

During the many centuries that have been called the Middle Ages the dental art was in a state of marked decline and we know very little about it, and the little that was achieved must be attributed to the Arabs. Rhazes is said to have been the inventor of the operation of filling teeth, using a mixture of mastic and alum. In the XI century Abulcasis in his work on surgery gave many illustrations of dental instruments and has much to say about the careful cleaning of the teeth. He describes a number of scalers, and says: "If a first scraping is sufficient, so much the better; if not, thou shalt repeat it on the following day, or even on the third and fourth day, until the desired purpose is obtained."

It is interesting to note that in the XV century Giovanni d'Arcoli in his medical work counsels filling the teeth, in certain cases, with gold leaf; therefore this operation dates back at least as far as the year 1450.

It is fitting that we should now turn to France and Ambroise Parē, who, although not a dentist, may, as Dr. Wm. H. Trueman says, be called the "foster-father of dental surgery."

Master Parē in his time met with a success which even today

would be pronounced extraordinary. He followed the wars for many years and was master barber-surgeon to the army and during his long life was surgeon to four kings of France. He wrote on surgery in French, touching also upon the practical part of dentistry; he referred to the transplantation of teeth, he favored the lancing of the gums in cases of difficult dentition and he described a number of dental instruments and several obturators of ingenious construction. Instead of keeping secret his inventions, as was the custom of his time, he made them as public as possible, saying in the preface to his larger work on surgery:

"For my part I have dispensed liberally to everybody the gifts that God has conferred upon me, and I am none the worse for it; just as the light of a candle will not diminish, no matter how many may come to light their torches by it."

Less than twenty-five years after the death of Parē there was born in England one whose name has been for over two centuries, and is today, very familiar to all dentists. Dr. Nathaniel Highmore was a physician, a man of learning and influence, and the intimate friend of the great Harvey, to whom he dedicated his work on anatomy. He described with much accuracy the cavity in the superior maxillary bone, with which his name is associated. Another interesting figure is that of the father of scientific microscopy, Antony van Leuwenhoeck, a Dutchman, who was one of the first makers of powerful microscopes, by means of which he made many important discoveries, among them that of the tubular structure of the dentin. This he made known in 1678 before the Royal Society of London.

In passing it is interesting to note that Parē's record as surgeon to four kings of France was equaled later by Dubois-Foucou, who was dentist to Louis XVI, Napoleon, Louis XVIII and Charles X. But long before his time dentists were attached to the court of France, and we not only know the names of the men, but even the records of some of their fees, are to be found in the French archives.

But there is another side to this picture. They had their quacks and mountebanks that plied their trade, usually on the Pont Neuf. The most notorious of all was the Great Thomas, who painlessly extracted the firmest teeth, free of charge, for his good people of Paris.

But let us leave these ancient charlatans and consider real dentistry. We get an idea of some of the dental instruments used at

the beginning of the XVIII century from the book of the celebrated surgeon and anatomist Pierre Dionis, published in 1718.

We now come to the father of dental surgery, Pierre Fauchard, of whom Chapin A. Harris said, "He was one of those masters in science who appear from time to time in every department of intellectual inquiry, and whose extraordinary capacity and acuteness enable them to prepare, in the brief space of their active life, material for the full occupation of generations of ordinary men who succeed them."

Born in Brittany toward the close of the XVII century, he was destined by his parents for the practice of surgery, but being prevented from doing this he became the disciple of Alexander Poteleret, surgeon in chief to the king's ships. Viau says that Fauchard had tried several mechanical pursuits, the practice of which proved to be not without value to him later on. In fact, it was the preliminary manual training he was unconsciously receiving. He was fortunate in studying under Poteleret, for this able naval surgeon was experienced in oral troubles, especially in scorbutic disorders, which at that time were frequent on vessels making long cruises. So important did they consider this matter that at the beginning of the XVIII century the port of Brest was provided with a surgeon-dentist and later, in 1730, the port of Rochefort was consulted in regard to the appointment of a similar officer. The reply to the minister was, that it would be useful to soldiers and sailors in the ships, who were often attacked with scurvy in the course of naval warfare, principally in the Canadian waters, at the Isle Royale and in the new world, to have a surgeon-dentist at that port. The appointment was therefore made, Monsieur Caperon, the brother of the king's dentist, being appointed at 40 livres per month. Thus, when the great minister Colbert organized the French navy, he instituted a health service, which, let us be thankful, was not too strict in the entrance requirements, and thus Fauchard was able to join as assistant. His service in the marine corps did not continue long, for in 1700 he took up his residence in Angers, afterwards traveling from town to town to make a livelihood, visiting Tours, Rennes and Nantes at fixed dates. And we may say of him as was said of Chapin A. Harris more than a century later as he traveled from town to town in the west—that wherever he went the public estimation of dentistry was elevated and his own reputation was established. Although his fame increased and people

came to seek him from the depths of Brittany, he determined to test his abilities on a larger scale, and in 1719 went to Paris, where at this time, and even earlier, as we have seen, there were not only the tooth-pullers of the Pont Neuf, but also dentists properly so called.

Indeed, Fauchard mentions the examination that aspiring dentists had to undergo as far back as the year 1700. It is not strange that this broad minded man met with success in Paris and quickly had for his friends not only the well known dentist, Carmeline, but also many surgeons and physicians. His great work, "Le Chirurgien-Dentiste," was published in 1728 in two volumes of over eight hundred pages, with forty full-page illustrations. To many of the present day this work would be a revelation, and it is much to be regretted that it was not translated into English at a time when the information it contained would have had practical value. It was translated into German and also passed through several editions in French. [The lecturer reviewed at some length Fauchard's work, illustrating his remarks with many lantern-slides of portraits, instruments and appliances.]

"A careful reading of the list of subjects treated in Fauchard's work," says Dr. Wm. H. Trueman, "will show how fully and systematically he covered the whole ground of dental science and refutes the common idea that dentistry in his day consisted in tooth-pulling and tooth-replacing. In my judgment as an original and comprehensive exponent of dental science it had no rival in the English tongue until Harris' 'Principles and Practice' had reached its second or third edition."

After a long and honorable career this illustrious ancestor of ours died at his residence in the Rue des Grande Cordeliers on the 25th of May, 1759—the exact date has been a matter of some dispute.

Listen to the eloquent words of Chapin A. Harris:

"He found the dental art a crude branch of mechanics, he left it a digested and systematic branch of the curative art. Though his own practice was far inferior in excellence to that of our day; though his instruments were rude, and the many appliances of his art very deficient in completeness and nicety of adaptation, yet, considering the circumstances under which he lived, Fauchard deserves to be affectionately remembered as a noble pioneer and sure founder of dental science. That his practice was crude was due to his times;

that it was scientific and comparatively superior and successful was due to himself."

He was an inspiration and example to his countrymen, and should be so to all dentists, and I wish to place myself again on record as sincerely believing that the day will come when some public recognition of the obligations we are under to this great Frenchman will be made and that a statue of him will be erected in the city of Paris by the grateful contributions of the dentists of America.

The year that Fauchard published his epoch-making work there was born in Scotland, the youngest of a family of ten children, John Hunter, the greatest name in the combined character of physiologists and surgeon that the whole annals of medicine can furnish. Although not a dentist he holds a deservedly high place as one of the pioneers in dental science.

Turning to our own country we find that a barber-surgeon came over to Massachusetts in 1636 and that there were dentists in New York a century later, but it was not until 1766 that Mr. Robert Woofendale (who was for the time a regularly educated dentist and a pupil of the king's dentist, Berdmore), arrived in this country. Two years afterwards Mr. John Baker came to New York from Boston, where he was succeeded by his pupil, the celebrated Paul Revere, a man of many and varied occupations, but whose numerous curious dental advertisements are to be found in the "Boston Gazette" for 1768 and 1770.

But whatever place we may be willing to give these early men I think we can safely say that dental science came to America in the person of Joseph Lemaire, a young soldier in the French army under Rochambeau. During the winter of 1781-82 he was with the troops near Providence and made the acquaintance of another Frenchman, James Gardette, who had arrived in America some time before with the French fleet. Gardette was educated for the medical profession, but having studied some dentistry, as required at that time in the French service, he left the navy and took up the practice of that calling.

Both of these men had a great influence on a young American soldier, Josiah Flagg, who may be called the first really American dentist. Several of his interesting advertisements were shown, and in order to give an idea of the state of the dental art at about this period illustrations from the work by Maggiolo (1807) were referred to.

The writer now gave short biographical* sketches with portraits of the Greenwoods, Edward Hudson, Leonard Koecker, the Spooners, the Frenchmen De Chemant and Audibran and the first American to make a great reputation in Europe, C. Starr Brewster. Dr. Eleazer Parmly, who stood at the head of dentistry in America for over thirty years, was referred to, as was also the dental poet, Dr. Solyman Brown, and Ebenezer Merritt, who introduced the hand mallet. Particular attention was called to the life and labors of the organizers of the profession, Horace H. Hayden and Chapin A. Harris, and a brief account was given of Dr. James Taylor, Horace Wells, the discoverer of anaesthesia, John M. Riggs, Amos Westcott, Elisha Townsend, Edward Maynard, the Tuckers, Thomas W. Parsons, Robert Arthur and many others.

Coming to more recent times a short sketch was given of Joseph Richardson, McQuillen, Garretson, Thackston, Morgan, McKellops, Geo. H. Cushing, Allport, Barnum, Webb, Varney, Morrison, Bonwill, Thomas W. Evans, J. Taft, H. H. Burchard and others.

In order to show the international character of our dental development portraits were given of Magitot, Karl Wedl, Sir Richard Sir John Tomes, Charles S. Tomes, Sir Edwin Saunders, S. L. Owen, Sir John Tomes, Charles S. Tomes, Sir Edwin Saunders, S. L. Rymer, Dr. John Smith of Edinburgh, J. P. Michaels of Paris, Guerini of Naples, Grevers of Amsterdam, J. Leon Williams, Black and Miller.

[The lecturer referred to the historical investigations of Dr. Vincenzo Guerini of Naples, Italy, whose remarkable work on the "History of Dentistry From the Earliest Times to the Beginning of the Nineteenth Century," is to be published, within a few weeks, under the auspices of the National Dental Association.]

*Biographies of many of these pioneers are to be found in the DENTAL REVIEW by Dr. Thorpe.

SOME OF THE DISEASES OF THE SOFT TISSUES OF THE MOUTH.

BY THOMAS L. GILMER, M. D., D. D. S., CHICAGO, ILL.

The diseases of the soft tissues of the mouth are far too numerous to consider, except in a very cursory manner, in a paper of this kind.

*Read before the Chicago-Odontographic Society of Chicago, March, 1909.

The aim of the program committee in having such a subject presented was a desire on their part to stimulate the younger members of the society to increased study of the pathology of the mouth, unassociated with the teeth, realizing that there is a danger to which all specialists are liable, namely, of circumscribing their study, limiting it to the few things they do meet, to the neglect of matters nearby, or perhaps others more remote of equal importance, which, if not considered, may render their service less valuable. Grave results are not uncommon from lack of better knowledge of the pathology of the mouth. This is equally true of those in the general practice of medicine as well as the dentist. The mouth is a fruitful source of disease which may be far reaching in its ultimate results. Very recently I saw a case which shows the importance to the dentist of more knowledge of oral pathology. In this case the patient had carcinoma of the jaw, with suppuration of the gingivæ and loosening of the teeth. The dentist in attendance, supposing it a case of the so-called pyorrhea alveolaris, made the usual treatment for this disease, continuing it over several months, the conditions gradually growing worse. The patient finally died. Had the condition been recognized earlier, there is reason to believe that the life of a valuable member of the community, through an operation, might have been extended.

Diseases of the soft tissues of the mouth in a general way may be classified under two heads, viz.: diseases primarily having their origin in the mouth, and diseases having symptomatic or secondary expressions in the mouth. Some diseases, it is true, may be primary in the mouth, or may be primary in more or less remote parts of the body and have secondary expressions in the mouth. Syphilis is one of this type, tuberculosis another.

There are some diseases of the mouth about which there is a doubt as to whether they are primary or secondary to the oral cavity. The so-called canker sores is one of this type, pyorrhea alveolaris and leukoplakia buccalis are others.

There are many diseases of the mouth definitely secondary, among these are diabetic gingivitis, mercurial stomatitis and plumbism. Differentiation of some diseases is difficult in any part of the body outside of the mouth and equally difficult in diseases of the oral cavity. Much observation and careful examination is necessary if one becomes a good diagnostician. Differentiation is especially difficult in some diseases of the mouth even to the most skillful and greatest

painstaker, though he be well versed in pathology. The pathological laboratory must, in many instances, be brought into use as an aid, even to the best clinical observer.

CANKER SORES.

The ulcers generally known as canker sores are among the more common pathological conditions of the mouth, if we except the diseases dependent upon the teeth. These ulcers are generally single, though occasionally there may be two or more at the same time. They seem to appear suddenly and are quite persistent unless given suitable treatment. Their site is most commonly at the duplicature of the mucosa of the cheek and the gums, though they are occasionally seen on the floor of the mouth and on the edges and under surface of the tongue. They vary in size from that of a grain of wheat to that of a small sized bean. In shape somewhat lenticular or oval. Their depth varies, but can never be considered superficial. Their margins are rather well defined, but not so markedly as are chancrous ulcers of similar tissues, neither are they so irregular as are lupus ulcers of the mouth. The mucosa for a quarter to a half inch from the ulcer is of a deep red color. The base of the ulcer is overlaid with a grayish white necrotic covering, not unlike that found in syphilitic ulcers in the mouth. When this coating is removed, a granulating surface is exposed, which is extremely sensitive to touch, but bleeds but slightly, if at all. The lympathtics doing police duty over the area involved do not, so far as my observation goes, become involved. These ulcers are so distinctive in their appearance that they can hardly be mistaken for any other lesion.

As to the nature and etiology of canker sores, there has been, and still is, some difference of opinion. Pusey and other prominent dermatologists believe them to arise from trophic disturbances and class them under the head of herpes simplex. That herpatic ulcers of the mouth are in some way associated with gastro-intestinal disturbances there seems little doubt, since they seem to accompany or follow gastric attacks in persons predisposed to herpes. Slight trauma may be the exciting cause.

Local treatment of herpetic ulcers of the mouth is generally curative. If they are touched with silver nitrate, they respond quickly. If the ulcer is cleansed with peroxid of hydrogen, then dried, and a 20% solution zinc chlorid applied, a cure usually follows one application.

Herpes labialis or cold or fever sores, as they are known by the laity, have a similar origin. They differ in appearance principally on account of location and tissues involved. Herpes of the lips and occasionally of the gums, sometimes follow dental operations and cause uneasiness on the part of the patient, he attributing this condition to infection from unclean armamentarium used by the dentist, when, in truth, the patient is of a herpetic diathesis, and under such circumstances a slight irritation only, in such locations, being sufficient to excite the condition. Herpes labialis and herpes gingivalis in character are much more alike than are herpes labialis and canker sores. Those of us who have practiced in malarial districts know that patients suffering from what is known as chills and fever are very subject to herpes labialis; the toxic elements accompanying, seemingly, are prone to cause herpes at the muco-cutaneous junctures about the mouth.

Herpes gingivalis is best treated by thorough cleansing with peroxid of hydrogen and painting with compound tincture of benzoin. A mouth wash, composed of a saturated solution of boracic acid to which one drop of the oil of cassia to the ounce of the solution is added, may be used to supplement the peroxid and benzoin. Herpes labialis is benefited by the application of tincture of camphor or alcohol, and while yet moist from the application, a coating of boracic acid powder may be dusted on, which acts as a dryer and protector. In case of cracks in the lips, collodion serves to immobolize.

SYPHILIS.

Primary expression of acquired extra genital syphilis is found on the lips, tip of the tongue and the pharynx. In these locations chancre may appear first as a papule, which ulcerates. Indurated neoplastic areas surround the chancre. The lymphatics, submental or submaxillary, whichever are associated with the area infected, are soon involved, enlarge and become indurated. Multiple chancre is rare, but is sometimes seen and is due to two or more infections at the same time.

When chancre of the lips and tongue becomes eroded and ulcerates, it enlarges and may simulate in appearance epithelioma, but the much more rapid growth of chancre, together with the earlier involvment of the lymphatics, the age of the patient and the absence of the characteristic odor of ulcerating carcinoma, serve to aid in differentiation. In case of doubt, the microscope and antisyphilitic therapy

will give a positive differentiation. Up to about the sixth to twelfth week after the appearance of the chancre, the physical condition of the patient may remain normal, when the secondary stage, if no treatment has been instigated, will appear, which is indicated by fever and a rash, or the rash may proceed the fever. Simultaneously with the rash and fever mucous patches occur either on the lips, tongue, soft palate, and on the inner surface of the cheek, or indeed on any part of the mucosa of the mouth, regardless as to whether the disease originates primarily or secondarily in the mouth. Mucous patches differ from canker sores in that they have more clearly defined margins and are not so painful to touch and the immediate area is not so hyperaemic.

Gumma marks the third stage of syphilis. These may be found on the lips, tongue, buccal mucosa, hard and soft palate. They may appear soon after the secondary symptoms or be delayed for two or three years. These may first appear as hard bodies or nodes under the mucosa. Later they may increase in size, become more superficial with a tendency to break down and ulcerate. When they appear in or over the hard palate, the bone underneath may become involved and extensive necrosis of the palate and nasal bones follow. Subperiosteal gumma are especially destructive of bone. I have seen the soft palate completely destroyed from ulceration of gumma in that locality.

The tertiary stage of syphilis is generally supposed to be non-infective, however, such good authority as Osler says that gummata may be infective, therefore dentists should be on their guard in the treatment of syphilitics at whatever stage lest they infect themselves or their patients.

Gumatous nodes in the periosteum, bones and tongue may be mistaken for carcinoma or sarcoma. Here also the microscope and anti-syphilitic treatment afford the most efficient means of differentiation.

TUBERCULOSIS.

Tuberculosis is occasionally seen on the mucous membrane of the mouth, and also on the lips and tongue. Generally speaking, lupus of the mouth is a secondary affection, but may be primary in this locality. If the lips are involved in lupus ulcers they generally originate in the contiguous skin and reach the lips through extension of the disease from the skin to the lips. Such ulcers may be extensive and are sometimes similar in appearance to chancre or epithelioma.

It is less like chancre than epithelioma in that the tissues adjacent to the ulceration are less indurated than in the former and it has rough irregular margins. It is also much more painful to the touch and is multiple, which is rare both in chancre and epithelioma.

When tuberculosis attacks the tongue the ulcer is generally seen on its lateral edges, posterior to the tip, while chancre usually attacks the tip of the tongue. The margins of lupus ulcers of the tongue are uneven, mouse-gnawed as they are sometimes designated. They are painful to touch, which is not usually the case to the same extent in chancre or carcinoma. The lymphatics are not so early involved in tuberculosis as in chancre of the tongue, and the ulcers do not respond to the iodides.

I have seen but three cases of tuberculosis of the mouth, one of the tongue, one of the sublingual salivary gland, and one an extensive involvment, including a part of the lips, the mucosa of the cheek, the soft palate, the tongue, and a portion of the pharynx. In the tongue case there was a large, deep ulcer on the side of the tongue, in the sublingual gland patient the entire gland was destroyed, the ulceration extending up to the floor of the mouth, leaving only a covering of the mucous membrane simulating ranula. On opening into the enlargement in the floor of the mouth, I found large quantities of a grayish debris. The microscope showed tubercle bacilli. The extensive case referred to in which so much of the tissue of the mouth was involved, was seen in conjunction with Dr. Pusey. In this case the ulceration was rather superficial, very painful on taking food. Salivation was profuse, so much so that there was constant drooling. So sensitive was the mouth that Dr. Pusey found it necessary to recommend cocain application before the patient partook of food, that he might have sufficient nourishment, which, without the aid of the local anesthetic, was almost out of the question. No treatment employed perceptibly benefited the patient, so he was sent to Arizona with the hope that climatic conditions there might at least ameliorate his condition, but the change did no good, as he died soon after his arrival. In this case diagnosis was difficult as the clinical aspect did not indicate tuberculosis, but microscopic section of parts of granuloma from the posterior portion of the mouth showed the characteristic histological formation found in tubercle granuloma. This, with the demonstration of tubercle bacilli, furnished conclusive evidence as to the nature of the disease.

Lupus erythematosus of the lips is a comparatively uncommon disease, and one very difficult of diagnosis. I have seen but one such case, and this through the courtesy of Dr. Pusey. Pusey in his recent great and comprehensive work, "The Principles and Practice of Dermatology" says of lupus erythematosus of the lips: "Occasionally lupus erythematosus appears upon the mucous membrane contiguous to involved skin, and lesions may be found on the vermilion border of the lips, in the mouth, in the nose or on the palpebral conjunctiva." When I saw this case the greater portion of the lower lip was involved. There was no perceptible ulceration. The normal bright red of that portion of lip involved was changed to a light ashy pink, and there appeared to be considerable atrophy of the diseased part, with slight epithelial desquimation at the edges of affected areas.

LEUCOPLAKIA BUCCALIS.

Leucoplakia buccalis is a disease of the mouth and tongue, with an etiology obscured. From the large number of instances in which leucoplakia is found in the mouths of persons with a history of syphilis, it would seem that it may be a sequel of lues, but no one has been able to definitely determine that syphilis has a positive causative relation to leucoplakia. A current opinion also prevails which is quite well substantiated, that carcinoma frequently starts in the site of an old leucoplakia. I have seen two such cases. Many cases of lecoplakia buccalis have come under my observation and, with few exceptions, I was able to elicit a history of syphilis.

I have seen it on the buccal mucosa, on the buccal surface of the gums, on the tongue, floor of the mouth and gums combined, also on the lip as an extension from the buccal mucosa. In some of these cases the epithelium in patches was blanched to a bright white and the affected area elevated; in others the epithelium was only whitened, with no elevation. In all cases I have seen, the patients were excessive smokers, but the clinical aspect is quite different from the smoker's tongue or smoker's palate. Occasionally we see in the mouth of excessive smokers, especially is this true of pipe smokers, a more or less whitening of quite extensive areas of the tongue or hard palate, or both, but the appearance is very different from that of leucoplakia patches. In the smoker's tongue the epithelium is of a brownish white rather than the clear white of leucoplakia. It has more the appearance of a cooked condition and the area involved is not in patches as

in leucoplakia, but rather a continuous extensive change covering broad areas of tissue.

In some cases of leucoplakia without treatment the condition seems to disappear spontaneously, while in others it persists, resisting all known treatment. I have removed it surgically to see it return. I have sent several cases to Dr. Pusey for treatment by the X-ray, and under his skillful treatment the condition has disappeared. I am inclined to believe that the cutting off of all irritants, such as smoking, and exposure to ray energy offers the greatest hope for its cure.

There is no other affection of the mouth that presents the same clinical picture that does leucoplakia. Eczema of the tongue or geographical tongue, as it is sometimes called, produces a "desquimation of the superficial epithelium of this organ in circinate patches," and perhaps resembles leucoplakia in some slight degree, but the resemblance is feeble, if at all. Leucoplakia is painless, may be overlooked by the patient, and there is no general systemic involvment accompanying it, unless it becomes complicated with cancer. I have recently seen an extensive case of leucoplakia in a man of forty years of age, involving half of the palate, the upper gums on one side, the buccal mucosa adjoining, and a part of the lips. An interesting complication in this case was a large papillomatous growth, with long epithelial tufts in the center of the largest patch of the blanched epithelium. It was situated immediately over the left upper alveolar ridge near the location of lost first and second molars. The entire papilloma was fully as white as the surrounding epithelium. Since carcinomatous growths often appear on the site of leucoplakia, the diagnosis should be made early and an effort made for its cure.

ACUTE ULCEROUS GINGIVITIS.

A comparatively rare disease of the mouth to which I have given the name acute ulcerous gingivitis, and one not before described by any one other than myself, so far as I know, attacks simultaneously the gum margins on their buccal or labial aspect about two, three, or possibly four teeth only, at the same time. These ulcers seemingly come suddenly, quickly destroying the gingivæ down to the alveolar process, but seemingly not invading it, baring the roots of the teeth to this extent. The margins of the ulcers are everted crater like, somewhat similar to chancrous ulcers. The base of the ulcers are overlaid with a grayish white covering. When this covering is removed

the granulating surface bleeds freely. The lymphatics related to the area become enlarged, and, unlike chancrous lymphatic enlargements, are tender. It is also unlike chancre in that the ulcers are exceedingly painful to touch. Salivation is much increased, the breath is fetid and, owing to the absorption of the toxic elements, there is a slight rise in temperature. The contiguous lingual gingivæ become reddened, but do not participate in the ulceration. The condition has been mistaken for syphilis. It persists under ordinary antiseptic washes, but yields promptly to local applications combined with small doses of mercurous chlorid frequently repeated. The ulcers should be cleansed with peroxid of hydrogen and the granulating surfaces protected by painting with compound tincture of benzoin. When the ulceration is controlled, the gum tissue destroyed is soon fully restored by granulation, leaving no evidence of the ravages of the disease.

As to the etiology of this disease, I have no knowledge. I have twice endeavored through cultures to find a clue to the nature of the condition, but as yet have been unable to find any other organisms than the staphlococcus and the bacterium common to the oral cavity.

References: Pusey, Osler, Bland Sutton, Stengle, Grant, Durck.

ANNUAL ADDRESS OF THE PRESIDENT OF THE ILLINOIS STATE DENTAL SOCIETY.*

BY DR. ARTHUR D. BLACK, CHICAGO.

This address will discuss the direct relation of the work of this Society and its component organizations to the individual members, and also refer to the effect of the work of the past five years on the broader general conditions in which the dental profession has a common interest with the public.

Preliminary to the discussion of the above, a review will be presented of certain changes that have taken place in the organization and conduct of this Society, to call attention to the fact that this body now differs from almost all other state societies, and even the National Dental Association, in that the period of actual activity and accomplishment of such organizations is limited to a few weeks in each year, while the work of the Illinois State Dental Society goes

*Read before the Illinois State Dental Society, Danville. May 11, 1909.

on continuously, not only every month in the year, but literally every business day in every month. This Society has come to be a great business association, conducted on good business lines. When attention is called to the fact that during the past five years the office of our secretary has sent out about fifty thousand pieces of mail each year, it may convey a better idea of the volume of business transacted. Each year definite plans of work are mapped out by our executive council, a budget is made of the cost of the various departments, and the officers and committees proceed with definite ideas of what is to be done. Our system of bookkeeping, including the presentation of statements to members of our local societies and the collection of dues, the transfer of same to the State Secretary, the transfer of all funds to the Treasurer, and the payment of bills by him on written orders by the President and Secretary, every item of which is carefully audited by a special committee and subsequently published, is one that insures a careful scrutiny by several officials and gives every member the opportunity to know much of the detail of both income and expense accounts. The adoption of these business methods has been necessary to enable the accomplishment of the plans undertaken. If the individual member will consider for a moment the amount of actual cash the society is spending on him personally in sending the DENTAL REVIEW, the *Monthly Bulletin,* in paying the traveling expenses of men to attend local meetings, in the clerical cost and postage in connection with the issuance of membership cards, certificates, and other notices, and will then think of the cost of the work that has been accomplished in the Postgraduate Course, the establishment of libraries, dental legislation, the constant campaign for new members, the publication of our transactions, and other matters of a general nature, he must agree that he is getting his money's worth. If we stop to consider that it costs nearly fifty dollars for printing, clerical work and postage to send a single circular letter to our members and almost twice as much to mail such a letter to all the dentists of Illinois, our members should appreciate the fact that the officers consider carefully the necessity and importance of each such communication and the members should do the same.

The office of our Secretary is scarcely more busy at any one time of year than another; there is as much going on in December as in May. The Secretary will be busy during the remaining weeks of May and June in closing up the actual work of this meeting. Considerable

time is required in July to locate and collect information regarding new men who have entered practice. Much of August may be occupied to advantage in the preparation of our large membership list for publication in the transactions, and in an appeal to delinquents for the payment of dues. In September much time is required in the preparation of the many printed forms to be used by both state and local secretaries during the coming year in the collection of dues and other business. An addressing machine, containing the name and address of each member, kept set up in type, is used in connection with this work, and each member's name is printed from thirty to forty times during the year. In October the principal work is the publication of the transactions; a letter may be sent to all eligible non-members at this time. In November the various blanks are sent to local secretaries, together with suggestions for the better conduct of those organizations. A receipt book is sent to each local secretary containing two sets of blanks, on each of which each member's name and address are printed three times, and these are arranged alphabetically for each local society. Statement blanks containing each member's name and address are also sent to each local secretary to mail to the members of his society. It should be remembered that most local societies elect new secretaries each year, and the State Secretary is necessarily required to conduct what might be termed a school of business correspondence, to familiarize them with the system of this organization. In this connection I am pleased to state that local secretaries generally are giving the Secretary of the State Society splendid support. In December begins the collection of dues for the ensuing year. It is necessary that a membership certificate and card be prepared for each member, a letter addressed to each, his subscription for the DENTAL REVIEW renewed, the payment of his dues recorded on the books of the Secretary, and his name put among the "live ones" in the addressing machine, all of which is no small task when applied to fifteen or sixteen hundred members. In January the work of preparation for the State Society meeting is taken up. The various committees are requested to begin activities or report progress and the plans assume definite shape. In February the Secretary makes his second appeal to local secretaries and members for dues, and with the assistance of the local committee, prepares for publication a special article regarding the annual meeting. In March the official program is prepared for the printer, and another appeal

is made to delinquents to pay their dues. A circular letter is usually sent to all eligible non-members at this time also. In April the final preparations for the meeting are made, including a general survey to be certain that the reports of various committees of the council and of many special committees are in readiness, and that all arrangements for the meeting are completed. The latter part of April and first days of May are devoted largely to the closing up of all of the accounts of the Society and preparation of official reports. During all of this time there is the continual grind of preparation and publishing our *Monthly Bulletin,* involving much correspondence and careful supervision of many details, printing office troubles, compliance with postoffice regulations, the ever changing mailing list and the addressing of envelopes.

Owing to the great variety and tremendous amount of work being done by this Society, there is a constant stream of letters from all over the country asking for information on every conceivable point in connection with the affairs of our Society and many associated matters of education, legislation, and other things. For example, the following are a few of these inquiries: The Secretary of the Kentucky Society writes for information regarding the "Illinois plan" of reorganization; the President of the Committee on Journal of the National Dental Association would like a list of the officers of all of the State Societies in the country and a list of all of the members of the Illinois Society. The Chairman of the Michigan reorganization committee wants a copy of our membership certificate; a certain dental supply house would like to exhibit at the meeting and writes regarding cost of space. A dentist in Iowa would like a copy like to know what he will have to do to secure a license to practice in California. Another writes that there is a new man in his town of the name of Jones, and wants to know right away if he has a license. A dentist in Brussels, Belgium, writes to ask all about our plan of classifying articles for our postgraduate work. A local society in the State of Washington wants a copy of the constitution of one of our local societies. The chairman of the reorganization committee in Wisconsin would like to know what should be done in a case in which a man who was already a member of their State society refused to join the local society formed in his district. Then there is a blank envelope containing a clipping from a newspaper in which one of our members offers "best sets for $8.00, with everlasting guarantee."

Possibly another member has been asked to give the school children of his town a speech and would like a few pointers as to what he should say. A member of the reorganization committee of the National Dental Association would like a copy of one of our component society charters. The president of the Mississippi Society wants information regarding the Illinois plan of organization. A member of the Pennsylvania Society writes for our views as to the proper action to be taken by a district society to become affiliated with the state society. Some one in Alabama wants to know all about the Postgraduate Course and how he can get the *Bulletins*. One of our members has moved to another county and would like to have his membership transferred; another is moving out of the State and desires a letter to the Examining Board of the State to which he is going, incidentally would like for the Secretary to find a man to buy his outfit and practice; another paid his dues to his local secretary a month previously and hasn't received the DENTAL REVIEW, and writes to know the cause of the delay. The committee on reorganization of the Oklahoma Society sends in a copy of a proposed new constitution and by-laws, with a request for suggestions regarding same. I am sure that our present secretary will tell you that there is hardly a day in the year in which several such inquiries are not received. These and many other things form a proper and natural part of the work which this great Society is doing, and each letter must be and has been answered as carefully and promptly as possible, not always by the Secretary himself, but in some cases by other officers or committeemen. As a matter of fact, questions of this kind often constitute the greatest tax upon the time of the Secretary for the reason that many of them are outside of the routine business and require personal attention.

Then there is much correspondence with the various local secretaries regarding preparations for and reports of meetings, the securing of men from other sections to attend meetings, the keeping of records of members and eligible men, etc. It is necessary that the State Secretary keep in close touch with the work of all of our local societies. He must keep records of their work, and must often be the actual director of local work by suggesting plans that will insure a good program and a good attendance. Such suggestions cannot be effective unless the Secretary has a correct knowledge of local conditions.

It is only a plain statement of fact to say that this Society has been doing a great work, not only in Illinois, but has been conducting a broad campaign throughout the length and breadth of the land, a campaign that properly belongs to our at present inefficient National Dental Association.

What is this Society doing for the individual member of the profession in this state? The answer must be a complex one; it involves dental education, ethics, business, the relation of the dentist to his neighbor, to the physician, to the public, and to politics. These have all been effected by the work of this Society throughout its existence, but to a much greater degree during the past five years. When this Society undertook the work of reorganization in 1904, no member of it then realized what we were in reality doing. It has required subsequent developments to enable us to see the things that we could not then see. We started at that time with the knowledge that there were in Illinois about three thousand dentists, about ten per cent of whom were members of this Society; that about half of this number attended all or a part of a three days' meeting once a year and had little in common during the other three hundred and sixty-two days. Even then this Society ranked first in progressiveness and actual accomplishment among the dental organizations of the world, not excepting any, and how it had previously accomplished so much with its limited membership will always be a source of wonderment. It can only be explained by one who is familiar with the men who have directed the work and thought of this association, and the writer feels that we should never allow a meeting to pass without honoring the names of Cushing, Dean, Swain, Judd, Kitchen, McKellops, Taylor, and others, now deceased, who gave their time and thought and energy so freely for the progress of the profession which they loved.

A careful scrutiny of the situation in 1904 showed the greatest irregularity in the geographical distribution of members throughout the state, no city being represented by more than a few, and many cities of good size without a member. Forty-four counties were not represented, and the entire section of the State south of the Vandalia railroad held but seven members. Good dentists who had been practicing for years in the same small towns were not acquainted, most of them had been told by patients of the others' "cut rates" and had seen results of failures and mistakes, without allowing themselves to realize that they had themselves done as badly, or even worse. Gen-

erally speaking, no common interests existed between the dentists of any community. This much was recognized when the work of reorganization was undertaken, and I believe I properly report the principal thought of the men who discussed the matter at the time, and I think I might associate the thought more closely with the late Chas. R. Taylor than any other man; that two things were necessary as a basis for whatever was to be accomplished, increased membership and the establishment of better professional relationship between the men of each community—good fellowship.

We started out then with a definite purpose, to increase our membership as an asset for power in all undertakings, to at the same time preach good fellowship and the possibilities that would result, and it was generally pointed out that these possibilities not only included a better chance to get to Heaven, but also a good boat in which to make the journey, and the leaving of a few provisions on shore for those remaining. The attempt was made to impress each dentist with the fact that so long as he practiced dentistry he should, with others, make dental society membership an asset which would develop for him, by coöperation with his fellows, much of benefit from the viewpoints of public service, education, enjoyment and business.

As is well known, we succeeded beyond our expectation the first year by increasing our active membership from two hundred seventy-four to more than twelve hundred and fifty, and the number has since gradually increased until this year it promises to pass the sixteen hundred mark. When we consider that most of our members have paid one dollar more in dues than in past years, it is rather remarkable that the membership has increased about two hundred. The principal credit for this excellent showing is due to the splendid work of the Secretary, Dr. R. J. Hood, and the President of the Chicago-Odontographic Society, Dr. F. W. Gethro.

The establishment of good fellowship has not been so easy, for its accomplishment not only involved the necessity of first getting the men of each community together, but of getting them so well acquainted that they would understand each other's peculiarities. Owing to the infrequent meetings held in some sections, to the changes in location of men, to the fact that some men have not attended meetings regularly, and also to the fact that there must necessarily exist many incompatibilities in disposition, likes and dislikes, ambitions

and jealousies, among groups of men, progress has been slow. But that progress in this has been positive and beyond expectation, will be acknowledged by all. Just in proportion as the men of various sections have come together frequently and have become better acquainted, has the establishment of good fellowship broadened, until today we have in Illinois a condition the like of which does not exist in any other state or in any other large professional organization, either medical or dental. During the past five years the writer has attended meetings of almost every local society in the state, and it has not been difficult to see the steady gain. This has been much more marked in some sections than in others, and there is yet room for improvement in all.

A discussion of the influence of this Society on the individual member resolves itself into a discussion of the work of the component society and that of the State Society as exerted through the component. In the development of our reorganization plan, the hope of success was placed with the component society, for under this plan the State Society can only be what its components make it. They are in reality the State Society. The benefits from the local society derived by any single member are naturally in proportion to his attendance and interest in its work. It has, therefore, been the policy of the State Society to do all that it could to assist the local societies in securing the best possible attendance. This has included the proper preparation of programs, good local arrangements for meetings and the sending of notices in ample time. The State Society frequently pays the traveling expenses of men to the meetings of local societies. Officers of many local societies will agree that their societies would not be in existence today but for the constant watchfulness and prodding of the State Society officials. The State Society, as such, is not, however, by any means entitled to all of the credit for the success of our local organizations, as many of them have gone along smoothly and successfully with very little help and few suggestions. In fact, many of the plans of helping local societies have been developed within the locals themselves, thus attesting to the interest of local men in their work.

Considering all of our local societies in a group, I should say that the greatest difficulty has been to get a sufficiently large percentage of men to take part in the literary programs. This led to the development of the Postgraduate Study Course in its present

form, and in it we have our greatest hope for the future. It provides the missing link in our entire system. It enables us to begin at the bottom in training ourselves to study and write and talk, while at the same time it enables us to accomplish practical and definite results. We need not conceal the fact that the dental profession contains a small percentage of literary men and orators; few men are so born, and there has been nothing in our training to develop them. The time has surely arrived, however, when the dentist who will be successful in the future must be more of a student than he has been in the past, and this Society has developed a plan which enables us all to start on the same basis, to do work that is easy of accomplishment by every one. It does more than this; it arranges our literature in such form that information on any subject may be quickly found and applied in daily practice. In this connection, dental libraries have been established in many cities throughout the state and these are being very largely used by our members.

If I were to sum up in a sentence the possibilities of individual advancement as a result of membership in our component societies, I would say that in proportion as good fellowship is advanced and as members attend and take part in the meetings, will each be benefited from every viewpoint, professionally, economically, morally.

There has been another decided result of the work of our State Society in recent years—the improvement of the standing of dentistry as a profession. I would like for each of you to think of this in your respective localities. Surely the work that you have done has attracted favorable comment from members of the local medical society, and there can be no question but that the reports of local meetings in the newspapers and the talk of these meetings between dentists and patients have done their share to elevate dentistry in the minds of our people. I believe that every legitimate means should be used to keep these things before the people in order that they may appreciate our efforts in their behalf.

In politics any organization is powerful in proportion to its numbers; we are therefore about six times as much of a factor in politics as we were five years ago, and the evidence of our work in politics proves it. Since this Society was reorganized, no appointment has been made on our State Board without the legislative committee being consulted, and we have, without very much difficulty, secured almost the exact legislation we have desired.

The Illinois State Dental Society today occupies a position of which we should be proud. The letters of inquiry that constantly come to our Society are the best evidence of our standing among the societies of this country. This Society is today wielding a much larger influence than any other dental organization in the world, and this is due to the fact that we started on a fair and sound basis, that there has been an honest endeavor to give every fellow a fair show, to push aside the ambitions of the few for the good of the many; and, more than all else, because a few hundreds of our members have become interested to the extent that they have really taken upon themselves the responsibility for the accomplishment of certain duties, which has resulted in our having a great crowd of pushers at the same wheel. The fame of this Society has extended over the entire country and no one can guess of the possibilities of the future if our men abide by the unwritten principles which have guided the destinies of this great organization in the past.

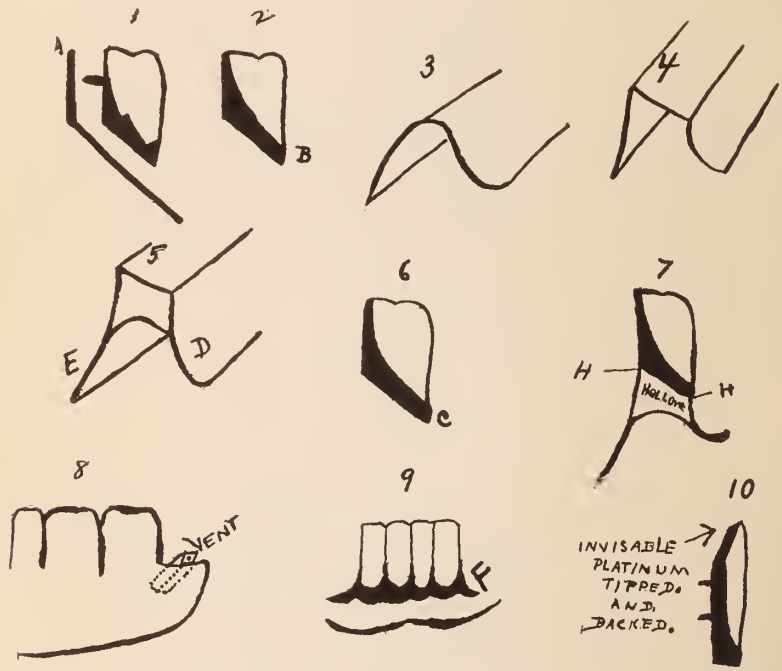
A FULL LOWER DENTURE ON A HOLLOW PLATINUM BASE.

BY W. A. HECKARD, D. D. S., NEW YORK.

The case was one in which the bite was one inch, thus precluding the use of continuous gum. Rubber would also be too heavy, and another objection to rubber by this patient was that it was almost impossible to keep it from feeling sticky all the time. Gold plates and rubber accumulate a stick sordes that is difficult to get rid of, while platinum is practically immune to this sticky feeling. So I made the platinum denture.

To my zinc die I swedged a 29 gauge platinum base, taking care to see that it was trimmed down to a pencil line I had drawn on the plaster model from the plate then being worn, which had been made of rubber on a platinum base and which had been nicely adjusted to the mouth until it was entirely comfortable. I backed up fourteen teeth with 34 gauge platinum, cutting at the corner of each tooth so that the edges could be burnished over the sides, as shown in Fig. 1. I tacked this backing to place with a small bit of pure gold at the pins, in open flame. I did this to each tooth. Then I made another backing of platinum, also 34 gauge, and bent it as shown in Fig. 1,

letter A. I did not lap this backing over as I did the first one, but allowed it to extend past, as shown, so that I could take hold of it with the pliers. Platinum tipped pliers, parenthetically, made of two pins from some cast-off Logan crowns riveted to the tips of a pair of iron pliers solves the problem quickly and inexpensively. You cannot afford to be in fear of spoiling a case by iron flakes getting in your work.



Next I made a backing of 22 k. plate gold, bending it just like the backing A, but not so large; in fact, but 1/64 inch larger than the tooth surface of the first backing (Fig. 1). I next placed the 22 k. gold plate backing in between the two platinum backings and holding this by the platinum extension mentioned before, in my pliers, melted the 22 k. gold plate as solder. Warming teeth gradually much time is saved in using the open flame as I did with these. If you will place a strip of platinum and pure gold together and a little solder between, 18 k., 20 k. or 22 k., I care not which, and solder the two strips together, you *will* see a warpage, but when you place platinum on both sides of the gold this tendency is offset and the

backing seems to hug the tooth closer than any backing I have ever seen. It looks as if the porcelain had been baked on the backing. I back bridge work facings in this manner, grinding them to a bevel at the biting edge. This tips the teeth unseen, and lends strength and insurance against breakage in mastication (Fig. 10). I next made made a 22 k. plate gold collar for each tooth. Figs. 2 and 6 show this and look almost alike, but should not and would not had an artist made the drawings. The small amount of platinum burnished over at B does not make much prominence, but when the gold collar is fitted around the tooth and soldered with 22 k. solder and then trimmed up neatly with a jeweler's scorper there is a slight roundness at C on the side and front of each tooth. I filed the sides tapering so that when the biting edges and cusps were lined up we had an appearance of a gold scollop. (See Fig. 9 F.) This had to be in the biscuspid and molar region, so I carried the effect to the incisors to balance things up, and carry out the scheme. Placing the platinum base plate on the model of the articulator (Fig. 3 shows a section at first molar), and then a tin plate, same gauge (29), on the platinum plate, I waxed these backed up teeth as shown in Fig. 6 to occlusion, substituted a fresh loop to the upper part of the Kerr articulator and ran investment material over the tips of the teeth far enough, so that when the investment had set, and the teeth were warmed a little, they were pulled away from the wax without disturbing it at all. I made a model of the wax, in plaster, and a zinc die of the plaster model. I swedged another piece of 29 gauge platinum to it, and got what is represented by Fig. 4. This inside swaging and the tin plate took care of two points, where the two plates paralleled and where the teeth come in contact fitted the better by the thickness of the platinum than they would have if I had swedged outside method. The plates paralleled at E D (Fig. 5). Placing some small pieces of pure gold around the entire edge of these two platinum plates, placed one above the other, it was an easy matter with a large bush flame to sweat the gold in between them at the edges. Then, placing it again on the model on the articulator, and bringing the teeth that we had fastened in the upper loop of the articulator, down on it, that filled so nicely at H H (Fig. 7) that I soldered it also "in the open" on the articulator. With a large bush flame blow-pipe in one hand and the oxy-hydrogen blow-pipe in the other, it is easier than it sounds. I used 22 k. solder labially and bucally, and 18 k.

solder lingually. A hollow base like this is not so liable to change shape invested or uninvested as a plain one-piece plate. In fact, I think a good point in favor of it being hollow is the advantage in soldering, and especially univested soldering. I had a vent that I closed the very last thing before polishing. The vent, in Fig. 8, was made of a square piece of platinum an eighth of an inch in thickness, a hole drilled in it and threaded, into which I screwed a threaded platinum wire tightly and burnished as I do my gold fillings. I use only smooth surfaces in packing, or condensing and welding gold fillings, never a serration. I believe a gold filling made after this manner is as hard as rolled or hammered gold, I mean hammered on the anvil; but that is another story, and I may say something about it another time.

Excepting pure gold, which is the same in the mouth as to cleanliness, platinum is the cleanest of metals for that purpose. So this case is a sanitary one. It was lighter than a gold plate with rubber attachment or a gold plate (full).

The tin plate and the vent should not be forgotten.

To replace a broken tooth, saw it out and set in a newly backed up one, and with a little investment over the biting edge of it and the tooth on either side, solder as a bridge as described above. No need to invest the whole thing. But do not forget to take out the vent plug before you solder.

In turning the blow-pipe on a backing of a tooth when I am backing up a tooth, I usually tease at the backing with the tip of the flame (bush flame and soft) for sixty seconds before I flow the gold or solder. I soldered the case I have been describing on the articulator in fifteen minutes from start to finish; very slowly, large, soft flame at first, passing at a distance at first and coming nearer and waving it by and on and off the case until I got it all heated up and the rest everybody knows, melted the solder with the small hot flame in my other hand.

SILICIOUS CEMENTS.*

BY W. V-B. AMES, D. D. S., CHICAGO, ILL.

For fear that there is a rather general impression that the so-called silicate cements differ wholly and totally from the phosphate

*Read before the Odontological Society of Chicago, March, 1909.

cements, I want to begin with the statement that the silicious cements of today are all oxyphosphates just as much as are the zinc cements with which you are familiar,—the silicious variety being oxyphosphates of calcium, modified by silica, and alumina in all cases, and other substances as the manufacturer is moved.

It will probably be of some interest to review the known attempts at the production of this kind of a phosphate. An early record of a tooth plugging and pulp capping material is the patent of William H. Rollins of Boston, Mass., application on which was made March 28, 1879. This was not an oxyphosphate but more of a hydraulic cement of the Portland variety, in which the setting depended on treating a mixture of calcium oxide and silicates with water, the water for the Rollins material containing some gelatinous silica. I mention this because this material has been cited as an early example of silicious phosphate.

The earliest record of a real oxyphosphate of the silicious calcium variety that I have been able to obtain, is the patent of Thomas Fletcher of Warrington, England, application on which was filed July 29, 1879, the same year. This specification calls for an acid solution of phosphate of tin, which will react with a compound prepared by fusing together lime silica and alumina. I am of the belief that the Fletcher preparation failed of marked success partly because of the instability of the acid solution of phosphate of tin. Another Fletcher patent of the same year calls for the same powder with an acid paste containing aluminum phosphate. The history of such acid pastes for dental cements, indicates negative value.

Some ten years later an oxyphosphate of the silicious calcium variety began to be shown by Dr. McGeorge of Corning, N. Y., and was later put upon the market by the S. S. White Dental Manufacturing Company as "Dentos." A few years after this "Archite" appeared through the Lee S. Smith Company, this also being of the silicious calcium variety. With these two efforts the principal fault appeared to be the inevitable shrinkage taking place in a mass during the setting process, and in the early material produced by Steenbock of Berlin, under the name Ascher Enamel, this fault was evident to a fatal degree. This Steenbock material is a silicious calcium oxyphosphate, said to be radically improved over any other possible material, because of a beryllium silicate ingredient. Since this many similar preparations have appeared, including Astral, Harvardid,

Smaltid, Hoffman's Enamel, Lorenz Silikat, Schoenbeck's Silikat, Ordel's Transparent Porcelain, and some others.

On February 12, 1906, an application for patent was filed in the United States by Josef Rawitzer of Charlottenberg, Germany, and patent granted same year. In this specification, the material being that known as Astral, Rawitzer says that a superior cement with reference to brittleness and shrinkage can be made by adding aluminum silicate prepared in a wet way to molten silicates of lime and aluminum, and it is on this preparation of aluminum silicate in a wet way, that the United States patent office granted letters patent, which seems a joke to the layman, as the wet way had no doubt been the method of preparing pure aluminum silicate in the making of previous similar preparations.

In the specifications for the patents of Steenbock on Ascher Enamel, issued in 1904, some extravagant claims are made for beryllium silicate as the distinguishing ingredient of his cement, and in advertising matter appearing from time to time, it is claimed that because of this ingredient his cement "stands as the only absolutely perfect filling material." It is not for me to pass on the value of the different silicious calcium oxyphosphates, but I feel safe in giving some working suggestions, which I believe can be followed to advantage with all materials of this class.

While I know that too extravagant statements have been made by manufacturers, which do not enhance the dignity of even a commercial pursuit, I am of the opinion that, while the perfect product is far from a reality, such advances have been made since Fletcher's first attempt that the prospects are encouraging. The makers have brought out their improved, and then their comparatively and superlatively improved editions of their original attempts. With the variety of shortcomings, among which we may mention lack of adhesion, shrinkage, and brittleness (causing chipping at edges), and a tendency of some materials to discolor badly in the mouth, I predict that this generation will not see all of the improvements in this particular field. I can predict this with plenty of courage and conviction, knowing that the ramifications of possible formulae are multitudinous.

I have worked on this problem in a desultory sort of way, being somewhat occupied otherwise, and it happens that I am able to produce a material which shows some adhesion, is free of shrinkage, so that in

its use undercuts are not called for, has a fair degree of translucency, does not discolor in even an unclean mouth, will withstand severe abrasion and acid and alkaline tests and has some desirable working qualities, but I have much work yet cut out for myself and would be very loathe to say that anyone today has produced the perfect material. What I can bring to you today of most value is the result of some tests of these cements in presence of sulphur compounds, or in the presence of the products of fermentation and putrefaction. These results, when noted by some of the manufacturers of such cements, may be the cause of some improvements.

Cavity preparation, where the use of cement is justified, should be, I believe, a very radical departure from the extension for prevention method, which has become gospel with the successful gold workers of today. For gold filling and for gold and porcelain inlays, enamel margins have properly been cut back very freely. For best results with a silicious calcium oxyphosphate I have offered a rule that any bit of enamel which does not render impossible the proper cleansing of the cavity and that does not yield a cavity margin too grotesque, should be retained. With an equipment of excavators such as Darby-Perry 1-2-3-9-10, the Gillett 4-5-6-7, Battle Ax 1-2-3-4-5-6, and others calculated to remove caries from inaccessible locations, proper cavity preparation is fairly simple after separation for proximal cvities, with the retention of enamel, which would be cut away for operations with some other materials. In making these statements we have proximal cavities of incisors mostly in mind.

In treating cavities in bicuspids or molars, reaching to the occlusal surface, if enamel can be retained which will give cavity edges removed from direct occlusion, and give an obtuse instead of an acute edge of enamel against which to finish the cement, the prospects are much lessened of having an odjectionable angular annoyance presented to the tongue from slight wear of the cement.

In connection with the making of silicious cement fillings, I want to call your attention to the value of oxychlorid of zinc as a cavity lining and as a pulp protection. Silicious cements are excellent conductors of thermal changes, so that a proper non-conductor will be often called for, and very often an intermediate layer having germicidal properties will be indicated. A silicious cement cannot be counted on for even the sterilizing properties of oxyphosphate of zinc because of its inert ingredients and because the compound is

not acted upon by the reagents present in the mouth. I think that oxychlorid of zinc fulfills the requirements more thoroughly and with fewer objections than any material available. It can be prepared to set quickly, especially with the application of heat. It is liable to be irritating temporarily, but can be used, I believe, over any pulp which is fit to be retained, with in rare cases a coating of some bland material directly over an almost direct exposure. I wish to especially emphasize the fact that silicious cements are prime conductors of thermal changes, if they have the desired texture.

Silicious cements should be manipulated with non-corrosive instruments. An agate spatula I consider the only proper instrument for the mixing process. Bone or ivory are so rapidly abraded that for that reason their use is contra-indicated, finely comminuted bone not being a valuable addition to a cement mass. A slab with a slightly etched surface I have found an advantage, as with a perfectly smooth slab the mass, as it acquires some stiffness, is apt to slide to an objectionable extent.

Some of the silicious cements are so susceptible to a hastening of setting from a rise of temperature, that a decided advantage obtains from working upon a chilled slab. A cement which would be objectionably quick setting when mixed on a slab of room temperature will admit of the incorporation of more powder and be rather slow of setting when mixed on a chilled slab.

I think that the cement can usually be inserted into the cavity with steel instruments without serious damage, as with cement of proper plasticity there would not be an abrasion of the metal when packing with an end thrust only, although I would consider an absolute result worth the expenditure necessary to procure non-corrosive points of proper shapes. For the filling of small proximal cavities some delicate instruments are called for which cannot be formed from agate or even bone or tortoise shell. Such may be formed from iridio-platinum and set into steel shanks. A practical makeshift is the coating of steel instruments with celluloid or cellulose, by dipping the instrument into a solution of a good collodion, such as the preparation found in the shops called "New Skin," and allowing the pellicle to harden before use. By cleaning the instruments while the cement is quite fresh, a good coating of good liquid court plaster such as that might be equal to many operations. Dr. Gillett suggests a solution of amber for the same purpose. For burnishing surfaces

for moulding to form, or for finish, agate is idea, but in a majority of cases, with proximal cavities of anterior teeth representing the majority, I would say the cement may be finally manipulated by steel burnishers with thin celluloid interposed between burnisher and cement. Vaseline I consider an abomination as an adjunct to the making of silicious cement fillings. The only excuse for vaseline known to me is that by its use a filling may be burnished to present a better appearance than it ever will after the grease disappears. Paraffin I find much more satisfactory for the lubrication of discs and strips than vaseline, cocoa butter or any such material previously recommended. It may be employed by drawing the strip or revolving the dise upon a lump of paraffin. While paraffin is not affected by acids in the cold state, I am satisfied that hot paraffin in the presence of a trace of free phosphoric acid will act as a neutralizing agent. For this reason it accomplishes a two-fold purpose, when applied hot to the surface of a newly made cement filling.

As has been said, the setting of some of these cements can be decidedly accelerated by a rise of temperature, without detracting from the integrity. After a cavity is properly full of properly condensed cement, heat may be applied as hot air, or hot paraffin, with the result of very quick setting. If the cement has been moulded beneath thin celluloid, the heat may be applied upon the celluloid, the strip being easily removed in a short time (probably about one minute) without distorting the cement surface, and without the need of vaseline coating, although the merest film would not be objectionable.

After finishing the hardened cement to the edges by cutting with knives, burs, strips or discs, a coating of paraffin is an advisable precaution against saliva for a few hours. As finished after this plan, I consider that the mass has crystallized to the extent of 90 or 99 per cent, the paraffin coating being advisable, however, as a protection during the final slight changes, which probably progress for several hours. I feel safe in saying that with some cements where it is advised to wait thirty minutes or more for the hardening, a better result might be obtained by very much curtailing the time, as I have found the hot paraffin scheme an apparent advantage with materials with which a long wait and no heat was directed. That disturbances of the cement after crystallization has progressed to a decided extent are wrong, needs no argument. Instructions furnished with some

silicious cements calling for this sort of a procedure have been the cause of many inferior results.

In the discussion of a paper read at the November meeting of the New York Odontological Society I took occasion to say: "In connection with this and some other cements there has been offered much faulty instruction as to manipulation. I do not believe that a rational process for mixing and using has yet been described, and I am sure that many fillings have been ruined by following the instructions calling for manipulation and disturbance of the cement mass during the setting process, this disturbance being carried out by means of vaseline coated burnishers. By stopping to think what would be the result of so interfering with a crystallization process, it is easy to see that this has been faulty instruction in the face of knowledge of such processes.

"I am sure that such a material should be mixed according to common sense processes, intermixing the materials thoroughly up to a point from which it might be expected that you would get the maximum strength, and then, after it has been placed accurately within the cavity and given proper form, by the application of heat and without further disturbance the crystallization or the setting should be hastened and caused to take place in as short a time as possible, consistent with the comfort of the patient. The mass should be finished after it has hardened, as much as is necessary, and even after infinite care it is necessary to finish these fillings to some extent. There will be secured by such a process a cement mass of an integrity superior to that secured by following any set of instructions as yet offered in connection with any marketed product and with fewer of the shortcomings in evidence."*

Actual and decided undercuts are not needed as generally as some instructions seem to indicate. Some silicious cements as prepared during their early history did need these undercuts because of their shrinking proclivities, for which reason there was no sane reason for their use. As made at present these same cements will not shrink when properly handled, therefore only good cavity form is called for. Since there is so little adhesion with some makes, at least parallel walls are needed with such, while if it is found that some preparations show some adhesion, then only fair cavity form will be needed as with any other adhesive cement. As to results, I have

*Dental Cosmos, April, 1909, p. 464.

seen some sufficiently creditable to encourage one to proceed cautiously. I feel warranted in saying that the time has passed for cutting back radically the enamel margins about a small proximal cavity for the insertion of a porcelain inlay, and for the management of labial and buccal cavities, these cements when free of the tendency to shrinkage and discoloration, are almost ideal. It is just these tendencies, shrinkage and discoloration, which must be eliminated or proven to be non-existant, before these materials can be accepted as practical filling materials.

Shrinkage, which was the vital fault with some early materials, has been eliminated I believe, in the materials most prominently with us today.

Discoloration of fillings, otherwise satisfactory, has discouraged many operators, or caused the abandonment of silicious cements.

As an example of what one may hear and read today regarding silicious cements, I quote from page 361 of March, 1909 *Dental Cosmos,* where Dr. A. C. Brewer of Baltimore says:

"In regard to the silicate cements that are being used so much today, it seems to me that the profession should be warned against them, especially the younger men, who take the superiority of the cements for granted simply because the manufacturers say that they are a permanent preparation. I have tried them under all conditions, with the greatest care and with all kinds of instruments. While some of these cement fillings are satisfactory, a large percentage of them leak and turn dark, and sometimes the whole filling discolors, beginning from the bottom. A material with which we cannot be sure of definite results, or of results that compare with those of porcelain, gold or amalgam, should not be used or advocated by us. I am not judging from my own experience, but have seen the same results from the hands of operators who are enthusiastic; in many cases the work looks very well, but other cases are failures. Let us be careful and conservative about discarding old methods that we know to be good, even though they require longer time and harder work."

In some early tests of these cements for discoloration, by subjection to sulphuretted hydrogen, results were obtained which led to erroneous conclusions as to the comparative value of different specimens, because of unrecognized conditions which are often of the utmost importance. In testing Ascher Enamel, for instance, the white or No. 6 would show no discoloration, and some other shades prac-

tically none when submitting pellets presenting continuity of the original surface, while in later experiments, in submitting pellets having abraded spots and broken edges, there would be a marked discoloration of all numbers except No. 6 (white), which stain would penetrate to a considerable depth and be ruinous to the texture. Some specimens, such as Schoenbeck's and Ordel's, exhibited discoloration, with or without abrasion of the surface, even in the white variety, but the stain was upon the mere surface only. Another peculiarity developing in the course of the tests was that with the Ascher, the stain was permanent after transferring the pellet from the sulphid solution to plain water, while with Schoenbeck's and Ordel's for instance, the surface discoloration proved to be soluble in water and would entirely disappear in a short time.

Of all specimens tested, the Ascher was in a class by itself in behavior in this respect, all other specimens showing surface discoloration only, and this surface stain being more or less soluble in plain water. As to an unbroken surface of Ascher cement being more resistant than a surface resulting from fracture or abrasion, I will not offer a theory.

The producers are probably aware of this advantage, since they lay much stress on retaining the original surface. Since the actual original surface is so transitory, many unsatisfactory results are accounted for in the light of these tests.

SYNOPSIS OF THE DISCUSSION BETWEEN KENNETH GOADBY AND W. D. MILLER ON MICRO-ORGANISMS IN DENTAL CARIES.*

BY J. E. HINKINS, D. D. S., CHICAGO.

Kenneth W. Goadby says: "The question of dental caries involves many issues, and more particularly those relative to the etiology of the process. It cannot be placed in the same category as those diseases which modern research has shown are due to specific micro-

*Read before the Odontological Society of Chicago, April 13, 1909.

organisms; there is no specific organism of dental decay. That the destruction of tooth tissue is due to the activity of bacteria has been placed on a scientific basis by the research of Miller, whose admirable pioneer work is so well known to all, but at the same time, although fully appreciating Miller's work, we must refrain from considering it as final. From the very nature, and the wide field involved, the work is of necessity but pioneer.

The results, admirable as far as they go, were obtained with impure cultivations, thereby introducing one of the greatest sources of error with which bacteriological work is beset. Under these circumstances it is of great importance to bring into focus the many side issues connected with the problem, and to determine, not the specific organism, but the classes of organisms, their biological, biochemical and other characters, before we can make any further progress in the true study of dental caries.

In examining the biological characteristics of organisms which are to be found in caries, and studying their various reactions, I find that the bacteria present in tooth decay fall into three groups:

(a) Bacteria which produce acid.

(b) Bacteria which liquefy blood serum.

(c) Bacteria which produce pigmentation.

The solution of the lime salts of the tooth is brought about by the acid-forming organisms, which in all cases are the prime movers in the process. The lime salts being removed, the liquefying organisms are enabled to digest the matrix of the dentin, whilst, *pari passu,* the pigmentation of the softened tissue takes place. It follows, therefore, that the chief points to be investigated in the organisms of dental caries are three in number—acid production, liquefaction, pigmentation; and an organism that does not possess either of these qualifications cannot be admitted as a cause of the decay. We are thus enabled to eliminate from the innumerable species that are to be found in the buccal cavity or in decaying dentin all those that do not bear a distinct relation to the process under consideration, and which, although often to be found in conjunction with those causing the disintegration of tooth substance, are only adventitious. The acid-forming organisms naturally deserve the first consideration.

We must, in the first place, guard against the supposition advanced by some, that all organisms are capable of acid production under given favorable conditions, more particularly so as it is a com-

monplace bacteriological fact that the usual result of the growth of an organism is an alkalin reaction in the culture medium, and that certain organisms only are enabled to reverse this condition, and to produce an acid reaction counterbalancing the usual alkalin condition. Further, some organisms, many of them well-known species, produce a very large amount of alkalinity even in media containing sugar; an organism in particular that I have isolated from the mouth on many occasions does this, a point of much importance in relation to earlier work on dental caries; the cultures used being impure and the one class of organisms neutralizing the products of the other, a very eloquent argument for the use of pure cultivations to which the pioneers in the field appear to have been deaf.

I have not considered it necessary to repeat Miller's experiments upon the action of acid-forming organisms at present, but I think it necessary to note some of the more commonly occuring organisms where acid production is an established fact, bacteria whose constant occurrence in dental caries cannot be looked upon as merely accidental.

In June, 1896, Dr. Washbourn and myself read a paper before this society, in which we laid especial stress upon the presence of streptococci in all healthy and unhealthy mouths we had examined, and we also called attention to the rapid acid production by that organism, e. 2., Strep. brevis of Von Linglesheim.

I am able to entirely confirm the statement we made then, and I think there is sufficient evidence to place this streptococcus as the most frequently present of all mouth bacteria, as I have obtained it in every one of 500 mouths examined, as well as in 20 cases of dental caries, both on the surface and in the deeper layers when decalcification was progressing.

I must point out at this stage of our inquiry that the question of examination of superficial and deep layers is of first importance, and I have found, in all cases examined, that by far the larger quantity and species of organisms are to be found in the superficial layers, a fact naturally contingent upon the general bacterial conditions of the mouth. The method adopted for obtaining cultures from the deep layers was similar to that used in making cultivations from the bodies of infected animals.

Extracted teeth were used in all cases to minimize the difficulty of sterilization, red-hot instruments being the only reliable method. Thus:

1. The tooth was taken to the laboratory immediately after extraction and the superficial layers of decayed dentine seared with a hot instrument.

2. The surface was next removed with a sterilized instrument and the fresh surface again seared.

3. Another layer was then removed and cultivations made as well as coverslip preparations.

By this procedure surface contamination is avoided, and the organisms isolated are those that occupy the van of dental decay in the deep layers.

So far I have only isolated from these deep layers two organisms which occur either together or singly in every case.

The one is the streptococcus brevis alluded to above, and which, as already stated, produces considerable quantities of acid and which grows with rapidity upon media containing starch and sugar.

He now speaks of a second of two organisms and quotes Arkövy of Budapest. Arkövy also gives a list of organisms found in dental caries which is most confusing, as the organism placed second on the list is of extreme rarity in the mouth (E. pyocyaneus), whilst the organism placed eighth is one which has only been found once in the mouth by Dobizyniecki (see *Centralblatt für Bak.* XXI., 1897). Such a list is of small value, for reasons already pointed out. A list more to our purpose is one of the acid-forming organisms which are found in dental caries, and in order of their average frequency. Arkövy's list does not assist us here, as it is relative to the frequency of organisms in alveolar abscess, not in dental caries.

Miller's meager biological characteristics leave us quite in the dark as to most of the organisms isolated.

One of these, micrococcus nexifer, is without doubt the ordinary mouth streptococcus (S. brevis).

Another, as Miller points out, probably V. Finkler Prior.

A third, bacillus E of Miller, I have not as yet observed.

Vignal and Galippe described six varieties of organisms from decayed teeth (L. Odontologie, Mar., 1889) acid production not referred to. One of these organisms, a coccus, is probably Sarcina alba.

Vignal's researches deal more with mouth bacteria than with dental decay. He places the two staphlococci (aureus and albus) last on the list in point of frequency.

Black claims to have found staphylococci much more frequently, also micrococcus continuous (streptococcus brevis).

Netter only found Staph. pyog. aureus in 7 cases out of 127.

Biondi describes a staphylococcus, staphylococcus salivarus pyogenes, which resumbles the S. aureus in many ways, but certainly differs from it in many respects.

I have found a staphylococcus closely resembling that described by Biondi in many mouths, and I am of opinion that it is this organism many observers have classed as the S. py. aureus.

These are a lot of experiments on bacteria in dental caries, and gives the following conclusion: I am of the opinion that the arguments and experiments adduced prove that the classification of the organisms found in dental caries falls under the three headings I suggest, and that the grouping brings the clinical and bacteriological problems into phase. And finally, that progress in the subject can only be made if the above system is adopted."

(*Transactions of the Odontological Soc. of Great Brit.,* 1898-99.)

Miller (W. D.) says: "My attention was recently called to a communication entitled "Micro-Organisms in Dental Caries," by Kenneth W. Goadby, L. D. S., in the June number (1899) of the Transactions of the Odontological Society of Great Britain, in which the author, while recognizing the 'admirable pioneer work' done by me, characterizes my work as lacking method throughout, since, in describing a new organism I gave perhaps two or three cultural peculiarities and nothing else.

This criticism seems to me to be not quite just, and perhaps uncalled for, in view of the fact that I have never undertaken to make a thorough study of the micro-organisms of dental caries. My first cultures were made before the extensive introduction of solid culture-media by the old fractional method, and the succeeding ones were made on gelatin, as agar-agar was not in use at that time. I did not incorporate these experiments in my book on the "Micro-Organisms of the Human Mouth." for the reason, there stated, that I did not consider them "sufficiently extensive or conclusive."

Besides this, the work that I did from 1880 to 1890 covered such an immense field that it was quite impossible for me to attempt to make a thorough study of all the scores of different kinds of bacteria that came under my notice. I have myself repeatedly criticised my mistake in trying to do too much (l. c. p. 84). However, it was not

at that time so much a question of classifying and thoroughly studying the different kinds of bacteria met with, but questions of a more general nature that demanded attention; and in my book and various communications in the dental journals I laid the foundation for as much work as all the bacteriologists in the ranks of the dental profession may be able to accomplish in many years to come. For reasons which I need not state here, I have not been able to take any part in the investigation of these questions since about 1893, in particular not being able to do any microscopic work, and have often been obliged to allow criticism and misinterpretation to remain unanswered. In Mr. Goadby's communication some statements are made which are not in strict accordance with facts, while several points are brought out without recognizing the fact that they were dealt with by me very many years ago, when dental bacteriology was in its infancy.

Mr. Goadby says: "The results, admirable as far as they go, were obtained with impure cultivations, thereby introducing one of the greatest sources of error with which bacteriological work is beset." I fail to comprehend this statement, from whatever point of view I look at it. Here in Germany the charge of working with impure cultures is looked upon as about equivalent to that of ignorance and incompetency, and is not made without very potent reasons. Apart from this, the statement is in general hardly accurate and totally misrepresents me in particular. Impure cultures or mixtures become a source of error only when they are dealt with as pure cultures, which I have been as little guilty of as Mr. Goadby himself. On the other hand, there is a possibility that there may be a source of error in pure cultures when we rely upon them alone for our knowledge of what takes place in the mouth under totally different circumstances. I have made many experiments in which the object was to imitate as nearly as possible the conditions in the human mouth, or where it was designed only to determine what takes place in mixtures of saliva with various foods. Here I should hardly call it a question of cultures at all, either pure or impure, and, at any rate, there is no particular source of error in the fact that there are various kinds of bacteria in such mixtures.

Again, in answering the question which I first put, "Is caries the result of bacteritic action?" as well as in my experiments for producing caries artificially, I attempted to imitate the conditions found in the human mouth, where we never have pure cultures. I did not

assume to be working with pure cultures, and there was no source of error resulting from such an assumption. No one understands better and applied the principal of pure culture more strenuously than myself, and where the attempt was made to determine any point relative to the biology of a particular organism—in other words, where pure cultures were called for—I invariably used pure cultures. In this connection I may further state that I also produced artificial caries more than seventeen years ago by the action of a pure culture of a pleomorphous bacterium.

Aside from these facts, I am not aware of a single error in my work which may be accounted for in the way suggested by Mr. Goadby.

Mr. Goadby's statement that I have relied upon morphological differences alone for determining new organisms is equally inaccurate.

In some of my earliest communications I expressed the opinion that only acid-producing bacteria are to be found in the deepest portion of carious dentin, whereas, more superificially, both such as produce acid and alkali might be present, a view which seems to be confirmed by the investigations of Mr. Goadby, though further experiments are necessary to definitely clear up this point. I very naturally, as it appears to me, recognized two stages in the process of caries of dentin—one of decalcification and one of solution of the decalcified tissue. The point has also been repeatedly brought out by myself and others that among the bacteria concerned in the causation of decay of the teeth there are some which produce acid, some which liquefy the decalcified dentin, and some which do both. The relation of pigment bacteria to the discoloration usually associated with decay of the teeth into (a) bacteria which produce acid, (b) bacteria which liquefy blood-serum and (c) bacteria which produce pigmentation presents, therefore, virtually only an indorsement of pioneer views. In my opinion, however, any attempted classification of the bacteria of decay of the teeth, to be complete, would here be extended so as to contain a rubric for bacteria which both produce acid and liquefy blood-serum, a class which undoubtedly has representatives in the mouth, and to which Goadby's yellow bacillus must be considered to belong, since it produces "well-marked acidity," in milk and also liquefies blood-serum.

Furthermore, if we were to consider pigmentation as an essential feature in caries, we would require rubrics for those which produce acid and pigment, for those which liquefy blood-serum and produce

pigment, and for those which possess all three properties, as does the yellow bacillus.

The classification is also not quite fortunate in introducing blood-serum as a criterion of the digestive power of bacteria for dentin, since nothing short of cultures on dentin itself will ever absolutely prove whether a particular bacterium has the power to digest dentin or not. For this reason the pioneer classification of bacteria of decay into (a) bacteria which produce acid, (b) bacteria which liquefy the decalcified dentin, and (c) bacteria which both produce acid and liquefy dentin, appears to me to be more to the point than Mr. Goadby's. Again, in testing the power of a bacterium to liquefy decalcified dentin we should put it under conditions as similar as possible to those found in the mouth, since a bacterium which does not liquefy dentin out of the mouth might do so in the mouth where the dentin is soaked with juices of most varying composition. Mr. Goadby himself observed that a non-liquefier of gelatin became a deliquefier on addition of potato-water to the gelatin. Suspending slices of decalcified dentin in the culture-medium brings the conditions somewhat nearer to those in the mouth.

It furthermore lies quite within the range of probability that a number of different kinds of bacteria together may accomplish results as to the decalcification or digestion of the dentin which the individual species alone could not bring about, and a thorough understanding of all that takes place in decay of the teeth will require experiments with mixed cultures, since in operating with pure cultures we have an extremely artificial condition never found in the human mouth. Also, as the production of acid takes place largely in the food found in the cavity of decay or between the teeth—in other words, outside of the dentin—investigation should not be restricted to those bacteria alone which are found within the dentin.

In respect to the solution of the decalcified dentin, Mr. Goadby says: "Liquefaction foci are figured by Miller having various forms, but no direct experiments were made to produce artificial liquefaction." Perhaps the fact that my publications were so numerous during former years may acount also for this oversight. In the *Independent Practitioner*, 1886, p. 534, I state that the comma bacillus which I isolated from the mouth in pure culture liquefies boiled white of egg, as well as decalcified dentin. Again (*Independent Practitioner*, 1885, p. 286) cultures of some of the fungi were made on dentin and enamel.

Sections of dentin, when decalcified, neutralized and soaked in saliva and sugar, formed a medium on which considerable development took place, microscopic sections of the dentin after two weeks showing a destruction of substance at the point of innoculation. Here also I was dealing with pure cultures. The solution of saliva and sugar was, of course, sterilized. Also (*Independent Practitioner,* 1885, p. 172) if we add a piece of decalcified dentin to a culture of caries fungi it will be dissolved, and (*Independent Practitioner,* 1884, p. 114) pieces of dentin in a solution kept constantly pure and sour by fermentation not only became softened, etc., but finally, after some months, disappear altogether. Here reference is had to a mixture of saliva and food stuffs.

It will be seen from these quotations that I have recorded experiments and observations regarding the dissolving action of pure cultures of bacteria on decalcified dentin in at least three different places, besides which I have repeatedly referred to the matter in my writings. It does not follow from this, however, that further experiments are not desirable, or even necessary, to clear up this point. As for the pigment of bacteria, it is very doubtful, for the many reasons I have repeatedly given ("Micro-Organisms of the Human Mouth," p. 90-162) whether their presence is essential to the production of the discoloration often associated with caries. Most certainly the pigmentation does not take place pari passu with the decalcification and liquefaction, as stated by Mr. Goadby. On the contrary, just the opposite is the case. It is well known that caries acutissima and white decay are synonymous terms, and that the deep discoloration is found only in slow or chronic caries and in cases where the decay has ceased altogether. I do not reckon pigmentation as a stage of caries, or as a process by which the progress of the caries is in any way influenced. Mr. Goadby warns against the supposition "advanced by some," that all organisms are capable of acid production under certain favorable conditions. This matter was not overlooked by me, and in the *Independent Practitioner,* 1885, p. 284, I state that four out of twenty-two bacteria which I examined with reference to this point produced an alkaline reaction in a solution of beef extract, peptone and sugar, while two appeared to leave the solution neutral. The cultures which I tested were not impure. For these organisms I suggested (Micro-Organisms of the Human Mouth," p. 19, the term "obligatory saprogenic bacteria." In the *Independent Practitioner,* 1885, pp. 207-288,

I wrote: "We undoubtedly have two distinct processes going on: First, the nutrition of the organism accompanied by the appearance of alkaline products, and, secondly, its fermentative action, accompanied by acid products. Ordinarily the latter so outweigh the former that the resultant reaction will be acid. This is, however, by no means necessarily the case." This appears to be exactly the position taken by Mr. Goadby fourteen years later.) It remains, however, a matter of fact that by far the great majority of bacteria do produce an acid reaction under favorable conditions.

Mr. Goadby's results as to the frequency of micrococcus nexifer (streptococcus brevis) quite agree with mine. Mr. Goadby states that the majority of mouth bacteria are pleomorphous. I will not dispute this, although the observations made by me in former years did not lead me to this conclusion. It may, however, be of interest to note that the second organism I obtained in pure culture from carious dentin was pleomorphous. With this I first succeeded in producing artificial caries, as described in the *Independent Practitioner* for March, 1884.

Nothing is further from my thoughts than to consider the "pioneer work" that I did as free from error. If I were to go over it now I should change many things and cancel some altogether, although the mistakes of my first communications were mostly corrected in later ones. For this very reason, however, I prefer not to have mistakes interpolated when there are none, and not to have the results which I obtained too severely slighted or "slurred over," as it was expressed by Mr. Bennett in the discussion following the reading of Mr. Goadby's paper. Nor do I wish to produce the impression that I do not appreciate the work done by Mr. Goadby. On the contrary, from its nature I conclude that our knowledge of dental pathological processes is still to be greatly enhanced by the experiments which are being carried on by him.

He ought not to forget, however, that the task which the dental investigator has before him today in dealing with the problem of dental caries is a far easier and simpler one than the pioneers had to deal with.

In looking over other recent communications and discussions on the question of dental caries, I repeatedly meet with statements in which, owing to over-enthusiasm for the work being done at present, that done long ago appears to have been entirely forgotten. For

example, Dr. Fort (*Dental Cosmos,* 1899, p 735) writes, "Dr. Miller proved twelve years ago or more that the dissolution of the teeth was brought about by acid-forming organisms, but he did not prove that the bacteria were responsible for the inception of the process."

This statement does not appear to me to be quite logical. How can one be said to have accounted for a process when his account does not give a satisfactory explanation of the way in which that process is inaugurated? But, apart from this, if Dr. Fort will consult my book, "Micro-Organisms of the Human Mouth," he will find that my account of the process of dental caries begins with the enamel cuticle. I distinctly called attention to the fact that the enamel cuticle in early stages of caries forms a matrix for innumerable numbers of bacteria, and that the thickening of the enamel cuticle is due to growths of bacteria in this matrix. "In the last stages of decay—i. e., of the enamel cuticle—we see only a mass af bacteria (cocci, rods and threads) which is held together by the remnant of the membrane. The membrane in this condition affords a matrix for bacteria, as well as for very minute particles of food, and thereby accelerates the progress of decay." This growth of bacteria in the enamel cuticle may possibly coincide with the film of Williams, although such films are not restricted to the surface of the enamel (see "Micro-Organisms of the Human Mouth," Fig. 79, p. 182). Williams, Black and others incline to the view that this film is necessary to the origin of caries, a point on which I am not quite convinced, as my observations would lead me to think that wherever food finds a permanent lodging place between the teeth, to undergo acid fermentation, there calcification is bound to take place in course of time, whether there is a film present or not.

Again, it has been said that while Miller furnished an explanation plausible enough for decay of dentin, yet he left us in the dark as to the nature of decay of the enamel. But a little examination will show that the short account I gave of decay of the enamel has been substantiated by Williams in his more recent investigations. For example, in my book (pp. 169-170) I say: "In sections (of carious enamel) the margin appears indented, and the enamel prisms more or less dislocated. The whole looks as if the interprismatic substance were dissolved—i. e., the connection between the prisms destroyed." This is exactly the idea brought out by Williams, and emphasized by Kirk (*Dental Cosmos,* 1897, p. 413) where they state that "the lines

of least resistance through the enamel structure are marked out by the territory occupied by the interprismatic cement." Again I say (l. c.), "About the same result is obtained when normal enamel is treated with diluted acids," which the investigations of Williams also confirm. He writes (l. c. p. 358), "If we expose a section of enamel for a short time to lactic acid we shall see that the effect is substantially the same as is shown in the mouth." In the *Dental Cosmos* for April, 1899, p. 326, Williams announces his conviction, which is perfectly well founded, that bacteria which give an acid reaction when grown in certain media may give an alkaline reaction when grown in other media. I cannot conceive why this announcement should have caused so much surprise to some members of the profession, since the fact has been before them for at least fifteen years, and was not presented by Dr. Williams as a new discovery. The subject was brought up by me in the *Independent Practitioner,* 1885, p. 285, also in the same journal for 1886, p. 115, also in "Micro-Organisms of the Human Mouth," pp. 18-19, 105, 205, 220, etc. For example ("Micro-Organisms of the Human Mouth," p. 18) "Many years ago I called attention to the fact that the course of fermentation depends frequently more upon the sub-stratum than upon micro-organism. Bacteria which grow upon white of egg, producing an intensely offensive smell and strong alkaline reaction, when brought into carbo-hydrates exhibit entirely different phenomena, viz., acid reaction and total absence of bad smell." Dr. Fort says I "hinted" at this fact—a rather broad hint, it seems to me. This fact is one of the fundamental ideas in all my discussions on caries of the teeth, and by it I have attempted to account for the comparative immunity from caries of meat-eating races (Eskimos, etc.); also for the fact that caries does not occur in canals containing putrid pulps. I have also explained on this ground the fact that persons of uncleanly habits may have very foul mouths and still little caries when they live chiefly on animal food, and when, through accumulations of tartar, etc., the gums are kept in an irritated condition and their secretions and exudations, being albuminous, undergo alkaline fermentation. A great deal has been said, by Hopkins in particular, about the necessity of conforming to Koch's laws, but where we have to do with the question of the possibility of producing caries artificially then the law of commonsense takes precedence. This law tells us plainly that we must imitate as nearly as possible the conditions present in the mouth itself, which I did in my

first attempts to produce artificial caries. It is altogether a different question when we ask whether it is possible for any one kind of bacterium alone to produce the phenomena of caries. Here, of course, we must have a pure culture. We do not need any law to tell us this—ca ra."—(*Dental Cosmos,* 1900.)

PROCEEDINGS OF SOCIETIES.

CHICAGO-ODONTOGRAPHIC SOCIETY.

A regular meeting was held February 16, 1909, with the president, Dr. Fred W. Gethro, in the chair.

Dr. Charles McManus of Hartford, Conn., read a paper by invitation entitled "Dental History," which was illustrated by numerous stereopticon slides.

DISCUSSION.

Dr. B. J. Cigrand:

I regret exceedingly that I was unable to read Dr. McManus' paper before discussing it, and yet, after having been in correspondence with him from time to time for the last seventeen years, I felt somewhat acquainted with the ground he would cover.

It would be impossible for me to do justice to the subject, because it is so broad and includes so much that I can only touch on points here and there. I want to say, however, that in his paper he brings out most emphatically a new idea regarding what happens to people when they die. Contrary to the idea held by Shakespeare, that "the evil men do lives after them, and the good is often interred with their bones." We have seen that the good lives after them, and if there has been much bad, we are glad to forget it.

Incidentally, I would like to call your attention to some of the great men who gave us new light on the science and art of dentistry, and one gentleman in particular was Celsus, born at about the time of Christ, and who gave to the world the gold thread suture. Then Galen came about one hundred and thirty years after Christ. He gave us the science of vivisection or dissection, and told us what animals do while they are alive, because up to that time the world prohibited dissection and vivisection, but because of Galen's high standing with the emperors of Rome he was allowed to vivisect, so that

one hundred and fifty years after Christ he gave to the world a new impetus, and was the one person who was allowed to vivisect.

Malpighii ought to be mentioned in this connection, who did much for physiology and anatomy. He was the one who gave us the first lens or microscope. He was the man who made us acquainted with the life that the eye had never seen before, and a life which contributed so much to our own knowledge, so that he should not be forgotten. He was the man who discovered the white and red blood corpuscles, and really was the one who discovered capillary circulation. Another great man was Dr. Schramm, of Germany, the dentist, who discovered cell physiology, a thing that is very important at the present time. You have heard from Dr. McManus tonight that Fauchard gave us so much in the porcelain art, and who was a mechanic and attributed his success in that line to his knowledge of mechanics. Another gentleman to whom I would call your attention is a Frenchman by the name of Brisset, a dentist, who gave us hypodermic medication. The world owes much to him. Another great Frenchman who deserves particular notice is Marie, a man who was noted for his greatness and skillfulness as a surgeon. In reading the life of Marie we are told that during battles he was known to have amputated as many as two hundred limbs in one day, and it was an ordinary thing for him to complete an amputation of the arm at the wrist, or a leg at the ankle, in less than five minutes. You will also remember that at one time he had in his army hospitals over ten thousand injured soldiers. You will also recall that Napoleon said he was the greatest, the best, and the most beautiful soul that he had ever found among men. It was a dentist, a barber surgeon, that became the great Marie of the Fench army. He ought not to be left out from this noteworthy body of men.

Sometimes I wonder, ladies and gentlemen, why this subject has been so long neglected. What would we think of a minister who had never heard of Spurgeon, of Wesley, or Beecher? What would we think of a lawyer who had never known much and cared less for Blackstone, for Burke, or for Webster? What would you think of an artist who cared nothing for Michael Angelo, for Oudin or Stuart? What would you think of a musician who did not know the difference between the music of Wagner and Verdi, or between the music of Bach and Mendelssohn? What would you think of an artist on the stage who was indifferent to the great founders of his art, or what

would you think of poets or writers who were indifferent to Longfellow, to Emerson, or to Ruskin? Yet that is what we have been doing for a long time. Let us be frank. We have been indifferent to the great men who have laid the foundations, built the roads and made our progress today that certainty that it is. Let us devote some little time to inculcating in our own hearts an appreciation for those who gave us what we today possess, and for what we know. It is well for us to consider what Henry Ward Beecher once said, that he who thinks the age in which he lives is supreme and has attained all knowledge, shows by the very remark that he is a personified ignoramus. Thanks to the men who lived before our time and devoted so much attention to the science and art we love! The historians, they say, are busy with bones. That, at one time, was the definition of a historian. The nineteenth and twentieth centuries show that the historian who is only busy with bones is not a historian in the true sense of the term. The historian of today is alive with the bones, it is true, but lives also in the flesh, for what is history if it is not a part of the present, and what is the present if it is not really a part of the future? This study, therefore, belongs to us. It is not of yesterday; it is of today, and of tomorrow. These things belong to us, because it inspires us to love the thing that has made us. What Dr. McManus has told us about these men this evening is really and truly a sermon, one which we will never forget, because the eye has taken in, as by an optic photograph, the whole scope of the early history of dentistry and of its great men down through the ages. All this has been done by one who loves his subject, and when the eye takes in all these things and the ear records simultaneously, we have something on which we can rely, and I wish to pay that compliment to the gentleman who has given us this subject tonight in such a fascinating and entertaining manner. What does this sermon teach us? It points out that every one of these great men was devoted to the subject. They were ridiculed and found fault with, and to be laughed at, to be scorned by ridicule, to be criticised, is the highest possible compliment of a live man, because it means he is blazing the way. He is an investigator, and in working along the lines of original research he is apt to meet with considerable opposition. He is apt to be ridiculed. But no man deserves success who cannot endure censure, and every great man the world has ever produced has brought more or less censure upon himself, has been laughed at, and profited by it. The men whom we

have been told about this evening were ridiculed. Fauchard, one of the pioneers, composed rhyme in French which lived. He was still in practice, still among his friends, notwithstanding the fact they were envious, and said that he had gone out of practice. That spirit will always prevail more or less, and it is a good sign that it is so. It will inspire us to keep on doing. If we were to take this spirit out of life all would become sluggish, all would become phlegmatic. It is the thing that keeps us going onward and forward. I like to see men who can stand criticism, say nothing, but saw wood; go right ahead, and sympathy and appreciation will come to you. Kindness will come to you, because the man who pays no attention to abuse, who pays no attention to scorn, is a magnet towards which men are drawn. The man who whispers to his neighbors and says, I am going to tell you something, but do not tell it to somebody else, is repellant. He is no good, and never lend him your ear, because he is of no account at home or in his church, or in politics. He is an enemy to life. We have many, many men who have no time for such things, men who go on and do their work. God bless them!

When I was in Paris I met Dr. Brophy at the International Dental Convention, and also Dr. Hart Goslee, and said to them it was a great pleasure to come across the sea and learn that the world everywhere was interested in the same thing, namely, in the uplift of humanity.

Paré, as the essayist has said, was a distinguished dentist. What did he do for us? He gave us the ligature, and I want to tell you that without the ligature where would internal and cranial surgery be? In the days of Paré, on the battlefield, men died because they could not stop the flow of blood. Many stern lessons were learned in those days. While abroad I stood in the amphitheater where this great man operated, and listened to the story before the days of this great dentist, when men died on battlefields from hemorrhage. After receiving wounds they invariably bled to death. Hot irons were used to singe the arteries and veins, or they were plugged with sticks of wood. In short, anything possible was resorted to to save life. They even poured into the wounds boiling oil, and that kind-hearted Paré said, "God Almighty cannot endure seeing such sufferings; there must be some way of saving the lives of these men," and so he ligated the arteries and veins. Hence major surgery owes a compliment to dentistry—the ligature, the very mother of major surgery, because of a

dentist. I saw hitching posts in this same amphitheater where men were tied in order to have an arm or a leg cut off, and all kinds of surgery was done. I thought of Horace Wells in connection with Paré, one who gave us the ligature, and the other anesthesia. And then there came into my mind another gentleman, Dupont, who gave us transplantation and skin grafting, a thing that was resorted to so extensively in Chicago after the great Iroquois fire, when so many of the victims had their arms, legs, shoulders, and faces burned, skin grafts being taken from other people and transplanted, with very successful results, all this because Dupont showed in 1633 that life could be saved by transplantation or skin grafting. He did not know the secret of it. He did not know that these skin grafts were held together by an infinitesimal chain, by an unknown combination of live cells taken from the living person, which can be transplanted to another person, and that became a mystery to him throughout life.

I often think of our American dentist, Dr. Taft. I often think of that beautiful spirit, that magnificent character, that thoroughly approachable gentlemen, one who was a great admirer of the beautiful, and in connection with him I think of what Pope wrote, "Love is with some men a thing apart; it is a woman's whole existence." As applied to Dr. Taft, I think it should be paraphrased to mean this, that beauty is with some men a thing apart; it was Taft's whole existence. I do not believe that man was ever known to neglect a single thing. At least, that is what his alumni say, and what his intimate friends say.

Again, I spent several days with Dr. McKellops in his laboratory when he was living. My visit was most enjoyable. He showed me things I had never seen. He showed me things I did not believe were possible, as, for instance, a lower molar built up practically from the gum line entirely with gold, with pivots within the roots. He built up the cusps, and so finished the entire work that it was beautiful and artistic to behold. He told me the secret of his successful work. I said to him, I did not know how it was possible to do such work. I had a talk with the patient, and she said, "He did not hurt me very much; he was joking and so congenial all the time that I hardly realized the work was being done——." He told me that the secret of his work was this, that when he put in a filling he felt that the whole dental profession would go at it with a sharp instrument and a magnifying glass. When a man loves his work like that he surely enjoys it. I take my hat off to such a man. In conclusion, let me

emphasize this one thought: Biography is the history of the world, because Carlyle has said that the proper study of the history of the world is the study of its great men; and the proper study of dentistry is the history and biography of its great men. It will soften our hearts; it will surely make us more agreeable, and plant within us a sentiment of affection, of goodness, and while we have gathered tonight as we have to show our respect to the dead we are really showing a great respect for the living. We are giving an impetus to the young men to carry on the work when we are gone. Let us have more real fraternalism, a higher standard of brotherly affection, and higher and nobler ideals like our forefathers. I thank you.

Dr. Charles R. E. Koch:

The hour is late, and yet the subject is so interesting that I feel like saying a few words before we leave.

The essayist has shown a wonderful ability in condensation. He has given us a retrospect of the history of dentistry from the time of Aesculapius to the present, a period of nearly four thousand years, and has done it in such a charming way that we have not grown tired. I have tried to do a little work of this kind myself, but have not succeeded so well in condensing my material. I am glad, indeed, the time has come when we can take an hour occasionally, as other organizations do, and look back to our ancestry. As members of the dental profession, we have reason to be proud of our ancestry. You have been frequently told in your gatherings, when addresses of welcome have been delivered, that dentistry used to belong to blacksmiths and other untutored and uneducated tradesmen, but when you look over its history you will find from beginning to end that it has been developed, it has been practiced, it has been taught by men of superior intellect and superior heart and genius.

Coming to Fauchard, I believe that he has been rightly named the Father of Dentistry. I have not read his book in the original French, but I have read the book as translated in old German, in 1733. The 1728 edition. The commendations published in the back part of the book are something that would be considered very peculiar today. They evidently had no book publishers in those days who sent out printed prospectuses; so that in the back part of this book are published ten or twelve recommendations and endorsements, both of the writer and the merit of the book. Every one of them is from the pen of men of high medical standing. Some of these say that it is the

first complete work on dentistry that the world has ever seen. Fauchard goes into the minutiæ of detail, step by step, in his operations, manipulation, position of the patient, position of the operator, the grasp of instruments, etc.

We come next to Hunter, who really was not a dentist. It is true he wrote on dental subjects, and here comes a conflict. The father of American dentistry was probably Dr. Hayden. Dr. Hayden raised the question that Mr. Hunter never realized the importance of dentistry. The question has been discussed in this country for many years, whether dentistry is a specialty of medicine, or whether a dentist could practice or perform surgical operations in the oral cavity. These things were thrown out by Hayden in his criticism of Hunter. Hunter defined a number of simple operations upon the teeth themselves, which it was proper for dentists to perform, but when there was an alveolar abscess or a similar disease involving the alveolus or jaw he believed that it should be put in the hands of a surgeon or the medical man. Hayden says that if Hunter had only had the ability or wisdom to look across the Channel he would have found there in France men who were educated as dentists, who were competent to take care of these cases without calling upon the surgeon or the physician.

Coming to this country, John Greenwood was apprenticed by his father to his uncle in Portland, Maine, when about sixteen years of age as a cabinetmaker, like John Hunter. When the shot was fired at Lexington "that was heard around the world" the enthusiasm all over the colonies was strong, and military companies were being organized. His uncle organized a company, and Dr. Greenwood, who played a flute, became the fifer of that company. But he was too energetic to remain in Portland waiting for orders. As he was an apprentice, he was bound, he could not leave. But one Sunday afternoon he went over the back fence with three pistareens in his pocket and walked to Boston. On his journey he played his fife and was received so enthusiastically that he did not spend a penny, because the people were only too glad to entertain him and feed him. When he arrived at Cambridge the British general forbade his crossing the river, and consequently he could not join his people. He then enlisted in a Massachusetts company, remained at Cambridge, and shortly after the commander of the Continental army, Artemus Ward, was relieved by George Washington. His mother asked to have the boy sent back

home. General Washington permitted her to go back, but did not allow the boy to accompany her. I have a sort of notion that that first interview between the mother of John Greenwood and George Washington led to the future relations, or subsequent relation of John Greenwood with George Washington from a dental standpoint. It would seem to me that was the case.

This is a subject to which I have given four or five years of almost exclusive attention outside of my regular duties, and I want to say, I am more than delighted—I believe I am more delighted than any one of you present, because I flatter myself that no one here has given so much thought and attention to this subject recently as I have. I feel, therefore, I can say with as much grace as anybody else, that this contribution bestowed upon us this evening by Dr. McManus is one of the finest, one of the grandest efforts the dental profession of this country has ever had the opportunity of listening to in this connection. The time has come when we ought to teach the value of ancestry, to encourage us in the present, and to make us more hopeful of our posterity.

Dr. Truman W. Brophy:

I came here this evening to listen to the lecture of my friend, Dr. McManus, and not to talk, and I certainly did not expect anyone would ask me to discuss this interesting contribution.

While Dr. McManus was presenting pictures in the time of Mc Quillan and Taft, the name of one man came to my mind that I thought should be considered in connection with them—a man who did more than any other man before his time or afterwards to perfect and bring to the profession prepared for its successful use porcelain in the form of artificial teeth, and that man was Elias Wildman, of Philadelphia, who, for many years, was professor of prosthetic dentistry in the Pennsylvania College of Dental Surgery. I hope, therefore, when Dr. McManus completes his list of names of distinguished men and brings this work before our profession in book form, he will include the name of this man, among those who worked so hard, not for pecuniary reward, but for the purpose of perfecting and bringing to the highest possible standard porcelain as a material for the making of artificial dentures.

Personally, I feel that this Society has been highly honored, and we have all been instructed and really given inspiration to do our work in a better way by reason of this most remarkable presentation. I

have known for a long time how hard Dr. McManus has worked to bring this about, and when we consider that he has made a trip of two thousand miles to bring this valuable contribution before us, we certainly ought to feel deeply grateful to him for what he has done.

Dr. Will Henry Whitslar, of Cleveland, Ohio:

Inasmuch as my application for membership in this Society has had its first reading this evening, I feel that I have not been born as yet, and am not perhaps entitled to speak. But as a visitor, I want to voice my sentiments in regard to the most excellent paper we have heard tonight. Five hundred years before Christ, there were written in letters of gold upon the Temple of Delphos, in honor of that great and illustrious soldier, Croesus, these words, "Know thyself." To know ourselves, we must know the history of our fellowmen, and this has been brought before us this evening in a very lucid manner in this most eloquent address, and also in the grandiloquent words of Dr. Cigrand. As I read between the lines, through the infamous order of Caesar, the burning of the library at Alexandria deprived us of many historic records which would be valuable to us today; and still as we came down through the history of the ages, and saw the galaxy of members of the profession upon the screen this evening, we have noticed pegs entered here and there—small pegs, it may be true, but the entering wedge to the professional status of ourselvs was driven in solidly by Chapin A. Harris, in 1839, when he entered upon a career of education, as it were, professional education in dentistry. And then, as we pass on down through the history of time, observing those who have passed before us, we come to the time of living men, and we have with us Brophy in surgery; Calvin S. Case in orthodontia; Professor G. V. Black in pathology, and Dr. W. H. Taggart, the inventor, so that I feel that you in Chicago are making history that is enduring.

I want to thank Dr. McManus for the inspiration I have received tonight, and this Society for the courtesies of the floor.

Dr. McManus (closing):

I have talked so much already, that I will only offer you my sincere thanks for the delightful manner in which you have received this paper.

A regular meeting was held in March 16, 1909, with the President, Dr. Fred W. Gethro, in the Chair.

Dr. Thomas L. Gilmer read a paper entitled "Some of the Diseases of the Soft Tissues of the Mouth."

DISCUSSION.

The discussion was opened by Dr. William Allen Pusey, who said:

Mr. President and Gentlemen:—I am very glad to have heard this paper by Dr. Gilmer on diseases of the soft tissues of the mouth, and I am very glad to take part in a discussion on the subject, because it is a field where dermatology and stomatology overlap in a very intimate way. It is not, however, easy for me to discuss this paper, because I am practically in agreement with all the author has said. There is one point in which I think I should put Dr. Gilmer right, namely, I am entitled to no part of the credit he gives me for his excellent paper. It is true, I have furnished him some pictures for his slides, but aside from that, I am not entitled to the over-generous credit that he gives to my work in diseases of the mouth.

My interest in diseases of the soft parts of the mouth has been stimulated, first, by intercourse with Dr. Gilmer, and, second, by the general fact that there has developed among dermatologists during the last ten years great interest in the manifestations of skin diseases as they occur on the mucous membranes.

I think Dr. Gilmer's division of diseases of the mouth into two classes, those that are local, and those that are a part of systemic diseases, is thoroughly logical and very convenient. We dermatologists have learned in the last few years to consider the possibility of the appearance of lesions on the mucous membranes in practically all affections of the skin which gives evidence of being of systemic origin. Not only is there a close similarity between the anatomical structure of the mucous membrane of the mouth and that of the skin, but there is a close association between the vaso-motor control of the blood supply of mucous membrane of the mouth and that of the skin and between the trophic control of the nutrition of the mouth and that of the skin. As a result affections of the skin and the oral mucous membranes are constantly overlapping.

Dr. Gilmer referred only briefly to the systemic diseases that appear in the mouth, but as illustrating the importance of them, I would call your attention to the various toxic eruptions that are

accompanied by mouth lesions. As a matter of fact, the mucous patches of syphilis are an illustration of these toxic eruptions of the skin that appear upon the mucous membranes. We have other familiar illustrations in the eruptions in the mouth in the exanthemata, measles and scarlet fever notably. You are all familiar with the manifestations of scarlet fever in the mouth, the strawberry tongue and the eruption upon the fauces and buccal mucous membrane; but you may not be so familiar with the Koplik spots which occur upon the buccal mucous membrane in the early course of measles. Koplik has shown that the first eruption of measles occurs upon the mucous membranes of the mouth. I refer to these well known toxic eruptions in the mouth, because they are highly interesting in connection with the other toxic erythemas that have eruptions in the mouth. In skin diseases we have a group of toxic dermatoses due to various sorts of intoxications, as, for instance, a dose of quinine in a susceptible individual, or a dose of copaiba in a susseptible individual. In the same way we may see certain skin manifestations from peculiar articles of food that are taken by susceptible individuals, or we may have these eruptions from ptomaines in the food. We get these things from all sorts of toxic processes, and so far as the cutaneous manifestations and the mouth manifestations are concerned, they are all alike. We have about three groups of manifestations of these eruptions. First, generalized eruptions with erythematous spots over the skin; then we have bullous eruptions occurring over the skin; and finally we have eruptions occurring with extravasation of blood or hemorrhages into the skin. It is a curious fact that we get exactly the same eruptions upon the mucous membranes. In the inflammatory dermatoses, with punctate discrete lesions of the skin, you get upon the mucous membrane not red spots but yellowish spots at the center with a more or less red areola around them. The reason for this is that the horny epidermis of the lesions becomes macerated or necrotic over the spots and is no more translucent but reflects all light and allows no color of the blood to come through. In all of these cases we get this mottling of the mouth which is quite analogous to that seen in the exanthemata. In the bullous dermatoses of systemic origin we have the same blisters forming in the mouth; they are quite common in cases of pemphigus and dermatitis herpetiformis. It is an interesting fact that pemphigus sometimes begins in the mouth, and in such cases it taxes not only

the dentist, but the skilled dermatologist to make a diagnosis. It is a fact that these primary mouth cases of pemphigus are usually of the most severe type. They are the type of pemphigus that goes on to death of the patient.

Dr. Gilmer referred to my belief that the so-called canker sores are manifestations of simple herpes in the mouth. I base that view on the ground that these lesions are not at all in their manifestations like simple infections. If any of you has had them, you know they are excessively painful and develop suddenly. These lesions have the acute pain and sudden onset which belongs to cold sores on the lips. The lesions occur when one is out of sorts, with indigestion, or with malaise of any kind. They may come from local irritation, as fever blisters come from local irritation. But their intense painfulness and their sudden development point to their being a manifestation similar to herpes about the lips. I believe that fever sores and canker sores of the mouth are due to a neuritis in the peripheral terminals of the nerves of the affected area, which may be set up by toxemia, other systemic disturbances or by local irritation, such as riding in a cold wind, or the irritation from dental instruments.

The toxic eruptions of the highest degree are those that are accompanied by hemorrhage into the tissues. We occasionally see in infectious diseases hemorrhages under the skin—extravasation of blood into the connective tissue—or purpura, as it is called. I have had opportunity to study several such cases in which there were manifestations of purpura in the mouth, hemorrhage into the submucous tissue of the mouth, and in two cases of the sort there has been hemorrhage into the tongue with sloughing of an oval mass that might have been taken for a gumma.

In all of these toxic erythemas that are short of hemorrhage, you get lesions which closely resemble the mucous patches of syphilis. In my observation, the most striking difference in the local appearance of these toxic erythemas occurring in the mouth, as distinguished from syphilis, is a bright red border beyond the necrotic pellicle, while the border of the mucous patch of syphilis is not distinctly bright. In these toxic erythemas the border is decidedly bright.

In all of these conditions you can usually get a clew to the mouth condition from the condition of the skin. You have a generalized eruption, and it does not need a wise man to assume that

the mouth eruption is a part of the general disease. A point that comes up in the toxic dermatoses is the difficulty of making a diagnosis from syphilis; then, of course, you have to consider all the factors that bear on the diagnosis.

There are one or two sharply defined skin diseases, one notably which is presumably toxic, that have interesting manifestations in the mouth. The first of these is lichen planus; the second erythematous lupus. Lichen planus is a dry inflammatory disease that occurs in discrete papules over the body, these papules being distinctly sharply angular or polygonal in outline. It is unaccompanied as a rule by systemic symptoms, but it is frequently accompanied by lesions of the mouth. The lesions are quite similar in character in their polygonal outline to the skin lesions but have a yellowish-gray covering, as inflammatory lesions in the mouth usually do. Erythematous lupus occurs on the face, often in butterfly patches across the nose. The patches have an inflammatory base, and are more or less covered by white or grayish scales. It is a recently recognized fact that these lesions occur frequently in the mouth. About two or three years ago I had such a case in which the disease was confined to the lips and the contiguous mucous membrane. At the present time I have under observations one case of this kind in which the lesions are almost completely confined to the mucous membrane of the lips, and there has appeared recently in the Archive für Dermatologic und Syphilis a description of numerous cases of this sort in which the lesions were confined to the lips. They are cases which lead to confusion chiefly with superficial epitheliomas on the lip, and they are extremely difficult to diagnosticate. I know of no clew to the diagnosis in circumscribed cases. To show however that these cases are sharply characteristic to the expert, I exhibited my last case at the February meeting of the Chicago Dermatological Society and the members almost unanimously made the one diagnosis.

In tuberculosis of the mouth we have a situation which, as a rule, would not give the dentist much difficulty. Lupus Vulgaris very frequently occurs upon mucous membranes in the form of irregular, soft, indolent ulcers, such as Dr. Gilmer has described, but so far as I know, this condition is invariably accompanied by typical lupus vulgaris upon the cutaneous surfaces, notably about the nose; so that in these cases the diagnosis can readily be made from the existence of the disease upon non-mucous surfaces. There is one

point, however, which is apt to lead you to confusion, and that is difficulty in finding tubercle bacilli in lupus vulgaris. In that condition it requires great patience to find tubercle bacilli. They are extremely scarce, and if a diagnosis were dependent upon them, it probably would in most cases not be made.

The other form of tuberculosis of the mouth consists of acute miliary tuberculous ulcers upon the mucous surfaces of the mouth, but the diagnosis here can be made upon the existence of tuberculosis elsewhere in the body. I saw a case of this sort of Dr. Gilmer's about two years ago in which he made a diagnosis of probable tuberculosis of the mouth, before I saw the case. The patient had superficial necrosis of the mucous surfaces, so superficial that it seemed to me it could hardly be a tuberculosis; in addition to that, there was very intense pain. I differed from him in the diagnosis at the start. I thought it was a beginning case of pemphigus of the mouth. Dr. Gilmer made good his position by finding tubercle bacilli and showing the typical tuberculous structure. You have there miliary tuberculosis rapidly progressing, with the typical structure of miliary tubercles. The condition, however, is usually easy to diagnosticate by the fact that the patient is manifestly suffering from pulmonary tuberculosis.

Syphilis, from the standpoint of the dentist, is undoubtedly the most important and practical disease of the mouth with which he has to contend. There is no class of medical practitioners who, in my opinion, are so much in danger of accidental infection with syphilis as dentists; and this is on account of the mucous patches. Mucous patches are extremely insidious, because they may cause almost no pain and there may be no other easily found evidence of syphilis. They are highly contagious and, it seems to me, the dentist cannot be too careful in guarding against the possibility of danger from this source. Of course, you have, also, chancres in the mouth or about the mouth to guard against, but in my experience chancres about the mouth, except on the lips, are uncommon. Chancres of the lips are not excessively uncommon in hospital practice, or in private practice. Usually, they are quite readily diagnosticated. There is one interesting point about chancres of the lips and mouth; and that is that they present a much uglier clinical picture, as a rule, than chancres about the genitals. A chancre about the lips is usually a lesion as large as a dime or larger, with firm induration

and sharply-defined neoplastic infiltration. It is also accompanied, as a rule, by marked lymphatic engorgement. You will get quite large tumors of the glands of the neck in chancres. The diagnosis from epitheliomas as a rule does not offer much difficulty and this is the only thing it is apt to be confused with. The lesions are more circumscribed; there is less ulceration; there is a different sort of induration; and there is the sudden development of enlargement of the glands. That is not the picture of epithelioma. However, chancres are sometimes diagnosticated and operated on as epitheliomas.

Mucous patches have been described fully by Dr. Gilmer, and I do not know of anything to add to this phase of the subject except this: When you are in doubt about the character of mucous patches or of ulcers on the lips or about the mouth, examine for the spirocheta pallida of Schaudinn. There seems to be left no room for doubt that the spirocheta pallida is the pathogenic organism of syphilis. This organism has a characteristic morphology, and it is easily found. It is not difficult to find, and you can, I think, with reasonable certainty make a positive diagnosis of specific disease now upon finding the spirocheta pallida.

Gummata occur about the mouth with great frequency, but I imagine they occur most frequently in a class of patients you do not see in private practice. I see many of them in public practice, but in private practice we don't see many of them. They occur in people who are not apt to pay much attention to the condition of the mouth. As to the infectious character of gummata, that is a point upon which I think there is some room for comment. It has been definitely established that occasionally gummata are infectious, but the part of the gumma that is infectious is the active spreading border. The degenerated center is not infectious. There is strong clinical proof of that fact, and we have now other proof; in the borders of gummata spirochetes have been found. The danger to the dentist however does not lie in the tertiary lesions of syphilis, but particularly in the mucous patches.

As to leukoplakia, as Dr. Gilmer says, it is a sharply defined clinical entity, a condition that does not leave room for much confusion in diagnosis. The ordinary leukomatous patch, with slight hyperkeratosis, is a perfectly familiar picture. Its histology is interesting. There is hyperkeratosis, a marked increase in the thickness of the horny layer of the mucous membrane, and a good deal of

down-growth of the inter-papillary processes. This is the commonest form—the form we are all familiar with as the gray leukomatous patch showing not very much thickening of the horny epidermis. I have seen a good many cases where there was marked papillation of the surfaces of the patches, where there were a great many horny projections on the surface up to the size of the head of a pin. I have seen one or two cases with considerably elongation of the papillary surfaces of the patch, and I have seen a few striking cases in which there was papillary hyperthrophy of the horny tissue up to one-quarter of an inch in length. The most striking case of this sort that I have seen is Dr. Gilmer's case illustrated this evening.

As to the etiology of these lesions, I entirely agree with Dr. Gilmer. I am convinced in the majority of cases they are a parasyphilitic affection, but I am also equally convinced that I have seen cases where, if you can exclude any fact, you can definitely exclude syphilis. So I believe some of the cases are not syphilitic, and I know no reason why such a chronic condition with hyperkeratosis, cannot occur without syphilis. The most important feature in connection with their etiology is long continued chronic irritation with smoking as of great importance. I regard these lesions as very ominous. In the first place, they show a striking analogy to the hyperkeratotic patches we see on the skin in old people, and in these keratoses of the old it is common for epitheliomas to develop. When these senile warts become inflamed, they show almost at once the histological picture of carcinoma, and in my judgment the leukomatous patches in the mouth are just as apt to become carcinomatous as senile keratoses on the skin. I have seen many epitheliomas that developed upon leukoplakia in the mouth; so frequently have I seen this that I regard them as very important lesions. If I had leukoplakia in my mouth, I would quit that greatest of indoor pastimes—smoking. No man, who has a well developed leukoplakia, can go on smoking without danger to himself.

One other condition that Dr. Gilmer spoke of is the so-called geographical tongue. I have had an opportunity to see one case. The condition consisted of circinate or annular patches of slight erythema upon the upper surface of the tongue. These reddish roundish patches surrounded by gray epithelium produced most fantastic figures on the surface of the tongue. But there would be no difficulty in diagnosticating it from leukoplakia.

In seeing this case of Gilmer's, with great papillary hypertrophy in a leukomatous patch, I was reminded of a somewhat similar condition of the tongue, that we call black or hairy tongue. This is excessively rare, but it is a condition we do see at times in which there is an enormous horny overgrowth of the papillae on the back of the tongue. You may see filiform prolongations one-quarter of an inch long. This differs from leukoplakia in being black, and being placed symmetrically on the back of the tongue.

There is another condition of the tongue, that I have found puzzling doctors, which is normal, namely, an excessive furrowing of the tongue which some individuals show; the so-called scrotal or furrowed tongue, where the normal furrows of the tongue are greatly exaggerated in length. It may be confusing if it is not known but it is simply a normal congenital peculiarity.

Dr. Truman W. Brophy:

It is unnecessary for me to tell this audience that we have listened to a very good paper this evening, and to a discussion which we may read with a great deal of profit.

I feel that I have quite a task before me to stand before you to discuss this paper, in view of the fact that the gentleman who read the paper and the one who discussed it are among the most eminent men in the profession in their special lines of work.

I want to say a few words regarding the remedies that I think are especially desirable and that would be called for in the management of some of these abnormal conditions of the oral cavity. The conditions that have been chiefly dwelt on have been lesions of the mucous membranes of the mouth, and of the submucous tissue. The doctor has pointed out many of those conditions that are of special interest to the practitioner of dentistry, because this is his field of work, and he must be constantly in touch with these conditions. I was especially pleased with that part of the paper in which he pointed out the differences between some of the diseases of the mucous surfaces. I cannot dwell on them, for there is nothing to be said more than to remark, I approve of what the doctor said in presenting them. I do not differ from him in the slightest degree regarding their pathology. I would suggest, in addition to some of the agents that he proposed to employ in the treatment of these mucous surfaces, especially the patches on the mucous membranes of the mouth, the use of oil of cassia, the use of argyrol, in preference to the use of peroxid of hydro-

gen. In fact, I do not use peroxid of hydrogen. I think, however, its use in such cases as he describes is admissable. It will clear away the necrotic tissue to a considerable extent; it will clear away the deposits of pus and mucus and leave fresh surfaces upon which to apply his more remedial agents; but inasmuch as it has been so often used, and is so often used injudiciously, carried into cavities containing pus and blood, and thus carrying infection oftentimes into parts quite remote from the center of disease, causing a great deal of distress and a great deal of destruction to the surrounding parts, I have abandoned it, because other agents will serve the purpose quite as well without in any way leading men to make use of it in places sometimes where it may do harm. I do not think there is any agent that is more potent in the destruction of pathogenic microörganisms we find in these surfaces than argyrol. It has been shown conclusively that argyrol will penetrate as deeply, if not more deeply, into the tissues, and destroy microörganisms more certainly than most any of the agents with which we are acquainted.

When Professor Pusey was discussing the relation of cutaneous diseases to these mucous surfaces, it occured to me that there is a field in common in the work of the dermatologist and that of the dentist so far as the etiology of disease and histology are concerned, and that we should get together more frequently and, in a general way, discuss these subjects. How well we know that cutaneous conditions in infants, in young children, make impressions upon the teeth that are lasting. We know that when a child has measles or scarlet fever, or any of these cutaneous infections, they will make an impression also upon the mucous membrane the same as they do upon the skin. I was glad to hear the doctor point out the relation of the skin to the mucous membrane, and how an impression upon the mucous membrane will produce an impression also in some form, though somewhat modified, upon the skin, and vice versa. In works on dermatology, in the works on pathology, when speaking of syphilis, the authors and syphilographers have seen fit to point out a certain condition of the teeth which they call "Hutchinson's teeth," where the teeth are deficient in enamel development; likewise called "screw driver teeth." The teeth are sharp, and they are called Hutchinson's teeth. I am satisfied that there never was a greater error than to teach that syhpilis causes the teeth to be thus imperfectly developed. Any eruptive fever in a child, whether scarlet fever or measles, or what not,

that will make an impression upon the skin during the formative period of the teeth will produce so-called Hutchinson's teeth, and it is not fair to make the declaration that such teeth are evidences of syphilis, for they are not.

I am sure the older members of this gathering will remember the history of the disease which terminated the life of General Grant. When Dr. Pusey spoke of persistent irritation, when he spoke of the evils of smoking, when he spoke of people who had these ulcerated patches in the mouth, I wished he had gone further. I don't think smoking ever did any man any good. It is an indoor pastime. There are other things that will serve the purpose as well as this pastime. General Grant broke a third molar tooth which was lacerating his tongue, and the late Frank Abbott advised its extraction, but General Grant did not want to have it extracted, and so it was allowed to remain. Dr. Abbott told him it was lacerating his tongue, and warned him against the evil of persistent smoking. General Grant always smoked before breakfast, after supper, just before he went to bed, and as soon as he got up in the morning. We all know what the sequel was. The ulcer extended down into the pharynx, developed into an epithelioma, and this epithelioma terminated his life.

We also know the experience of Dr. Thomas W. Evans at the bedside of Prince Frederick of Germany, who for thirty days only was the German Emperor. There was another instance of persistent irritation that developed an epithelioma which terminated his life. We know that persistent irritation means a multiplication of cells. Cohnheim declared that epithelioma was the result of the passage of epithelial cells into regions where they did not belong. The late Professor Hamilton worked night and day with a view of showing that carcinomatous developments were due to pathogenic microörganisms. Professor Hamilton came to the hospital one day and said he thought he had discovered the origin of malignant growths in the development of microörganisms. We all went to the laboratory with specimens and slides and looked at them microscopically, and Professor Senn said: "Hamilton, where did this growth come from?" Professor Hamilton told him. Senn said: "Hamilton, you must bring us something better than that, for while I admit the rôle played by pathogenic microörganisms in this condition, the teaching of Cohnheim must stand until something better than you

have presented can be brought to us. Pathogenic microörganisms we see, but they are not primary, they are secondary."

Today the teaching of Cohnheim stands. We are looking for the man who will bring us something that will be convincing that malignant growths have their origin in pathogenic microörganisms. Up to the present time it has not been done to the satisfaction of a large majority of pathologists. Some believe the cause of malignant growths has been discovered, that they are caused by bacteria, but that theory has yet to be accepted.

(Here Dr. Brophy presented several patients showing the different pathological conditions which Dr. Gilmer had described in his paper, among them a woman for whom one-half of the lower jaw was removed without an external incision.)

I do not believe in disfiguring the face of a patient for the removal of any diseased tissue or humor within the mouth. Tumors of the maxillary bones can be removed without external incisions.

I regard this evening a very profitable one, and I am delighted to have been here and to have listened to this paper and the discussion by the learned gentleman who has kindly consented to be with us and to give us some practical information from his enormous fund of knowledge on the subject under consideration.

Not long since, at a meeting of one of our dental societies, the question arose as to what is the most essential thing for the dentist to know. What one subject is more important than any other? What subject are we passing by without giving it the proper consideration more than any other? I said pathology, the study of abnormal conditions, for this seemed to me of more importance for dentists to understand than anything else. It is an easy matter to get remedies. We can go to our books and find them, but the important question is, What is the matter? So when we come to treatment or to the consideration of anything which is presented to us, the first question that should arise in our minds is, it depends on what is the matter. If we know what is the matter the course to pursue is comparatively easy.

Dr. Frederick B. Moorehead:

Diagnosis consists in bestowing a name upon a certain assemblage of pathological phenomena. It must include also a knowledge of the causal factors of the disease; a determination of its character with reference to type and severity; an estimate of the amount and kind of damage, both general and local, which has been sustained by

the organism; a forecast of the probable course and duration of the morbid process; and a cognizance of the personal characteristics of the patient, whether psychic or physical, inherited or acquired. Its final object is to be able to treat disease intelligently, and the application of scientific methods to the completest discrimination, and recognition of disease constitutes the art of diagnosis. His ability as a diagnostician is the best estimate of a man's true value and worth to the medical fraternity and to society. Diagnosis is not a thing apart or separate, but the composite expression of all medical learning and knowledge.

True medical scholarship finds its most perfect expression in diagnosis. We use the term "medical scholarship" in its most comprehensive sense.

A review of all types of medical literature reveals some significant facts concerning the oral cavity and its relations. One is quite unable to decide to whom the child really belongs. The internist has produced a splendid literature—a literature worthy of his calling, and he lays an *a priori* claim to the oral cavity. His treatment of the subject is most unsatisfactory. Exceedingly meagre is the information found in the many works on internal medicine.

The surgeon has also produced a splendid literature. He also has an *a priori* claim to the oral cavity. The sum total of all that may be found in the many works on surgery covering the oral cavity is not only incomplete but unsatisfactory.

The dermatologist has also served notice that he is to occupy the mouth as part of his legal territory. The manner in which he has treated the subject is of little service to the dental practitioner.

And so on down the line of medical specialists. About the only specialists laying no claim to the mouth are the gynecologist and obstetrician.

Splendid works have been written on the nose, throat, stomach, ear, eye, and other parts of the body; splendid volumes are in print on general and special pathology and bacteriology. They all reflect great credit on modern medical science. The dentist, however, has never laid a scholarly claim to the oral cavity, as a pathologist or therapeutist, comparatively speaking. Why is this? The answer is simple and well known. His college training does not prepare him for such work. To answer the requirements imposed upon the student by the departments of operative dentistry, prosthetic dentistry and

crown and bridge work taxes him to the utmost of his time and strength in the three college years. If Dr. Gilmer is justified in presenting to this society a paper on the soft tissues of the mouth; if the society is warranted in giving an evening to the consideration of the subject, it follows as the logical conclusion of a premise that more serious consideration be given to the matter, both by the college and the dental society.

It is imperative, both from the standpoint of the practitioner's peace of mind and the well being of his patient that the dentist be trained to recognize lesions common to the oral cavity and adnexia. We do not mean by this that he should attempt the treatment of these lesions. It is a wise man that knows his limitations. There is a reason for the dental specialist. Any single phase of dentistry is a challenge to the biggest mind in the profession. No one engaged in practice has the time to give, and the theorist *per se* can not solve the many problems demanding solution. The conditions of modern society require that a large part of one's time be given to earning a livelihood and perhaps to earning a decent competence. Then, too, the practice of operative and prosthetic dentistry do not aid in acquiring a pathological sense. Dr. Gilmer's paper is not only timely but calls for very serious consideration. We would like to take up and discuss seriatum the items in the paper, but the hour is too late. We wish to make a plea that the younger men particularly, face the entire field of dentistry and equip themselves in the art of diagnosis. This, I believe to be the real object of the paper,—besides, Dr. Pusey in his splendid discussion has covered the lesions mentioned in the paper. I have too much regard for your comfort to continue longer.

Dr. Arthur D. Black:

I did not intend to say anything on this subject, but I cannot refrain from saying a word or two in reference to the statements made by the previous speaker (Dr. Moorehead). I believe that the work of Dr. Miller upon the etiology of dental caries will stand alongside the work of any man in medicine as a scientific treatise. I believe the work of Dr. Williams, of London, on the study of the etiology of dental caries will stand with that of many of the works of members of the medical profession. I believe the studies of Dr. Michaels, of Paris, on the saliva, will stand with any of the writings of men in the medical profession; and while, in a general way, I agree

most heartily with the statements Dr. Moorehead has made as to the need of more study, yet I believe he has not given many men in the dental profession the credit he should give them for the work they have done, and I call attention to this omission.

Dentistry is young, and while we ought never to be satisfied, I do not believe that we should be too pessimistic regarding the progress we are making as a profession. I realize as much as anyone that the literature of dentistry, taken as a whole, is not a thing of which we should be tremendously proud; yet it is going through the same process of evolution that everything must go through. There are a great many good articles here and there that ought to be sorted out and saved. If you will turn to the *Missouri Dental Journal* for 1869 and 1870 you will find an excellent series of articles written by Dr. Homer Judd, on the histology, pathology and treatment of alveolar abscess. These are as fine articles as you will find in any literature. There are a lot of good things in our dental literature, but they are hard to get at on account of the way they have been published. I believe the best plan of encouraging the young men of our profession to do better work is to pick out the good things that have been done and emphasize them as an inspiration to do more; rather than to decry the work that has been done. (Applause.)

Dr. Frederick B. Moorehead:

I do not want the impression to go out that I do not appreciate the work that has been done by dentists, for I appreciate it just as fully as any man living; but I do not stand corrected with regard to the statements I have made concerning the literature of dentistry as compared with the literature of medicine. If, for instance, I want to consult a textbook on dermatology, I can get a number of excellent works. If I want to consult a textbook on any specialty of medicine, except dentistry, I can easily find it; but we cannot point to a single able textbook in dentistry which is equal to the emergency of therapeutics. It is not in print. You cannot find a textbook on oral pathology which will compare with the textbooks on other medical subjects. That was the point I wanted to make, and not to speak disparagingly of the splendid work that has already been done by dentists. But when you compare the textbooks of other specialties of medicine with dental textbooks you must admit that what I have said is right. The work of Miller is monumental; so is the work of Dr. G. V. Black, and the recent work edited by Dr. C. N. Johnson. But

a scholarly treatise on pathology, therapeutics or surgery of the mouth has not been put into the hands of the student of dentistry.

Dr. H. A. Potts:

There are one or two points I would like to mention. First, in considering tuberculosis of the mouth, let us go back to the etiology of tuberculous lesions. Tuberculosis may be implanted. It occurs on the mucous membrane, as Dr. Pusey has said, by contiguity of tissue, advancing from lupus vulgaris. It may also be implanted in the mouth, as has been demonstrated very clearly in von Bergmann's clinic. One of the physicians in his clinic, in order to demonstrate this fact, was in the habit of smoking cigarettes, the end of which he placed in places which had been prepared for the reception of the cigarette with tubercle bacilli, and he developed upon his lips within the vermilion border the lesion of tuberculosis. This advanced lesion was later excised by von Bergmann and demonstrated to be tuberculosis. The point is that tuberculosis may be implanted upon portions of the mucous membrane. A person with pulmonary tuberculosis, with cavity formation, who is constantly throwing off tubercle bacilli, is in great danger of implanting tuberculosis upon the mucous membrane following the analogy in the case I have just cited; consequently, any abrasions of the mucous membrane should be carefully guarded for that reason alone.

Tuberculosis may make itself manifest in other ways.

There is a case reported by H. Wolf in which the superior maxilla was removed because of a supposed sarcoma of the antrum. There had not been any suppuration. Microscopical examination of a section of the growth which completely filled the antrum disclosed tuberculosis.

In regard to syphilis, it has been stated that the three different lesions of syphilis, which we are pleased to term primary, secondary and tertiary, may be manifested in the mouth. There is one secondary manifestation which is very often seen, and that is the papule which occurs in the corner of the mouth during the secondary lesion and following it. On account of the movements of the mouth the papule does not heal; it is covered by crusts, and the skin around the corner of the mouth takes on a copper-colored hue. That is one point which may be noticed by the dentist.

In regard to canker sores and their differentiation from other sores, quite frequently we see patients who have whooping cough with

a sore beneath the tongue upon the frenum, this being due to irritation of the teeth during the paroxysms.

Another condition in the mouth which may be easily differentiated from some others, one which is not particularly rare, and still not so eommon, is that known as thrush; the patch may be wiped off from the skin without leaving a marked excoriation.

Dr. Pusey has referred to the hemorrhages which oecur in the mucous membranes, and one point which may be of particular benefit to the dentist would be with regard to hemorrhages and discolorations which accompany hemophilia. Therefore, when a patient with pigmented mucous membranes presents himself for the extraetion of a tooth or teeth, it would be well for the dentist to inquire whether he has had previous severe hemorrhages, and if so, he might be spared a fatal hemorrhage from the extraction of a tooth.

Pigmentations of the mouth are beginning to be noticed, and classified according to their etiology. One point is that inflammation of any sort, particularly of the mouth in colored individuals, leaves pigmentations.

Dr. Gilmer (closing the discussion):

There is little left for me to say in closing the discussion. I am under obligations to Dr. Pusey and the other gentlemen who have diseussed my paper.

If this were the last time I ever expected to appear before this audience I would emphasize the importance of the younger men giving more attention to the pathology of the mouth, other than that dependent upon the teeth. There are many such diseases and some of them require early diagnosis to be helpful to the patient. The dentist will be the first to see indications of disease in the mouth, since this is the dentist's field, and he should, even though he may not care to treat such conditions, have an intelligent knowledge of them, that he may refer them to those who do.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held Mareh 9, 1909, with Dr. Truman W. Brophy in the chair.

Dr. W. V-B. Ames read a paper entitled "Silicious Cements."

DISCUSSION.

Dr. J. W. Wassall:

I am not really competent to open the discussion on this subject, because I have taken little interest in its use after seeing the rather unsuccessful results of others. I admit I have not given these cements a fair test in my own practice, because I have not taken enough pains to study them and try the different kinds. I have thought, however, from what I have seen, very much as the essayist thinks tonight, that there may be something in this material, but we have not found it out yet, and I have rather taken a back seat so far as my own use of these cements is concerned. I share the hopes of the essayist that something will be found which will enable us to make fillings in teeth without extension for prevention as much as necessary. But, notwithstanding the fact, we know that one of the reasons for the great success of inlays in stopping the recurrence of caries is because the margins are necessarily extended; still, when I look at some of the porcelain inlays in front teeth, where they have been opened up from the lingual aspect, I am surprised at what I have done myself, although the parts lost have been restored. I hope some day we can with safety fill with a plastic material in such places without the same destruction of enamel which I am obliged to now make for inlays.

Dr. J. E. Hinkins:

I have been very much pleased with the paper of Dr. Ames. Some years ago I did a good deal of chemical work on cements, but I have done nothing with regard to these new cements. Dr. Capon, of Philadelphia, and myself were the first two dentists in the United States who used the Ascher cement, and when I first started with it I thought it was the whole thing, especially for setting porcelain inlays, but after two or three months I began to notice a beautiful black ring around the porcelain, and these black rings continued to increase as I set the porcelain inlays with it. Then, one of my patients in the east, a young school girl, for whom I filled proximal cavities in the front teeth in the fall, came home for Christmas, and the fillings were very much like those you have seen here tonight. These fillings stained both the enamel and dentin. I then filled them with some of Ames' cement, light color, and some with Harvard cement. In filling them with oxychlorides it helps to remove the stain. But I quit it after I had been using it for about six months. I have not used it since that time, nor any of the others to any extent. But I firmly

believe with the essayist that there is a great field in this line of work for these cements. Just what the chemical combination would be is a rather complex question. I cannot see any reason why we cannot get something better than we have ever had in the zinc phosphate, and the fact that he is getting adhesion such as he referred to is one great step in the silicious cements. In the other cements I have worked with I found they would not stick to the cavity. I sincerely hope that Dr. Ames will accomplish much good along the lines he is working, because it will not only benefit the profession, but the public as well if we can save some of the destruction of the proximal walls of teeth. Personally, I wish to thaink Dr. Ames for the work he is doing, and hope he will continue.

Dr. Elliott R. Carpenter:

I have been very much interested in Dr. Ames' paper and wish, in the first place, to congratulate him on its excellence. He has opened up a field for investigation. I have used the Ascher cement for about a year, and my attention was attracted to it by a patient who came to me from a Boston dentist who had filled some sixteen or eighteen cavities a year previous to this time with Ascher's enamel, and these cavities included the incisal angles of incisors occlusal surfaces of molars and bicuspids, also the buccal surfaces of the distal teeth as well. Some of them were not of good color so far as the match was concerned, but the adaptation was most excellent, and showed after a year's wear and exposure to the saliva no discoloration. The margins were apparently perfect. I elicited of the young man, twenty-two years of age, as to how they were inserted, but the only thing he was able to explain was that the dentist mixed it up like putty, molded it into the cavity and then rubbed it off. There was no medium of tenacious quality underneath the Ascher's enamel. I have tried this cement in all kinds of cases and have followed the directions very closely, but my experience in the majority of cases has been most disastrous, so much so that I have absolutely abandoned the use of Ascher's enamel. There have been a few cases in which I have used it along buccal surfaces, where the saliva has caused great discoloration. I believe there is some quality in the saliva which does that, and I am absolutely afraid of this enamel, but I do hope Dr. Ames will be able to work out something for us that will be useful in our daily practice.

Dr. C. N. Johnson:

I feel as Dr. Wassall has expressed himself, that we are fortunate in having a man like Dr. Ames to investigate this question, a man who can look at it from the point of view of the practicing dentist and manufacturing chemist. I have not had a wide experience in the use of this kind of cement, and what little experience I have had has been apparently contradictory. In some cases the product seems to give good results, in others disastrous results. I think that if Dr. Ames can incorporate in this product an adhesive property he will have gone a long way toward improving the product permanently, because in very many of these cases where we have found failures those failures have been due to the shrinkage from the walls, leaving a leak, which introduces the factor of discoloration. I saw a case the other day in my office where a filling had been inserted only three months, and I do not know what product it was. It was a silicious cement and there was a dark line around it and the tooth itself was discolored, but the filling was not discolored. I have had other cases of failure with this product. I had a case a short time ago where I had inserted fillings of this character in the buccal surface of an upper bicuspid and in the mesial surface of an upper cuspid. In the bicuspid part of the filling flaked away, leaving a cavity. In the cuspid the filling was loose. The filling shrunk badly, and I find that the greatest limitation of this material is a tendency to shrink. It is a harder cement than oxyphosphate of zinc and the harder the cement the greater the shrinkage. While I have seen some cases in which there did not seem to be any shrinkage, at the same time it is so unreliable that we need some definite and well-sustained improvement in the product to make it reliable for us to use daily in our offices, and I am greatly encouraged by Dr. Ames' investigations and study of this subject, and it is to be hoped that he may be able to evolve something which will give us a more reliable product than anything we have had in the past.

I wish to express my appreciation of the paper and the manner of its presentation. It is a phase of the subject which may be beneficial to us in our practical work.

Dr. Truman W. Brophy:

I did not listen to the paper of Dr. Ames as carefully as I might have done, but allowed my mind to be occupied in part with some other thoughts while he was speaking. Among them this thought

came to me, namely, the time would surely come when someone would investigate and furnish us a cement which would enable us to preserve the teeth, a cement that would endure. We have all hoped for that for many years, and I am convinced that the profession some day will secure that which it so earnestly seeks, and if anyone at the present time is better able than anyone else to do that it is Dr. Ames. I do not know of any other man who has practiced dentistry long and successfully who has this subject more at heart and who is better qualified to evolve exactly what the dental profession needs than Dr. Ames. He works and thinks and dreams of cement, and while porcelain has done so much as a filling material, in the insertion of large gold fillings we have depended on the right kind of cement to make them perfect. I think the essayist has already succeeded in giving to the profession a cement which serves a better purpose in setting inlays than any other that has appeared, and if he can succeed in producing a cement that will make it possible to preserve teeth without any porcelain or inlays of any kind he will have reached the very acme of success in supplying the profession with means of preserving human teeth.

A good many years ago, when the question of inlays was discussed by Dr. Swasey, Ames and others, I felt the inlay was a rather poor thing, and that probably the best inlay that could be put in would be one made of gold foil that had fallen out. I thought I was a little severe on Dr. Ames at that time. I have taken occasion before publicly to admit that I was mistaken, and I have apologized to him for the unjust criticism, and since we have gone on from that time and the inlay is a fixed method of practice, I am sure we are all indebted to him for having been one of the pioneers in making and adjusting them. Furthermore, we feel indebted to him for his untiring efforts in the laboratory in producing cements which are indispensable to the dentist. Everybody looks to him now for advice and suggestion in the making of cements, in the preparation of them, in the manipulation of them and their adjustment to fillings. I am satisfied that a large per cent of the dentists who make use of cements do not know how to mix them properly. They do not know how to mix them as they should be mixed. If anyone will watch Dr. Ames mix these powders and see how diligently he manipulates them and uses the spatula in rubbing them down, in getting the fluid mixed with the powder, and using them at the right time before they har-

den, and get them finished before they set, he will learn a great deal. I am satisfied a great many inlays have fallen out because dentists undertake to put them in after the cement is partially set.

I want to see Dr. Ames continue his work along this line, because he is doing the profession more good than he would if he were working over his chair all the time in filling teeth. Indeed, we are fortunate in having a man who has the ability to do this work who has the energy to stick to it all the time, working to accomplish better results than those he has previously demonstrated to us.

Dr. Ames (closing the discussion):

Following Dr. Brophy's kind words and those of the rest of you who have spoken, it looks as though we have been having a love feast. It is truly gratifying to me to have my desultory efforts appreciated. I can only say all this work is fascinating to me, and this particular branch of the cement subject is particularly fascinating. Although I have not been able to devote much time to it, having other occupations, I do feel that I have made some progress and have been able to show some of the shortcomings of some of the materials, and what is most to the point, the reasons why.

I believe it is possible to get some adhesion with a silicious cement. For instance, one test I have made quite often is the filling with this kind of cement of a cavity which is formed after grinding the cusps from a human extracted molar in a sufficiently sound condition that a flat surface with a complete enamel margin and surface of dentin is presented. By forming a cavity which would reach to the enamel margin in all directions, with a flat base, the edges can be easily watched after filling. I have found I could with some of the materials latterly available make a filling which did not show any defective leaking margins, whereas with the earlier materials I could not make a filling which did not show faulty margins. Wishing to utilize the same tooth for another filling—to return to the question of adhesion—I would make a cut from one margin to the opposite directly across the mass, when with Ascher enamel, for instance, the parts would drop out from being separated. I have been able to fill such cavities—with berylite, for instance—in the removal of which I would need to cut out the last bit from every corner, showing a positive adhesion.

From what I have seen in testing the Ascher enamel and from what I hear of some most excellent results as well as so many faulty

results as regards discoloration, I believe that the principal fault of the material is from improper pigmenting of the powder. I am inclined to believe that with one or two colors, No. 4 and 5, and the plain white, one may get good average results. I think plain white would not give the objectionable discoloration, and that this may be pigmented to give much safer colors than the makers of this cement have produced. If the filling is leaking and the material has been improperly pigmented it will surely give a dark line because of the tendency of the ingredients of these materials, and especially some pigments, to form dark-colored sulphides. In locations in which the accumulated dark sulphide is not removed by any process of mastication or other friction the stain is much in evidence. It has been observed that with these materials which are prone to discolor they would be clean upon the occlusal surface, getting plenty of the friction of mastication, and would be very dark upon another surface, the occluso-proximal filling being clean upon the occlusal surface and growing darker as it approaches the cervical margin.

In bringing this subject before you I can take to myself some small satisfaction in having demonstrated that some of the faults of silicic cements are not necessarily inherent, but that they are extrinsic defects, capable of correction.

A regular meeting of the Odontological Society of Chicago was held at the office of Dr. L. L. Davis, 6 Madison street, Chicago, on Tuesday evening, April 13, 1909, at 8 p. m.

The president of the society, Dr. Truman W. Brophy, occupied the chair.

Dr. J. E. Hinkins read a paper entitled "Synopsis of Discussion Between Drs. Miller and Goadby on Dental Caries."

DISCUSSION.

Dr. G. W. Cook:

I think the discussion of this question by both Dr. Miller and Dr. Goadby brings us to the realization of the fact that the question is not yet settled. I agree with Dr. Miller that Dr. Goadby's criticisms were unjust in that he dealt with the question as if he were settling the whole subject while Miller had not done much with it. As a matter of fact, he introduced nothing, so far as I can see, that was new or startling. While I was in London I visited Goadby's laboratory, and, while he was out of the city at that time, I saw his assistant, and

had several hours with him, a young man with very good bacteriological technique. It seems that a good deal of Goadby's work is done something like Talbot's—by somebody else working for him. Evidently his interpretations were not as correct as they might be, from the fact that he was not keeping close track of some of the things that were being done.

I am willing to take my hat off to Miller and what Miller has done. Of course Miller has stated in a number of places, and at different times, that he did not consider that his work was final, but that there was a good deal to do yet. I think we all realize this more and more as we go along, and especially from a clinical point of view. There are very few points that Miller has not made some very good suggestions regarding, and there are very few points where he has not placed a peg, in order that the next fellow might look out for shoals. That is the only thing that anybody can do, to go through the forest and blaze a tree once in a while, or set a stake, so that the next fellow can profit by the trail that has been left.

The subject that has been brought up tonight is naturally capable of a great deal of discussion. If we would go into all the details it would consume a great deal more time than that devoted to the paper. I have done some work on dental caries and on the bacteria of the mouth. While Miller never brought forth the pre-morphic idea, as originally brought out by Williams, he recognized that in the fact that he gave two or three pure cultures where they were different, showing that there was a variability of all the organisms, to a degree at least. There are many things that no one has touched upon very conslusively. One point is the fact of the media changing in which the bacteria live in the mouth. To me that is the great factor. Another thing is the presence of sugar. There are very few bacteria that are capable of breaking up sugar and producing acids. There is that condition that Miller speaks of where the organisms live together; in other words, most every bacteriologist considers that in the symbiotic action of organisms one is essentially important to the process that another may establish. We know that some forms of vegetable life grow very much better when they have a certain fungus on them, or somewhere where they can draw a certain physiological force from them. There are some organisms that must, in order to establish fermentation, exist in conjunction with other organisms. That is illustrated in the making of kumyss. That is an illustration where we have acid formed by

two organisms where it would not be formed by either of the pure cultures. That is the best proof, I think, that you can or cannot produce dental caries with pure cultures. I am at a loss to know where Goadby found so many streptococci that he claims to have found in the mouth. I have never run across them so constantly as he has, though that is not very surprising to me from the fact that I may not have gotten cultures in which they were present.

Some years ago I read a paper on pulp decomposition, in which I gave a classification of the organisms I found in the decomposition of the pulp, and Black was somewhat surprised that I had found as many streptococci as I enumerated. He was of the opinion that my percentage was rather high, though he did not give any special reasons for it. That confirms the fact that perhaps Goadby might be mistaken as much as somebody else in finding those organisms. And, further, while the streptococcus will produce acids, it does not do it in all cases. There is some biological fact regarding all these organisms that ought to be worked out in pure cultures, and in combination cultures other than to determine in a way what organisms will interfere, and what will not interfere. That, to me, seems to be an important point to be investigated and found out, if we are going to know more about the subject. Not only the environment in which the organisms grow, but the general condition of the mouth, the saliva as it comes from the salivary glands, or the mucus as it comes from the mucous glands, and what effect they have on the organisms nobody seems to have determined anything about that yet. We know that some organisms will grow in the mucoid material, or mucin, without producing acid, while in another case the same substance from another mouth will produce an entirely different condition. The establishing by Miller of the bacteriological process of dental caries is certainly, as I investigate and think about the question further, one of the most interesting problems that has been dealt with in pathology.

As I said in the beginning, the question is so broad that it seems impossible almost to bring out even a few points. Let us consider whether the pigmentation in the dentin of the teeth, or bacteria that produce pigmentation, have anything at all to do with the question. The pigmentation may be pigmentation of the dentin itself, when we consider that the dentin of the tooth is made up of from 20 to 27 per cent of sulphur compound. That varies in different teeth. It is always variable in its organic compounds with proteids. The sulphur

that is in there plays a most important part in the discoloration, because we know other sulphids are formed in large or small quantities, differing because of the great many factors that enter into the development of pigmentation. One of the most common forms of pigmented bacteria, and one studied more than any other organism concerned in pigmentation, is the bacillus prodigeosis, which produces a very beautiful pigmentation of bread, but if you transfer it to the potato it produces an acid reaction. You see how easy it is to transfer it from one activity to another. It is a big field, when you think of the twenty-four organisms Miller identified with dead dentin, and you can see the possibility of one getting in once in a while and making up a great system of fifty or sixty that may be present in any mouth under ordinary circumstances.

Dr. J. G. Reid:

Mr. President, the presentation of the discussion by Dr. Hinkins to me is new. I do not remember having had an opportunity at any time in my reading to have passed over this subject at all, but it is exceedingly interesting. The presentation of it is unique and novel, and along an educational line. Dr. Cook is abundantly able to see these differences to a much greater advantage than others who do not pursue that field of investigation, and therefore I feel myself unqualified to discuss the question at all, other than from the general knowledge gained from reading, which we all have, and I would, therefore, not offer any discussion of the paper.

Dr. L. L. Davis:

Mr. President, it is a long time since we have heard this subject discussed. It was one of the first things that came to my notice after joining the State Society. At that time Dr. Miller's paper had been published, and Dr. Black took up a series of experiments to demonstrate to the members of the Illinois State Dental Society the experiments of Miller, that decay was produced by bacteria whose exudate was acid in its reaction. That is as far as the laity ever got on the subject. The later papers by Williams and Goadby took the matter up as Miller left it at that time. I do not know that Miller ever claimed to settle the question. He simply proved that decay was not the result of mineral acid, but the result of acid forming bacteria, and the specializing of that bacteria was begun at that time. All credit is due to Dr. Miller for having taken the first steps in this direction. As the previous speaker said, he has driven in pegs for the engineers

that followed, so that they would have something to go by in their later experiments. There is no doubt but that a good deal Goadby has said may be contradicted in the next twenty years, or he may be criticised by others that may follow him. As far as the general practitioner is concerned, all credit must be given to Dr. Miller for having overthrown the teachings of the schools twenty-five years ago, when I graduated, because at that time we had no knowledge of bacteria as being the cause of decay.

Dr. C. N. Johnson:

Mr. President, this is an intensely interesting subject, and I am very glad that Dr. Hinkins has brought it before us. This subject has been before the profession for a long time. It was in a most chaotic condition until Miller made his demonstration. Away back in 1835, I think it was, Robertson was the first man to state definitely that dental caries was caused by some force exerted from without inward. It had been the theory of many men before that dental caries progressed from within outward. He laid down the law that it was from some agency that acted from without inward. That was the first really definite statement in regard to the *modus operandi* of dental caries. Then different theories were advanced. The theory of inflammation was one, and as late as 1885 I had a very heated discussion with an old professor who formerly lectured to me about the matter. He contended that it was due to inflammation. Then came the mineral acid theory of Dr. Watt, which was advanced with a great deal of dogmatism. Then came Miller's work, and I tell you, gentlemen, Miller's work was revolutionary on that subject. We have never had from that time to this a work on that subject which was so definitely stated and of such a definite nature as that of Miller's. I am very glad that it has been brought out tonight that Miller did not claim everything in connection with this. The subject of dental caries has not been settled as yet. Miller simply gave us some facts that he had learned to prove that dental caries could be produced artificially which simulated the dental caries which occurred in the mouth of the human being. He did that by acting on the enamel with acids formed as a waste product of micro-organisms, and I think he stated that the chief acid in that process was lactic acid. I regret that Dr. Miller's work was scattered over so wide a field, because he thereby lost the opportunity to follow up that one particular thing and give us something even more definite about dental caries, because if there is one

thing in the study of this subject that is impressive it is the fact that dental caries does not always start or progress the same in different cases. There is a different method of attack that has not been sufficiently taken into account by the men who have investigated this subject. It seems to me that the significant thing for us to study today is the subject of immunity and susceptibility to dental caries. There are very few men in the profession who have the ability or inclination to work out the pathological aspects of this question in the laboratory, but every man who practices dentistry can study the patient's condition, and the conditions which diminish susceptibility. I believe members of the profession today are not living up to their highest possibilities, because they are not studying this subject sufficiently. Dental caries is a question of environment. It is not a question so much of the tooth tissue. If it were a matter connected with the tooth tissue we would be absolutely helpless. Since it is a matter of environment we can change the environment. That is what is being done today in the keeping of the teeth clean and instructing regarding prophylaxis. The future hope of the profession is in working directly towards the establishment of a condition of immunity. Dr. Low, of Buffalo, is working along the line of administering medicaments to individuals to establish immunity, and is getting success in some cases, I believe. Aside from this, it seems to me that we can establish in the mouths of our patients a condition of immunity from dental caries earlier than has ever been done, by careful supervision and prophylaxis, and I believe that it is along these lines that the future benefit is going to come. I am intensely interested in this subject, and I wish our investigators would give us a scientific basis upon which to work in the establishment of immunity in susceptible mouths.

Dr. Truman W. Brophy:

I feel that no more timely paper could be brought before us than this one. We are now in a state of uncertainty and doubt as to whether even the more advanced members of the profession understand the subject, whether dental caries is brought about according to the teachings of Miller. There is doubt as to whether his conclusions are final, as we have heard stated here this evening by men who have studied the subject for a period extending over many years. I must confess that I myself feel that a great deal will have to be developed in this particular line of work, and what I am about to say now has to do with the continuing of the great work done by Professor Miller.

Whether we have men among us who believe that Miller was right or wrong has nothing to do with it. The question is before us. Have we not a great obligation? Do we realize our responsibility to our profession and to humanity to that degree that we will do our part, no matter how small that part may be, to assist in the pursuing of the investigation along these lines, so that by-and-by nobody will doubt as to the real cause of this most prevalent of all diseases known to mankind—dental caries. There is no subject in this world, it seems to me, more important to the interests of humanity than the subject we have under consideration tonight, because we are dealing with a disease that almost everybody suffers from. Dr. Crawford, of Nashville, Tennessee, made the remark some years ago that "Oral hygiene is the highest expression of general prophylaxis." I said to one of our leading physicians today: "The time has gone by when physicians may place drugs in the stomachs of their patients with the vague idea that they are doing something to cure them, when they do not know anything about it to a certainty. They are unaware of the fact that within that mouth in which these drugs have been placed resides an infection that is poisoning the patient every minute, bearing him down to a state of mental depression and physical distress, not knowing that the patient's health is being ruined by local infection, and that infection having been brought on by diseased teeth. He admitted I was right. Dr. Miller lifted a great cloud from the dental profession in awakening interest in the study of this subject. If Miller's life had counted for nothing more than to point out to the dental profession the necessity of getting actively at work with the view to solving this great problem his life would not have been in vain. He worked night and day. He lost his life by reason of his untiring efforts to solve this and other great problems in the field of pathology. What I am about to say you all understand. We have an obligation to do something to perpetuate this work, and we have two men at this table tonight, both of whom are competent by reason of the trend of their minds, by reason of their strong, irresistible desire to delve deep into this subject, to take up the work that Miller's untimely death ended, and determine in a way that they know so well how to do where his errors were, and follow the thread along and bring out of his work, in further pursuit of it, the results that he would have obtained had he lived. Everybody knows that Miller was honest. Everybody believes that he would have corrected many errors, as he did in many

instances. He was determined in the course of his life to work this subject out as far as it was possible for him to do it. He was a man that would listen to others. If he was wrong, there never was a man more prompt in admitting his error. The obligation that we have before us is to do something, as some of the gentlemen at this table have done, to show to the world that they appreciate what Miller did, and to make it possible for men who in some instances cannot by reason of their financial situation pursue this work as they would like to do it, to take advantage of a fund which should be created, what for? Not for ourselves, nor for the dental profession, but for humanity. The greatest work on the earth we can do is service, service to humanity. That is the reason I am glad I am a professional man. I remarked to a banker the other day that I thought he was entitled to a great deal of sympathy. He said "Why?" I said: "Because you are all the time thinking of mere money." Some of the men at this table have done something in a substantial way to assist in carrying on the very work Dr. Hinkins and the rest of us have talked about. Miller fortunately had a competence. He could do it. Isn't it right to assist in doing that work? Let us do something to assist in raising this fund, and we will serve the entire human family everywhere.

Dr. Hinkins, in closing the discussion, said:

The discussion has been somewhat rambling, and has not been confined strictly to Goadby and Miller, but I wish to say that I thoroughly appreciate the work of Dr. Goadby. Had it not been for Dr. Goadby's criticism we should not have had the discussion tonight, and Dr. Miller would not have answered that discussion in the manner in which he did. While Goadby criticised Miller in his pioneer work, and while some of his criticisms were uncalled for, still we have to acknowledge the fact that if you take two men of equal ability and let one man discuss a subject from one standpoint and the other discuss it from another, they can both put up a good discussion; and while I am perfectly willing to concede all glory and honor to Miller, still I think there is a great deal of honor and glory due to men like Goadby, Wiliams, Black, Cook and others.

As I have said, I appreciate all that Dr. Miller has done. When I first came into the profession the leading theory was the mineral acid theory, and in many ways it was a logical conclusion, but I have had to learn to think myself. While many times my thoughts have not been expressed grammatically, they have been honest, and I have

been led to the conclusion many years ago that the whole system is a co-operative system, and in my review of the literature, and in reviewing the beacon lights of the profession I had the good fortune to talk to Dr. Miller, and we discussed the matter pro and con. I have since thought that it was too bad that I did not present this synopsis before his death, because he could have added a great deal more to it than I can, as I am not able to present the subject in the form in which it should be. I thought that this would be a good place to present it. Taking it altogether, from what Miller has stated, and what Goadby has done, and from what the others have done, and from what Dr. Cook has stated and done, we have to concede, gentlemen, that it is not pure cultures that produce caries of the teeth. It is mixed cultures, and it is a condition brought about entirely by environment. You can take the tubercular germ in the human mouth, and in the dog and a few other animals, and it will retain its normal size, but in the cat family it will attain three times its natural size, and grow. Inoculate it into the human family again and it returns to its natural size and characteristics. These different actions, such as the catalytic, electrolytic and hydrolytic, are of assistance to one another. Of course we must have these pure cultures to study the biology and etiology of the different things and come to correct conclusions regarding them.

ILLINOIS STATE DENTAL SOCIETY, FORTY-FIFTH ANNUAL MEETING, DANVILLE, MAY, 1909.

DISCUSSION ON THE PRESIDENT'S ADDRESS.

DR. S. F. DUNCAN, of Joliet:

I have no doubt that I voice the sentiment of everyone present when I say the President's address is a splendid resumé of the work our State Society is doing, and I am sure it is an eye-opener to many of us. Few realize the vast amount of work it takes to run successfully an organization of the magnitude of our State Society, and especially is this true since the work of the local or component societies has been under full swing. And the great success which this work has attained is the highest compliment that can be paid the men who are actively engaged in its management. What this society is doing for the individual members of the profession in the state is very difficult to properly estimate. However, it is certain that the

dentist who puts the most of time and effort into the work of the society is the fellow who gets most good out of it.

Just in this connection I want to say a word in regard to the post-graduate course of study. It is a marvel to me that the committee appointed to prepare this course has accomplished thus far so great a task. It certainly shows that the right men were appointed to do the work, and I want to compliment them on it. And while it will be very widely useful, no doubt those who did the work profited most by it. For no one can go into a subject and do the great amount of careful reading that has been necessary in the preparation of this course without getting an immense fund of knowledge as a reward for the effort. I think we all agree that the post-graduate work is one of the most important, and promises to be the most beneficial of any ever undertaken by a dental society. The thing for the members of the component societies to do is for each one to take hold of this post-graduate work with a vim and put forth his best energies. Most of us who have been out of college for a number of years have gotten out of the study habit; our minds are no longer disciplined to that kind of work, and it will be a little difficult, I imagine, for some of us to get right down to business of this kind. But we can do it if we make up our minds to, and we and the entire profession will be helped by it. Just think for a moment what an uplift will come to the profession of our state from sixteen hundred or more dentists studying scientific questions in a systematic way. The good cannot be estimated, and the broadening effect it will have on us as individuals is bound to be far-reaching. Another point, it is absolutely necessary that we should do work of this kind if we are ever to attain a place among the learned profession which I believe we should aspire to.

The president states that "the establishment of good fellowship has not been so easy." This is undoubtedly true, and yet I feel that much progress has been made by the influence of local societies. For men cannot get together and study and discuss questions of common interest without finding out that each has some good qualities which were formerly unrecognized. And through this recognition of good in the other fellow, jealousies are abated, backbiting ceases, a better understanding results and good fellowship is established. I was glad to hear the President say that we should never allow a meeting of this society to pass without honoring the names of those who have

gone before, who gave so freely of their time, thought and energy for the progress of the profession which they loved. And I would like to suggest that we should not forget to scatter a few flowers along the path of those who have given and are still giving the best there is in them for the elevation and progress of our chosen calling. When we see the great sacrifices of time, energy and financial means to the cause of science and for the good of humanity by such men as our own beloved Dr. G. V. Black and others who are working along the same lines; or such devotion to the elevation of our Society to a place of power, influence and usefulness as that shown by our President and those who have aided him in the work of reorganization, we should not wait until it is forever too late to speak the kindly word of appreciation and admiration of their splendid work.

The Illinois State Dental Society is a great organization. It occupies a commanding position among professional societies both at home and abroad. It is daily shedding its influence for good upon our profession throughout the world; and humanity is reaping the benefits of our activity. It behooves us, therefore, to maintain this position, and we can do it if each and every one will simply use the talent God has given him instead of keeping it buried out of sight.

Dr. M. L. Hanaford, of Rockford:

The paper of our President is somewhat different from the addresses of former Presidents. We have always been told, since I have been a member of this society, which is about twenty-five years, that the Illinois State Dental Society was the largest, best and finest society in the world. Dr. Black has not only told us this, but he has given us the proof of it.

The work which has been done by the Secretary in the organization of this society has been tremendous and its far-reaching benefits we all know. The component societies are the foundation of the success of the State Society, and the work of getting young men interested in them is one of the finest things that has been undertaken. I must confess that four or five years ago, when reorganization was attempted, and an increasing membership was asked for, I was skeptical as to the results. I was not sure whether an increase in numbers would work for an increase in interest and efficiency, but I think we are obliged to acknowledge that the work has been eminently successful, and although it is not possible to bring in and interest all of the dentists in the smaller towns, we have been very

successful in that regard. If we can get these young dentists into the societies and their money to carry on the work, it means something, and gradually we may be able to get them interested in the work of the local societies. I can speak from the experience of the Winnebago County Society, and it is an experience which I presume is duplicated in other local societies, that it is exceedingly difficult to get men in the smaller surrounding towns to attend the meetings. In our own society we have one man who comes from one of the smaller towns to attend our meetings regularly. Several others are members, but it is very rarely we see them at our meetings. That ought not to be so, and it will not be so if they can be thoroughly aroused and interested in the work, but I have learned long ago that it is of no use to tell people what they ought to do, unless we can get them actually interested, and then they will come.

The post-graduate work, as we have taken it up for the last three or four meetings, has been very successful. We have interested men; we have got them to reading, particularly those who have not been in the habit of reading very much before. One man, in a meeting at which the subject of the etiology of caries was discussed, said he did not think it was possible for him to become so intensely interested in the study of this subject; that it was his custom to pass such articles by in the Journals and not read them, but in preparing answers to questions he showed a profound interest, and I think that will be the experience of the future.

Dr. J. N. Crouse, of Chicago:

About forty-five years ago an elder brother of mine, after I had attended one course of lectures, advised me to go back to Chicago the next day and attend the meeting which was called to organize the Illinois State Dental Society. This was the best advice I ever received. It probably did more for me than any other one thing, because I got into the swim, and I have been there ever since.

The last speaker spoke of how difficult it is to get men to work. I think we will get men interested more by experimental work along the line of post-graduate studies than in any other way. Experimental work is always fascinating. I think the most stupid man living would become more or less fascinated with it.

As the last speaker has said, it is a difficult problem to get everybody interested. We will never do it, because there are a lot of men attempting to practice dentistry who ought not to be practicing

dentistry. You all know that. The whole thing centers upon the one thought of getting men aroused to earnestness. If we can get every practitioner in earnest, so that he will do the best he can, something can be accomplished. This post-graduate work ought to help us very materially, and I have no doubt it will. I want to encourage it more than any other one thing, as I am confident it will very much improve the Dental profession.

C. P. Pruyn, of Chicago:

I could not refuse to respond to such an invitation to take part in a discussion of the subject that has been presented by our President.

One of the previous speakers spoke of honoring not only those who have passed from us, but those who are with us. When men have done such wonderful work as has been accomplished by half a dozen or more men in our society in the last few years, we ought to let them know that we appreciate what they have done. Our President, Dr. Black, has done a wonderful, a phenomenal amount of work for this society in the last few years. He has inspired us to do greater and better things, and I voice the sentiments of the members of the society when I thank him for it.

In building up this system of post-graduate study, every man, both young and old, should be able to render better service to the community. We can hardly appreciate the extent to which this organization will grow in usefulness during the next decade.

Our President has told us that he has received inquiries from every state in the Union as to what is being done by this society. If we have a reputation for doing certain things, we have a great responsibility. Are we willing to work along present lines and thus do something that will be a credit to ourselves and to the world? I think our experience of the past has proven that we are willing to take this responsibility and carry on our work to great success.

Dr. C. N. Johnson, of Chicago:

These opening exercises are always inspiring to me. They are indicative of what we may look forward to for the rest of the session.

I believe this address of our President today has more meat in it than the address of any President that has preceded him. It gives us facts upon which to base an opinion as to what is being done in this organization, and in one respect I am a little more hopeful than our President and those who have spoken, and that is in regard to

the development of good fellowship among dentists throughout the state. The intimation has been made that this feature is somewhat discouraging, but as I see it there has never been in the history of the profession of this state anything like the feeling of good fellowship that exists today, and it is not confined to our own state, but the influence of this organization has gone out into other states.

Last fall, while in Wisconsin, I sat at a banquet table, and I heard it said that just a year or so before this event the members of the profession in that particular city were accustomed to pass one another upon the street without speaking. But there they were, assembled around the banquet board, good fellows. Good fellowship in the profession is the basis of all progress in our professional work. The closer we get together personally, the better progress we will make scientifically.

I must add my tribute to those already paid to our President by the previous speakers. It has been his brains more than anything else that has brought this society to the proud position is occupies today.

I want to say a word in support of our present Secretary. I was very glad indeed Dr. Black brought before you some of the details of the work of the Secretary's office. Dr. Hood answers letters, and does a volume of work which would be amazing to a man not familiar with it, and we are likely to take it for granted, and make the mistake of heaping a lot of work on him which he ought not to be asked to do. We are sometimes careless in our correspondence, and apt to make unnecessary work for the Secretary, and I make an appeal to the members of the society here that they show some consideration for our officers, and particularly to the Secretary, whose work is immense in its details, and that we should do everything we can to support him in that office and be prompt in our replies when he writes to us. In this way we will make the office of the Secretary much more pleasant than it is now. He has done a wonderful work in the year he has been connected with this office.

This address of our President will do more good than many of us think when it is published, from the fact that other state societies will be able to trace the minutiæ and the details of this organization. The address will not only do a great deal of good to the dental profession all over this country, but, I believe, in other countries.

Dr. C. E. Bentley, of Chicago:

It would be redundant for me to say anything save to indorse what has been already said with reference to the excellence of this address. It is a marvel to me, Mr. President, to notice the wonderfully systematic, methodical mind of our President. He has achieved great success in the organization of this society because he is systematic and methodical.

I am somewhat familiar with the details of the work of the Secretary by reason of my contact with Dr. Black in Chicago, and I know the tremendous amount of work that has been shouldered by him in the past, and I know, as you do, of the great results achieved.

I hope we will not take unto ourselves the flattering unction that we are now so great we may stop where we are. Too much self-flattery is liable to sow seeds of disintegration and inertia, and might possibly prevent some of the great work that lies before us. It is always dangerous to pat ourselves on the back.

With reference to post-graduate study, one thing stands out most prominently with reference to it, namely, that it compels men to read. Dr. G. V. Black, not many years ago, stated that the profession of dentistry was not a reading profession, and I do not think he was very far from the truth. But if you compel men to read you will compel them to do some sort of study and some systematic work. Having done this, you will soon get some results.

As to the feature of good fellowship, there is nothing so great as contact. The ability to look one in the face and to touch his palm and to exchange the thoughts which make for personality and magnetism, are the greatest civilizing influences in the world. And this post-graduate work promotes contact.

Dr. C. B. Rohland, of Alton:

The main thing that impressed me in the President's address, as it did some others, was the immense amount of work that is being done by the officers of this society in carrying on this work. That tells the tale more lucidly than anything else I can think of concerning what this society has accomplished and is accomplishing, and why it is getting such a reputation everywhere. Its work is being looked upon as exemplary. Dentists are inquiring as to what we are doing and how we are doing things, and we deserve this, simply from the amount of work that has been done and is being done. I know that our Secretary must have been kept very busy in doing

this work, and how he can practice dentistry and do it as well as he does, I do not know. I could not. I would have to sit up all night and practice dentistry all day, and that would not do very long.

This address will add to the reputation of this society because it will bring the profession at large to a realizing sense of what is being done. In the early days we did very little as compared with the large volume of work transacted today. This simply shows how the profession has grown and is growing, and the society has grown with it, and may it grow still more.

Dr. Black (closing the discussion):

My main idea in presenting the form of address which I did was to familiarize as many members of the society as I could with something of the scope of work of this society which they do not see or clearly understand. Probably most of the members know very little about the details of this work and how much of it has to be done, and if that object has been accomplished my principal purpose has been accomplished.

There are just one or two little items I want to refer to in closing the discussion. Dr. Hanaford spoke of the difficulty of getting dentists in the smaller towns to attend society meetings. That is a natural difficulty, yet I know of some men in smaller towns who, though they may not attend many meetings, are getting a lot of good out of the society work. I could name several such men who have accumulated a full library of this post-graduate course scheme and are using it at home alone. There are not many of these, but I know of a few. Those who have not been connected either directly or indirectly with the work of the society, and particularly with the post-graduate course, have no idea of the large percentage of our members who take an active interest in this work. Some had no more idea that they would do so than that the millenium was going to come. There have been a great many dentists all over the state who have manifested great interest in the post-graduate course this year, and there ought to be many more next year, and if we can interest even a few as we go along we are accomplishing good work.

I think it can be easily figured out that if this post-graduate course work is carried on during the next winter, as it has been during the past few months, we will have in this state next year no less than three thousand short papers presented to our various local society meetings (not by three thousand individuals, because there are

many men who will present two or three papers), and if we have half that many there will be more dental literature read systematically than at any other time heretofore.

Just one more thought or suggestion with reference to the machinery of the secretary's office. The work of this office is now so arranged that our Secretary can do a tremendous amount of work within a comparatively short time, but this work was never as great or as large as it is today. If necessary, our Secretary can have letters printed, the envelopes addressed and the letters mailed to all of the members of the society within a period of five or six hours.

Lastly, we ought not to judge any individual or any society by the position it occupies at any particular time, but rather by the progress that is being made. If we make good progress, I do not care what the particular position is today; it is progress that counts more than position.

BOOK REVIEWS.

The Missouri State Dental Association. Biographies of the Founders, Prominent Early Members, and Ex-Presidents. By Burton Lee Thorpe, M. D., D.D. S.

This is a fascinating volume of about 150 pages, containing at least that many portraits, and giving the biographies of every prominent man in Missouri. Dr. Thorpe has labored hard in the field of biography, and in this volume has placed the dentists of Missouri under a lasting obligation to him for having gathered under one cover so much of interest to the profession of that state. It is a book to be taken up at any time, and it will always be found interesting.

The Dental Review.

Devoted to the Advancement of Dental Science.

Published Monthly.

Editor: C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL.

A NEW CODE OF ETHICS.

At the recent meeting of the Illinois State Dental Society a new code of ethics was adopted by the Society to take the place of the one so long in use. The old code has done great good to the profession and there is nothing but respect for its teachings, but it was felt that some of its provisions should be made more specific and that there should be some additions made to its restrictions. The new code reads as follows:

Section 1. In his dealings with patients and with the profession, the conduct of the dentist should be in accordance with the Golden Rule, both in its letter and its spirit.

Sec. 2. It is unprofessional for a dentist to advertise by handbills, posters, circulars, cards, signs, or in newspapers or other publications, calling attention to special methods of practice, or claiming excellence over other practitioners, or to use display advertisements of any kind. This does not exclude a practitioner from using professional cards of suitable size with name, titles, address and telephone number printed in modest type, nor having the same character of card in a newspaper. Neither does it prevent a practitioner who confines himself to a specialty from merely announcing his specialty on his professional card.

Sec. 3. It is unprofessional for dentists to pay or accept commissions on fees for professional services, or on prescriptions or other articles supplied to patients by pharmacists or others.

Sec. 4. One dentist should not disparage the services of another to a patient. Criticism of work which is apparently defective may be unjust through lack of knowledge of the conditions under which the work was performed. The duty of the dentist is to remedy any defect without comment.

Sec. 5. If a dentist is consulted in an emergency by the patient of another practitioner who is temporarily absent from his office, the duty of the dentist so consulted is to relieve the patient of any immediate disability by temporary service only, and then refer the patient back to the regular dentist.

Sec. 6. When a dentist is called in consultation by a fellow-practitioner he should hold the discussions in the consultation as confidential, and under

no circumstances should he aeeept charge of the case without the request of the dentist who has been attending it.

Sec. 7. The dentist should be morally, mentally and physically elean, and honest in all his dealings with his fellow-man, as eomports with the dignity of a cultured and professional gentleman.

It will be seen that this code contains provisions which have not previously been found in any dental code.

Section III is a conspicuous instance of this, and it is so specific that there is no possibility of mistaking its meaning. It is striking a somewhat prevalent evil at its very root, and the result will place our profession on a higher ethical plane than ever before. The unanimity with which this code was adopted by the state society is an indication of the rapid advance being made in ethical standards on the part of the members, and it is hoped that the practical working of the code will prove beneficial to all concerned.

ENDOWMENTS NEEDED FOR DENTAL RESEARCH.

In August, 1907, we published an editorial calling attention to the urgent need for a fund for dental research, and at various intervals we see reference to this matter in our periodical literature. It is only a matter of time when this must come, and every means should be employed to interest our wealthy men in such a project. The following taken from the *Chicago Daily News* and written by Dr. J. H. Woolley is timely, and we are pleased to reproduce it:

FOR DENTAL RESEARCH.

The Daily News' editorial of April 16 regarding work in the universities was timely and forceful. The point made was that "there are tests of greatness in university work more convincing than mere size of buildings and number of students," and that "the efficieney of an institution in qualifying young men and women to carry on original researeh work is the true test." The diseussion of the importance of researeh work on all scientific lines led to the founding of the Rockefeller Institute of Medieal Researeh. There is, however, one branch of this work that has been overlooked, although it is second in importance to none other—the diseases of the teeth and other diseases ineidental to the oral cavity. These are often so eomplicated and so elosely related to more general physical disorders that they lie somewhat outside the knowledge and experience of the average dental praetitioner, and fall within the range of the speeial student. Our great university in Chieago or the state institution at Champaign eould neither of them do better than to add a ehair of dental research to their already excellent equipments.

Many diseases originate in the mouth and teeth, and the need of special research on this class of physical ailments is as important as work in any other field. Our universities are doing admirable work in scientifie and medical investigation, and it is to be hoped they will make a plaee for this new and more specialized department at an early day. J. H. Woolley.

Chicago.

PUBLIC INSTRUCTION REGARDING QUACKERY IN THE PROFESSIONS.

It is seldom that newspapers can be induced to speak out regarding the evils of quackery among professional men, for the very patent reason that quacks pay money into the coffers of newspapers for the advertisements which foster quackery. It is too much to expect of human nature that an attack will ever be made by newspapers on institutions or methods which regularly support the papers financially.

And yet it is refreshing to note that some publications are awakening to the evils of quackery sufficiently to openly oppose it. *Forest Echoes,* a monthly paper published in Seattle, Wash., under the auspices of the Woodmen of the World, is throwing open its pages for articles exposing quack methods in dentistry. Most of these contributions are signed by *Pro Rebus Rectis,* and they are undoubtedly written by some member of the profession who is familiar with the subject. They expose unmercifully the evils of quack methods, and *Forest Echoes* is to be congratulated on the courage displayed in giving space to them. The articles will set many people to thinking and will probably save scores from being victimized. If other publications would do what this paper is doing along this line it would result in great good to the people.

THE EDITOR'S DESK.

STUDYING FOREIGN LANGUAGES.

If there is anything fascinating and exasperating it is the study of a foreign language. I can work up a case of envy quicker over hearing an individual rattle off several languages fluently than I can over almost any other accomplishment. And yet I recall with some resentment the weary hours I put in as a boy grinding away over Latin, wishing the while that the dead languages had all been decently buried before I was born. And the hard part is that while I remember the drudgery I have quite forgotten the declensions. I could not parse a Latin sentence today to save my reputation from oblivion. But French I liked better, and some day I hope to master this beautiful language. As for German, I began in real earnest with the resolve that I would soon be able to converse fluently at first hand with some of my good German friends who curled their tongue so bewilderingly

around the English language whenever they essayed it. I was fascinated when I heard my teacher roll out the gutterals as if it were second nature, though I sometimes wished he would not chew up the words so fine before he spat them out. And then the construction of sentences! It seemed to me like heading for New Orleans when you wanted to go to St. Paul or Omaha. But the worst of all was the involved character of many of the words. I could never reach the end of some of them without forgetting what the first part of the word meant. I could sail along reasonably well on the short words, but when it came to such monstrosities as "Entscheidungsgrunde," "Verwaltungsgerichtshof," "Ministerialverordnung," etc., I did not feel that I could take a day off and limp over them. They are all good words, undoubtedly, but they turn out too much to the hill for me.

An amusing thing connected with the translation of a foreign language recently occurred in the office of the DENTAL REVIEW. One of our staff, Mr. W. A. Wilde, wrote to Mexico City, asking for a photograph of the dental college building, to be used in our foreign college series. A letter came back in Spanish. Mr. Wilde handed it to a friend who prided himself somewhat on his knowledge of the Spanish language and asked him to translate it. The translation came as follows:

"Dutiful of the politeness of yours of date 27th of March past, he the clear which so much immediately in such a manner limits the translation of this nursery-garden for new example, to me great satisfaction to convey of the photograph which I solicit.

"I therefor for the pleasure of its offer gently to yourselves, affectionately and politely, "Your servant."

This was so very intelligible that it excited Mr. Wilde's admiration, and so to verify it the letter was submitted to a Spanish gentleman, and his translation was as follows:

"I received your kind letter, dated 27 of March, and I am glad to tell you that as soon as we shall be in the new building (because at present we are moving), I shall send you with pleasure the photograph that you asked for. Yours respectfully."

The similarity of these two translations is only another commentary on the fascinating character of studying foreign languages.

BOOK REVIEWS.

TRANSACTIONS OF THE FIRST AUSTRALIAN DENTAL CONGRESS, SYDNEY, 1907.

This is a beautiful volume of 184 large pages setting forth the work done at this notable gathering. Australia may well be complimented on the progress being made in the science and art of dentistry in that country as represented in this volume. The meeting was a decided success, and now that the transactions are in print the reason for the success is apparent. Much excellent material was presented for the consideration of those in attendance, and this in addition to the social features was sufficient to insure success. Another congress is to be held in Australia next October, and if it proves—as it surely will—of as much benefit as the first one it will mean a material uplift to the profession of that land. A very significant thing about this publication is the fact that the expense of issuing the transactions was assumed by the government. Such a paternal spirit as this on the part of any government is calculated to develop the highest there is in a profession, and it will most surely redound to the best interests of the people of the commonwealth. The officers and members of the First Australian Dental Congress may well be congratulated, and we wish for the second one a similar achievement.

ANOMALIAS DE LA OCLUSION DENTARIA Y ORTODONCIA. By Luis Subirana Matas, Madrid, Spain, 1909.

This is a volume in Spanish of 392 pages, with 427 illustrations, and it is a most worthy addition to Spanish dental literature. The eminent author, Dr. Subirana, is well qualified to place before his confreres a book comprehensive and well up-to-date, and as this subject of anomalies of dental occlusion as it relates to orthodontia is a very live one today the book cannot fail of creating much interest among the profession of Spain. The volume is in every way a credit to the author and publisher and lends added distinction to the dentistry of the Spanish speaking countries. Dr. Subirana is in every way to be congratulated on his notable achievement.

FOREIGN DENTAL COLLEGES.

Dental Department, University of Strassburg, Strassburg, Germany.

Stomatological Clinic of the Royal University, Budapest, Hungary.

FOREIGN DENTAL COLLEGES.

Glasgow Dental Hospital, Glasgow, Scotland.

Zahnärzte Abteilung, Vienna, Austria.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Oral Massage:—Oral massage, with its most effective results, may be gained by moving a swiftly revolving rubber cup, such as is used in carrying pumice to the teeth, over the gums.—H. E. Latcham, Jefferson, Iowa.

Soldering Flux:—An excellent soldering flux may be made by mixing equal parts of common vaseline and borax. Smear over parts to be soldered sparingly, and no trouble will be experienced with the pieces of solder becoming displaced.—G. G. Kimball, Mitchell, S. Dak.

Relieving Pain After Extraction:—When the patient experiences pain after the extraction of a tooth, wash the socket thoroughly with Sozodont liquid, full strength. Then place a pledget of cotton saturated with the liquid Sozodont in the socket. This will give almost immediate relief and will also promote healing of the lacerated tissues.—E. D.

Banded Crowns:—To me a crown made without a band flavored of careless dentistry until recently, but as I go deeper into pyorrhea and prophylactic work I see less use for a banded crown, for in a majority of cases there is always more or less irritation until the gum tissue has receded to the top of the band. It is impossible, in a majority of cases to properly treat, for pyorrhea, a root which wears a banded crown.—Frank H. Skinner, Chicago.

Retention of Inlays:—I believe the question of retention of inlays, whether in bridge abutments or in single inlays, is largely one of cavity preparation, and that cavity preparation is a question of angles. We have no undercuts to hold; we have cement, and cement will not hold alone. There must be preparation of the cavity with

angles and a flat seat—bases which will take stress without tilting or rocking the inlay out of the cavity.—Elliott R. Carpenter, Chicago.

Failures in Bridges:—That we have failures no one will deny. I have arranged them in the following classes: Failures by breaking of the structure; failures from fracture of roots used for a foundation; failures from loosening of roots; failures from an esthetic point of view; failures from a sanitary point of view. Notwithstanding, the bridge where it is indicated, is a great blessing to our patients, but where it is not indicated it is a curse. Best of all is to save the natural teeth.—E. H. Allen, Freeport, Ill.

To Relieve Pulpitis:—If you want to get a patient promptly relieved of pulpitis, counter-irritate the gum tissue, over the offending tooth, and give internally 1/100 grain of nitroglycerin, in tablet form. There is nothing like nitroglycerin to relieve the blood pressure, and its effect is very rapid. Do not give the patient any of the tablets to take home. One tablet will be sufficient to get results. This treatment is especially indicated in cases where arsenic has been applied, and the patient returns with a severe throbbing tooth-ache. The relief is almost instantaneous.—W. H. Tweedle, Pierre, So. Dak.

Quick Method of Replacing a Tooth on a Vulcanite Plate:—Dovetail the place in the plate slightly more than if rubber were to be used. Adjust tooth to plate and retain by a large piece of wet absorbent cotton, holding plate and all in the hand. Use a small piece of acolite sufficient to fill space with a slight excess. Heat a small soldering iron in the blowpipe flame to almost redness, touch the acolite, and it will flow to place and securely hold the tooth. Finish with burs and stones. The process takes about twenty minutes and it is impossible to remove the tooth without breaking.—E. Marshall Bush, Rossville, Ill.

Hurry and Worry in Practice:—If we habitually allow ourselves to hurry we use nerve energy under high pressure, get our work mixed or tangled up, and have to go back and untangle it. This continued leads us to the point where we fling open the door of worry. Our store is then being drained by both hurry and worry. At last,

when our supply of nerve energy is almost exhausted, there is a sudden explosion of anger, and the whole business is a wreck. Don't work too long hours; don't work at night; don't work seven days in the week; don't think you can not afford to take a vacation when you need it.—S. T. Butler, Sullivan, Ill.

Strength of Cast Gold for Crowns:—In the use of cast gold in daily practice for three years I have found that gold, as we ordinarily cast it, is one of the most frail materials we can use for casting to the edges of a shell crown. Cast gold is not, and can not be made as strong as the ordinary plate gold. Cast iron is not as strong as wrought iron of the same thickness. A thin cast shell crown going over a properly tapered root, the shell being filled with soft cement and crowded to place, is exceedingly liable to split and is a very treacherous support for anything. It will not last because it has not the strength.—L. H. Arnold, Chicago.

The Cast Inlay Relative to the Education of Students:—The student is far from the zenith of his manipulative dexterity at the time he has reaped his reward in the due course of scholarship, and if he has received the impression that inlay practice is going to be an easy road to travel, the trend of his ambition will be to satisfy such a desire, the result of which will eventually lower the standard of skill which has so long been the pride of the American dentist. To further the effectiveness of this argument, I need only to refer to the change brought about in prosthetic dentistry by the introduction of vulcanite as a base for artificial dentures.—J. G. Reid, Chicago.

Method of Making a Gold Crown:—Wax together the fragments of the plaster impression, soften modeling compound or wax and press it in the impression of the tooth you wish to obtain a die of. Remove the compound, or wax, and chill it. Cut off the proximal teeth, and trim the cervical margin of the required tooth, making it about one-eighth of an inch longer than the impression indicates. Replace the compound model in impression and cover the sides with soft moldine. Remove the compound model and pour Melotte's metal in its place. If the tooth requires building up, this may be done in the impression by cutting out some of the plaster.—M. A. Gottlieb, New York, N. Y.

Construction of Crowns:—A study of the forms of the teeth shows in most cases a constriction of the gingival enamel margin, thus producing a recess which affords some protection to the gingivæ against the excursions of food. This form of development is quite marked in the cingulæ of the incisors where the gingival border is exposed to constant action from the incision of food. In constructing crowns, if this form be given them, greater protection will be afforded the gingivæ and peridental membrane, than if the sides of the crown are parallel. By restoring proximal contact the tissues in the interproximal spaces are protected, while correct occlusion obviates undue stress being brought upon the peridental membrane in mastication.—J. H. Prothero, Chicago.

Dressing for Putrescent Canals:—Following are two prescriptions, one a powder and the other a liquid, mixed like a cement, very thin, and makes an ideal dressing in putrescent canals as a first application, or mixed very stiff makes a good permanent filling in abscessed root canals. Many abscessed teeth can be cured permanently with it:

Liquid:

Oil of Cloves	3j
Creasote	3j
Formalin	gtts. ij

Powder:

Thymol	grs. xxx.
Alum	grs. xx.
Zinc Oxid	grs. xx.
Morphine Sulphate	grs. x.

—A. M. Schoenbrod, Chicago.

Constructing Abutments for Replacing Lateral:—The semi-jacket is admirably suited to cuspid abutments, and by adopting the casting method is comparatively simple in construction. The cuspid is the most favorable for this form of attachment and in many instances will serve alone to support a lateral dummy.

Where the bite is not too close and the patient will submit to the removal of a portion of the lingual surface of enamel, and drilling two or three small pin holes into the dentin between the pulp and

periphery of the tooth, a very satisfactory piece of work may be done in this way. This method will necessitate anchoring to both cuspid and central and requires a high degree of skill in successful application.—F. E. Roach, Chicago.

MEMORANDA.

SOUTH DAKOTA DENTAL SOCIETY.

The next meeting of this society will be held at Huron, June 29, 30 and July 1, 1909.

VIRGINIA STATE DENTAL ASSOCIATION.

On account of the Mecklenburg having been destroyed by fire the place of meeting of the Virginia State Dental Association has been changed to the Chamberlin, Fortress Monroe, Va. W. H. Pearson, Cor. Sec'y.

CALIFORNIA MEETING.

The California State Dental Association and the Alumni Association College of Dentistry, University of California, have secured the services of Dr. John Q. Byram of Indianapolis and Dr. Weston A. Price of Cleveland for their joint session to be held on July 6, 7 and 8, at the College of Dentistry, San Francisco. The presence of these men is a guarantee of a first-class meeting.

INDIANA STATE DENTAL ASSOCIATION.

The fifty-first annual meeting of the Indiana State Dental Association will be held in Indianapolis June 29-30 and July 1. The program is now complete. The papers are all on up-to-date subjects. The clinic will be the largest and most helpful in our history. The exhibits will be many and very instructive. The prospects for a large attendance are very flattering. You are invited. Remember the dates. Dr. O. U. King, Sec'y.
Huntington, Ind.

WYOMING STATE BOARD OF DENTAL EXAMINERS.

The Wyoming State Board of Dental Examiners will hold their meeting for examination on the 5th, 6th and 7th days of July, 1909, at the Senate chamber, Cheyenne, Wyo. All applications for examinations must be in the hands of the secretary, together with the fee of $25, fifteen days before the examination. Applicants must be graduates from reputable dental colleges recognized by the N. A. D. E. For further information address
Peter Appel, Jr., Sec'y, Cheyenne, Wyo.

KANSAS STATE BOARD OF DENTAL EXAMINERS.

The Kansas State Board of Dental Examiners will hold a meeting for the examination of applicants for license to practice dentistry in Kansas, beginning Tuesday morning at 9 o'clock, June 15, and continuing until Saturday, the 19th. All applications must be in the hands of the secretary by June 10. The examination fee is $25. Only graduates of reputable

schools or those having practiced for five consecutive years in another state are eligible for examination. The meeting will be held at Topeka, Kas., in the Roof Garden of the National Hotel. For further information or blanks write the secretary.

G. F. Ambrose, President, Eldorado, Kas.
F. O. Hetrick, Secretary, Ottawa, Kas.

RECENT PATENTS OF INTEREST TO DENTISTS.

916,387. Dental plugger. W. G. Church, Hartford, Conn.
916,856. Dental instrument. R. H. Gallagher and R. E. Dutscher, Plainview, Neb.
918,115. Combination condiment and toothpick holder. G. A. Baeder and G. Ludge, Pittsburg, Pa.
917,995. Dental cabinet. H. E. Brown, Columbus, Ohio.
918,275. Adjustable wall-bracket. A. W. Browne, Prince Bay, N. Y.
918,281. Tooth-cleaning device. E. C. Chambers, Kansas City, Mo.
917,886. Artificial tooth. T. McCullough, Kansas City, Mo.
918,372. Tooth-brush case. P. A. Rohr, Philadelphia, Pa.

Copies of above patents may be obtained for 15 cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

RESOLUTIONS ON THE DEATH OF DR. HARLAN.

Whereas: Through the death of Dr. A. W. Harlan, the Odontological Society of Chicago has lost its founder and a former president, one who had been most actively connected with the society for twenty-five years, whose vigorous personality won for him the respect, admiration and love of his colleagues; therefore, be it

Resolved: That the members of the Odontological Society of Chicago express their profound sorrow at the loss of their associate, and extend heartfelt sympathy to the bereaved family. And be it further

Resolved: That these resolutions be spread upon the minutes of the society, that a copy be furnished to the dental press for publication, and that a further copy be transmitted to the family of the deceased.

J. W. Wassall,
C. N. Johnson,
W. V.-B. Ames.

ILLEGAL METHODS OF COLLECTING.

Our attention has been called by Dr. H. C. Newton to the following from the *Bulletin of the Chicago Medical Society,* which is worthy the notice of dentists as well as physicians:

"Caution—Concerning the Collection of Bills.

"Certain firms have persuaded some of our members to buy form letters or a series of form letters purporting to be sent by a collection firm. These letters are intended to be used by the purchaser in the collection of his bills.

Our members are cautioned not to use these forms, as so doing renders them liable to prosecution for obtaining money under false pretenses and also jeopardizes their right to use the United States mail.

"The postal authorities have ruled that the act of buying printed forms from a firm, and with that firm's heading thereon, and mailing said forms to a patient in an endeavor to collect money, is fraud. The firms selling the forms are not liable, but the individual using them is held responsible.

"This information is from official sources and the Bureau of the Chicago Medical Society should have the credit of obtaining it for the members."

RESOLUTIONS PASSED AT THE A. D. S. E. MEETING AT WIESBADEN, APRIL 12, 1909.

WHEREAS: Through the sequelæ of an unfortunate accident, there has been removed from our midst our co-laborer and respected friend and member, Dr. Alison W. Harlan, of New York, U. S. A., be it

Resolved: That in his death there has been taken from us, at the zenith of his usefulness, one of our most regular contributors and efficient workers, a stanch friend of science and one of the brightest and most companionable members of our profession.

Resolved: That in his demise dentistry has lost one of its most able instructors and the younger members of our profession one of their most reliable guides and truest friends; and be it

Resolved: That the American Dental Society of Europe, in the death of our brother and colleague, hereby deplore its irreparable loss, and respectfully tenders its sympathy to his widow and children in their sad bereavement, and that this expression of our feelings be conveyed to them by our secretary and that a copy of the same be inscribed in the minutes of our deliberations as a permanent record of our love and respect for our departed brother.

(Signed) W. MITCHELL,
I. B. DAVENPORT,
W. M. GRISWOLD.

EXAMINATIONS OF DENTISTS FOR THE ARMY.

The surgeon general of the army announces that while there are no vacancies in the dental corps, he intends to hold examinations to establish an eligible list from which appointments will be made as vacancies occur. Applicants for appointment as dental surgeons in the United States Army will be authorized to present themselves at the nearest military post at which a commissioned officer of the medical corps is stationed, for examination as to physical qualifications for employment, and those found physically qualified will be invited to report at West Point, N. Y., or San Francisco, Cal., about August, 1909, for the professional examination. No allowance can be made for expenses incurred in undergoing these examinations. Application blanks can be procured upon application to the surgeon general of the army. The essential requirements to securing an invitation are that the applicant shall be between 24 and 30 years of age, a graduate of a standard dental college, and shall be of good moral character and habits. Army dentists are employed under a three years' contract at the rate of $150 per month; are entitled to traveling allowances and suitable quarters; they have the privilege of purchase of supplies at the army commissary. The hours of official duty are from 9 a. m. to 4 p. m., although they are subject to emergency calls. During other hours they are permitted to treat persons not entitled to gratuitous services with their own materials.

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THE CONTACT POINT AND ITS FUNCTION, CONSIDERED WITH REFERENCE TO DENTAL CARIES AND ITS TREATMENT.*

BY G. V. BLACK.

In this paper it is not the intention to develop new thought or to bring forward new, or very recent observations, but rather to accentuate some things well known, but altogether too much neglected. The contact points consist of those prominences on the proximal surfaces of the several teeth at which they touch each other when the teeth and the arch are of normal form. This contact point may be of good form, small and prominent, as it usually is in bell crowned teeth, holding much of the proximal surfaces well apart; or it may be of bad form, as when the teeth are very square, or angular, so that broad, flat sides, lie close together for a greater distance bucco-lingually, causing the embrasures to be very shallow. In that case the contact points and the near approach of the proximal surfaces, are broad from buccal to lingual. Then, if the person is even moderately susceptible to dental caries, the form last mentioned gives opportunity for the wide-spreading of caries bucco-lingually. In what is known as thick-necked teeth, if at the same time they are squarely built, so that broad, flat sides come together, we have the worst form of contact found in nature. In this case the broad, flat sides come together near the gingival line. They are apt to catch and hold food between them, which will crowd out and destroy the central portion of what little interproximal gum tissue there is, forming a pocket in which the food undergoes acid fermentation and causes caries near the gingival line,

*Read before the Chicago Odontographic Society April, 1909.

where it is especially difficult to treat; or putrefactive decomposition occurs with grave injury to the peridental membranes. Fortunately this last described form is rare.

The parts of the spaces between the teeth should be closely defined in the mind of every operator in order that these separate parts forming the whole may each be considered. The contact point is but one small part of the proximal surface. The interproximal space proper extends from the contact point to the margin of the alveolar septum between the teeth. It is triangular in form with an acute angle at the contact point, and a base of more or less breadth on the margin of the alveolar septum. In normal condition, in young adults, this space is completely filled with the interproximal gingivæ. That portion of the spaee between the proximating teeth that is formed by the rounding of the teeth away from each other, and which normally is not filled by the interproximal gum tissue, is called the embrasures; i. e., the buccal embrasures and the lingual embrasures. In proportion as the contact point is prominent and well rounded, the embrasures, both buccal and lingual, will be broad and deep; and the arch of interproximal gum tissue filling the interproximal space will be broad enough along its buccal and lingual slopes so that the crush of food running over it in mastication, will clean the embrasures their whole depth, except possibly a little space to either side of the contact point. Again, in proportion as the contact point is broad and flat, a larger proportion of the surfaces will be in contact or in near approach to each other, the embrasures will be shallow, the spaces will be narrow, and from lack of gum tissue to fill them, their deeper parts will not be cleaned by the crush of food through them in mastication.

These two opposite conditions occurring as the extremes of that which is regarded as normal, are of the gravest import to all persons susceptible to dental caries. In the first, the spreading of caries broadly bucco-lingually is hindered or made impossible by the cleaning effect of the crush of food through the embrasures during mastication. In the second, this cleaning effect is in large degree lacking; neither can it be effectively supplied by the tooth brush because of the closeness of the spaces between the exposed tooth surfaes; and proximal decays will spread broadly bucco-lingually. Therefore these cases will require that much broader cavities be formed in their treatment; or that when fillings are made they be converted into the first form by

wide separation and the building of prominent contact points. Every gradation between these extremes will require attention.

The breadth of the contact point is readily measured by passing small silk floss between the teeth, bringing the two strands together between the fingers and holding them tightly away to the buccal or labial. The distance these strands are apart where they leave the teeth will be the width of the contract point occluso-gingivally. Now change the position and hold the strands away to the occlusal and again draw them tightly. Now the distance the strands are apart where they leave the teeth, will show the bucco-lingual width of the contact. In all cases in which the contact points are of good rounded form, a ligature passed either in between the teeth, or out from between the teeth, will pass the contact point with a snap. Many contacts are so perfect and so small that it will be found almost impossible to pull a ligature between the touch points so that it will remain tight. It will slip out one way or the other. In any case in which a ligature will drag through between the contact points and be held for some appreciable distance, the contact is bad, and will be liable to grasp and hold stringy foods.

Connected with these several arrangements of the teeth and their surrounding tissues, there is a function of the fibers of the peridental membranes that brings a continuous pressure of the teeth one against another, holding the contact points in more or less firm apposition. This serves to keep them always in close contact in every normal denture. The force of this arrangement is quickly seen in any case in which a tooth is extracted. Within a few months the space the extracted tooth had occupied will be much narrowed; or in many cases will be closed up entirely by the dropping forward of the back teeth. This is too well known to need comment, and serves to accentuate and further describe that apparently latent, but persistently acting force, that is constantly driving the interproximal contact points firmly against each other.

This force, together with the movements of the teeth in their sockets during mastication, causes the contact points to wear away so that the teeth are continually coming closer together. Usually by the time the person is forty or fifty years old the loss by this wear is equal to about one centimeter (a little more than the average width of a central incisor) measured from the mesio-buccal cusp of one

third molar around the arch to the mesio-buccal cusp of the third molar of the opposite side. This amount of wear when distributed very nearly equally upon the thirty contact points, is normal, and does no special harm. Each of the facets of wear is very small, but may readily be seen when the proximal surface of an extracted tooth is held in such position that the worn facet reflects the light.

This wear of the contact points is, however, often excessive at some particular parts of the arch where the use of the teeth in the heavy work of mastication is greatest. This occurs especially between the second bicuspids and the first molars, the first and the second molars, and more rarely between other teeth. In these cases the contact point becomes so much worn that the facets become very large, creating broad, flat surfaces that fit accurately together. It often happens that stringy foods are pushed between these flat surfaces and held, forcing them slightly apart. At the next meal more food is forced in and held. This, by its repetition, loosens the force by which the contact is held, and the collection of food between the surfaces becomes habitual; the food is forced more and more onto the interproximal gum tissue which is absorbed away from the central area between the teeth, forming a pocket in which this food material undergoes decomposition. If this decomposition is an acid fermentation, the acid product soon causes decay, beginning usually very near the gingival line, a position in which treatment by filling is especially difficult. If the decomposition is putrefactive in the main, decay will not occur, but sooner or later disease of the peridental membranes will occur, which will wreck the teeth involved and perhaps the whole denture. Frequently the roughening of the proximal surfaces, by beginning decay, causes a similar lodgment of food, causing wide secondary spreading of decay gingivally. (This phase of the case, so far as it affects the soft tissues, belongs to Dr. MaWhinney's part of the subject.) It is the duty of every practitioner to correct this condition at once, when injury is noticed, by cutting a sufficient proximo-occlusal cavity in one of the teeth, separating them sufficiently, and building a filling, or by placing an inlay, with a good and sufficient contact point to effectually cure the difficulty. I speak of this after much personal practice in this operation, and also of personal experience with my own teeth. The general neglect of this condition by dentists is a sin against the patients who depend upon dentistry, and a sin against the dental profession.

After the preceding description of the contact point and the related tissues, it only requires mention for one to fully understand the functions of the contact point. In the crush of food between the upper and lower teeth in mastication, the contact points divide the food materially, causing the one portion to run through the embrasures to the buccal side of the arch, and the other portion to run through the embrasures to the lingual side of the arch. This action of the food running through these embrasures cleans the angles of the teeth, and effectually prevents the beginning of decay on the angles, or the spreading of decay across the angles of the teeth, in all persons who are using their teeth normally in mastication. This arrangement is therefore a powerful factor in limiting the spreading of the beginnings of decay on the surface of the enamel.

The normal function of the contact point is to protect the interproximal gum tissue and to contribute to the cleanliness of the denture. The contact points do this service well or poorly, as they are well or poorly formed. This is equally true whether they be the natural contact points, or whether they be those artificially formed in the building of fillings. And yet, in their operations for patients, how many hundreds of dentists are utterly neglecting these contact points. In this they are sinning against the public and against their profession.

When caries begins on a proximal surface the particular place of beginning is just to the gingival of, and close to, the contact point, usually in a small spot, or if the contact be a broad one, the beginning is often in two or three small spots in a line from buccal to lingual. This beginning is always in, or on, the immediate surface of the enamel, never within the enamel. When this has made a very little progress it shows, when the tooth is dried, as a whitish spot. It may be difficult to see if the tooth is wet. There is no cavity; the contour of the tooth remains perfect. The effect on the enamel is first to dissolve out the cementing substance from between the enamel rods, and to soften it; so that a stiff but sharp-pointed exploring tine passed over it with a little pressure, will catch and can be forced into the enamel. On these proximal surfaces the enamel is developed as in a single plate. It has no fissures, grooves, pits or other imperfections. It is smooth, hard, perfect enamel. The point of beginning is exactly where a colony of micro-organisms may lodge and remain undisturbed for

the longest time, grow and form their acid products. The action of this acid begins always upon the surface of the enamel, penetrates it, following strictly the direction of the enamel rods toward the dentin. At the same time *it spreads on the surface of the enamel* in every direction which opportunity allows. It never spreads laterally within the enamel, but each widening of the area is a fresh beginning on the surface. Every beginning follows the course of the enamel rods toward the dentin. The result is the decayed area is more or less conical in form, with the base on the surface of the enamel and the apex toward the dentin. This will go on spreading on the surface and going deeper, until the enamel is penetrated in the central area and the dentin itself begins to be dissolved. There is as yet no cavity; the contour of the tooth remains perfect. No enamel rods have been completely dissolved, no enamel rods have fallen out.

It is at this stage that decays should be discovered and filled, before further injury is done to the dentin. We should not wait, as is the habit of practitioners, until an actual cavity has formed and great damage has been done to the dentin. To discover these proximal decays at this stage is not easy. They cannot ordinarily be seen without placing the rubber dam, lifting the teeth slightly apart and drying them. This opportunity is offered frequently, without extra trouble, when the rubber dam has been placed for other operations. Such decays can generally be discovered by careful examination with a small, strong and very sharp exploring tine, which can readily be made to penetrate the enamel in the decayed area. The general neglect to form cavities and fill them at this stage, causes a much greater injury to the dentin and to the tooth than is at all necessary; and much too frequently they are neglected until the pulp of the tooth is closely approached, or exposed. There is much to be lost and nothing to be gained by waiting, or by neglect.

In this connection, every one should distinguish sharply between spreading of decay on the surface of the enamel, and the formation of broad cavities by the spreading of decay along the dento-enamel junction after decay of dentin has fully begun. The spreading of decay in the dentin along the dento-enamel junction has no limitations except the time of its action; and it respects no part of the tooth whatever. It has no respect for contact points, angles, or cleanliness of surfaces. Its work is done within the tooth, not on

the outside. If we have no decay of enamel beginning on the surface, we will have no decay of dentin. Therefore in all consideration of treatment, decay of enamel, beginning on the outside, is the important consideration; and the two must be held distinctly apart. Decay within the dentin will not be discussed at all in this paper.

The tendency in every decay beginning in the proximal surfaces of the teeth, is to spread upon the surface of the enamel as the colony of micro-organisms causing it, grows and broadens. If the opportunities were equal for spreading in all directions, the decayed area would be round, or nearly round. But the opportunity is not equal for spreading in all directions. Decay cannot spread much toward the occlusal, because this part of the surface of the enamel is well washed, and cleaned, by the saliva and the crushing of food over it in chewing. It cannot spread toward the gingival so long as the interproximal gum tissue has not been pushed away, because decay of enamel from the surface never occurs under healthy gum tissue. If it spreads on the surface of the enamel at all, it must spread bucco-lingually. For this reason the spreading is to the buccal, and to the lingual, along the crest of the arch of the interproximal gum tissue. Therefore the beginnings of decay on the surface of the enamel usually spread in these directions only.

The width that decay will spread on the enamel bucco-lingually is limited again to those portions of the surfaces of the teeth that are nearly in contact, and are not protected by gum tissue. That is to say, decay cannot spread to the buccal, or to the lingual, beyond a point or line at which these surfaces lie far enough apart to be cleaned by the crush of food through the embrasures. It therefore follows that if the contact points be prominent, the embrasures will be wide and deep. Normally such an interproximal space will be filled with firm gum tissue, covering all near approach of tooth surfaces, so that food passing through the embrasures cleans the surfaces of the teeth well. In this case, the spreading of decay on the surface of the enamel will be confined to narrow limits, just to the gingival of the contact point. But on the other hand, if the surfaces are broad and come flatly together so that the embrasures are narrow and shallow, the spreading of decay will be correspondingly broad.

It requires no elaborate apparatus for the effective study of these characters of the spreading of caries on the surface of the enamel on

proximal surfaces, and to determine its relation to the forms of proximal contact. Find a whitened spot, the beginning of caries of the enamel, on the proximal surface of a freshly extracted tooth, one from which no enamel rods have fallen out. Grind away half of the tooth, stopping near the center of the whitened area. For this purpose use the ordinary lathe and grinding stone of the laboratory. Make this surface smooth by grinding on a finer stone. Wash the surface clean, and as the surface dries study it with an ordinary pocket lens. This simple process will reveal the whole scheme of the penetration of enamel by caries. The examination of a sufficient number of these will render any one familiar with the tendency of caries to spread on the surface of the enamel, and the directions and extent of such spreading in any case that may come under observation in practice.

It is only another step to apply this knowledge to the treatment of dental caries. In the treatment, the requirement is simply to place the lines of the cavity margins beyond the limits of the spreading of decay on the surface of the enamel. The general utilization of this one idea in its necessary details, will more than double the average time, which fillings made, will protect the teeth from further decay. When there is added to this the intelligent formation of contacts of fillings with the proximating teeth, and when this is combined with intelligent and masterful manipulative ability, we will obtain the best results in the treatment of dental caries that our present knowledge affords. The details of cavity preparation do not belong to the subject of this paper. But no study whatever can be complete, no manipulative ability will suffice, without this study of the contact point and the influence of its form on the recurrence of dental caries, and diseases of the gingivæ.

Connected necessarily with this is the study of the influence hindering the beginning and the superficial spreading of caries on the surface of the enamel exerted by good, firm, healthy gum tissue filling the interproximal spaces completely; and also filling out into the embrasures sufficiently so that food will glide over it in mastication, and clean the whole depth of the exposed tooth surfaces. The maintenance of this good form and fullness of the interproximal gum tissue is just as important in limiting the beginnings of, and the spread of, proximal decay on the surface of the enamel, as the forms of the teeth themselves. Therefore every care should be exerted to preserve this tissue in perfect health and form.

Why it is that so many men of good natural ability go on year after year filling holes in teeth from the mechanical standpoint only, and fail to study the pathology of dental caries in order that they may actually treat caries with an intelligent idea of its eradication and cure, I am unable to comprehend.

Another important item, that is much too often neglected by practitioners, is those cases in which, by reason of neglected proximal caries, the contact has been lost and the teeth have dropped together, narrowing or almost obliterating the interproximal space. Over and over again I see cases in which the attempt has been made to fill cavities, with the teeth remaining in this abnormal relation to each other. Such attempts at filling are almost useless. If the proper inquiry be made, it will generally be found that the patient has such discomfort in chewing food that this part of the mouth is avoided; or if used at all, is used timidly and inefficiently. Even with this timid use, food lodges and annoys, disease of the soft tissue results, caries recurs and the conditions become worse. The whole matter should have been taken earnestly in hand, and the proper separation of the teeth made. This will enable the operator to restore the full original form, interproximal space, contact point and all. Then in most of the cases, by care, newly formed interproximal gum tissue will again fill the space and a radical cure of the condition will result.

I wish to say in closing, that this discussion of the value of good form of the contract point is not offered with any idea that such good form actually protects every denture from being wrecked by caries. Caries that begins with small openings through the enamel will wreck the denture just as certainly and just as quickly as decays that begin with broad openings. But if we understand the value of good form of the contact points in limiting the breadth of the beginnings of decay, and understand the use to be made of it, we will be able to make a far more rational and more successful treatment of caries.

(Note)—The reading of this paper was followed by the exhibition of a number of lantern slides explanatory of points made in the paper, and also by a number of slides exhibiting the results of very careless operating in filling teeth.

THE CONTACT POINT IN RELATION TO DISEASES OF THE GUM TISSUE.*

BY ELGIN MA WHINNEY, D. D. S., CHICAGO, ILL.

OBJECT.

The object of this short paper is not to present anything new but rather to present some clinical evidence in support of certain well-established principles, to the end that we may be encouraged to put into daily practice what we already know.

DEFINITIONS.

"*The Contact Point* is defined to be that point at which the proximal surface of a tooth touches the proximal surface of its neighboring tooth."—Black.

Interproximal Space "is the V-shaped space between the proximal surfaces of adjoining teeth and the septum of the alveolar process between their necks."—Black.

Interproximal Gum Tissue is that soft tissue which normally occupies the interproximal space! It is triangular in shape, having its base resting on the septum of the alveolar process, its apex reaching to the contact point and its two sides resting against the surfaces of two adjoining teeth.

This gum septum completely fills the interproximal space and covers the cemento-enamel junction.

HISTOLOGICAL STRUCTURES.

Histologically this gum tissue may be described as a mass of connective tissue made up of interlacing fibers, mostly of the tough white variety continuous with the periosteum of the alveolar border, and the principal fibers of the peridental membrane at the teeth necks, and all covered with heavy mucous membrane.

This gum tissue is richly supplied with blood vessels, some nerves, and so-called glands of Serres's, which is a mass of small round cells in the interproximal gingivæ.

Fig. 1.—Is from a longitudinal section at the gum margin and shows the dentin, the epithelial covering of the gum tissue, the

*Read before the Chicago Odontographic Society April, 1909.

cementum, and the fibrous connection between cementum and gum tissue.

Fig. 2.—Taken a little lower down shows relation of fibers to alveolus—to the periosteum.

Fig. 3.—Is from a cross section showing the strong fibers' connection from the cementum to the bone at the edge of the alveolar border.

Fig. 4.—Is a cross section showing fibers passing from tooth to tooth over the edge of the alveolar septum between the teeth.

These fibers are interlaced with the fibers of the true periosteum

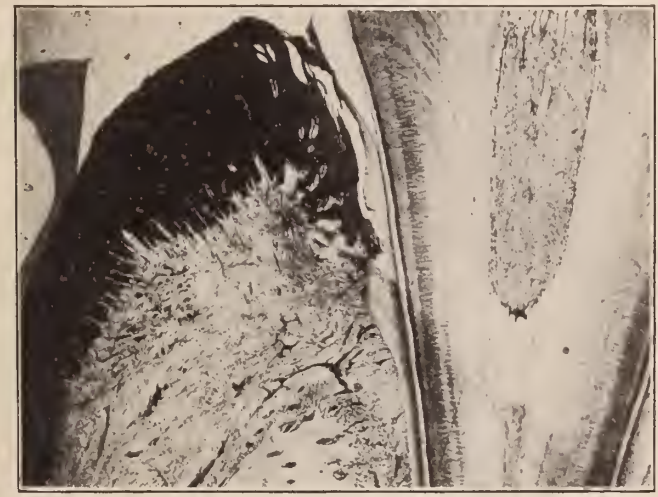

Fig. 1.

and with the fibrous gum tissue and serve to give a good idea of the strong support afforded the interproximal gum tissue.

The interlacing of these fibers not only serves to hold the gum tissue in proper place but also serves to hold the teeth and alveolus in proper relation as well.

Fig. 5.—Gum tissues which show the so-called glands of Serres's as well as the epithelial structures of the mucous membrane.

This so-called gland of Serres's is a lobular group of cells lying close against the enamel of the tooth on the proximal side, which in general appearance seems to be a gland but it has no glandular lumen and no ducts and is, therefore, not strictly a gland.

It may have some connection with the epithelial glands of the peridental membrane which in many specimens seems to run into it.

Fig. 6.—Is from a larger magnification and shows particularly well the relations this gland bears to the epithelial structures of the mucous membrane covering.

Especial attention is called to the loose epithelial arrangement under the free margin of the gums as compared with the epithelial covering of the exposed mucous surface. This explains why this gum tissue under its free margin is so easily injured by ligatures, clamps, separators, etc., and when injured is so liable to take infection.

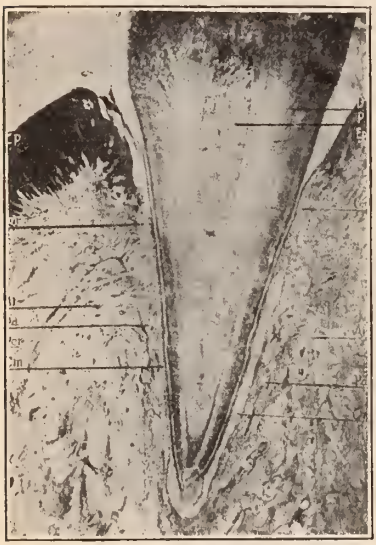

Fig. 2.

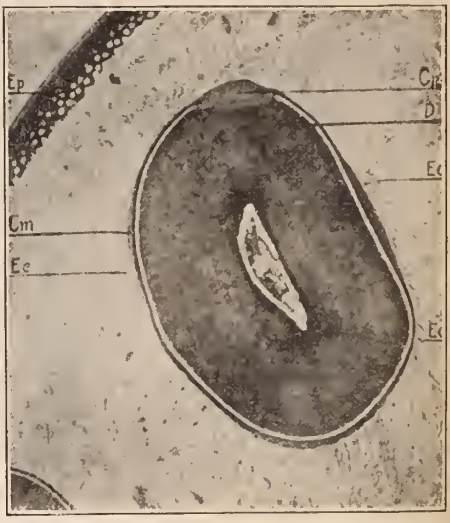

Fig. 3.

Fig. 7.—Is from a cross section through the gland of Serres and shows the arrangement of the round cells.

A knowledge of this minute histology is imperative to successful, careful operating upon the teeth, especially where the gum tissue is involved or adjacent to the immediate field of operation. Particularly should we always keep in mind the fibrous connection between the gum, the periosteum of the alveolar border and the tooth neck, which is really the most important soft tissue of the mouth.

The necks of the teeth are normally bathed in mucous secretions.

This secretion seems to have the normal function of keeping the teeth surfaces under the gingival border clean as well as the gum tissue. Any disturbance of this secretion portends trouble. From a pathological standpoint I have come to regard the interproximal gum tissue as the most important of all soft tissues of the mouth. From careful clinical observation over a number of years I have gathered data which shows that fully 80 per cent of all serious gum diseases begin or make first appearance in this tissue.

When from any cause the interproximal gum tissue recedes from its normal position it invites disease. When the normal contact point

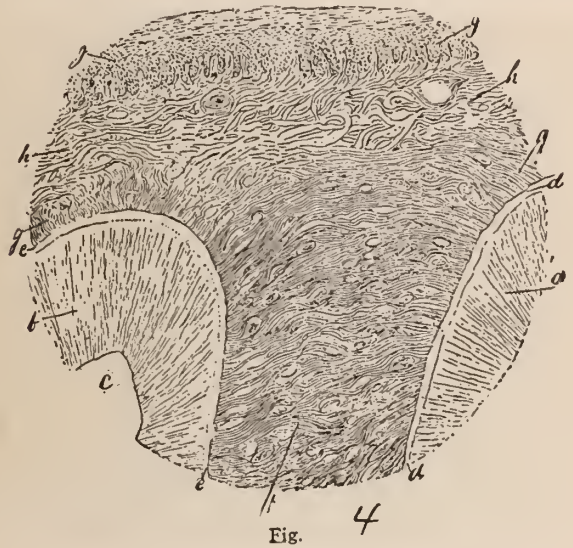

Fig.

is lost, the natural protector of the interproximal gum tissue is lost and then it is subject to irritation and permanent injury from crowding in of food and the use of toothpicks which that impels. The nature of the pathological condition depends largely upon the local conditions in each individual case.

The following illustrations taken from cases of clinical cases will serve to emphasize a variety of conditions that may develop when normal contact is lost.

Fig. 8.—Shows normal contact lost by decay, only partially restored by filling.

The fillings were excellently placed but for this one slight defect

which may have been slightly increased by the extraction of the second molar allowing the first molar to drop back slightly.

The jamming in of food into this interproximal space during mastication has brought about a serious inflammation with usual swelling, inviting infection which in this case has occurred within the gum tissue itself on its lingual aspect, forming a gingival abscess instead of suppuration between the gum and tooth neck as usually occurs. In this class of cases the alveolar septum is soon lost either by absorption or necrosis. With the discharge of pus the tissue rapidly drops down, exposing the cemento-enamel junction on the tooth necks

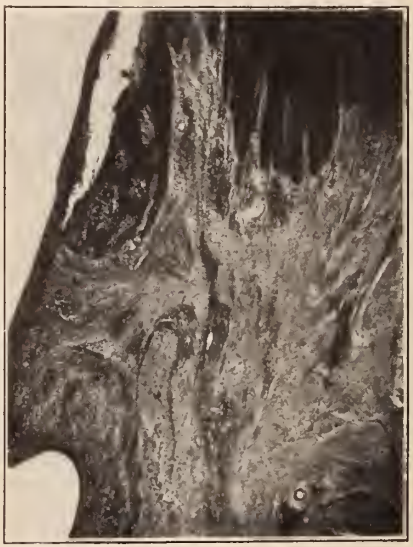

Fig. 5.

which soon become annoyingly sensitive. Unless a remedy be applied early these teeth will be lost from pyorrhea.

The remedy consists in restoring and maintaing the normal contact, but when that has been delayed until such serious inflammation has occurred it will require the greatest care to restore and maintain the usefulness of such affected teeth.

Fig. 9-10, are illustrations of the buccal and lingual sides of a similar case, but a more advanced stage of trouble. The normal contact point was worn flat.

The crowding of food past this contact point and use of toothpicks which that necessitated has brought about the absorption of the entire alveolar process between these teeth and complete recession of the gums to a point where restoration of normal contact will do little good, for already the second molar is practically lost from the resulting pyorrhea.

Figs. 11-12 represent the buccal and lingual aspects of an entirely different type of case. Here the normal contact was lost by decay on the proximal surfaces of second bicuspid and first molar. The occlusion was such that these teeth dropped together, opening up the con-

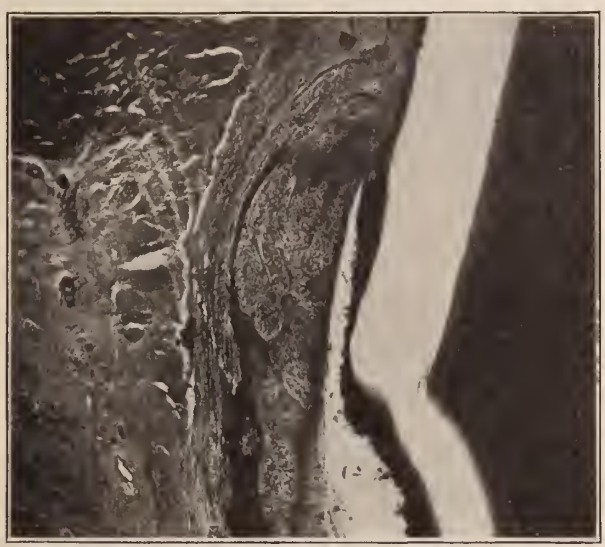

Fig. 6.

tact between first and second bicuspids as shown. When fillings were placed sufficient separation was not made to close the normal contacts between the bicuspids. The usual sequence followed.

The destruction of the fibers on the disto-proximal surface of the first bicuspid caused that tooth to be drawn out of position mesially, which allowed of still greater irritation, destruction and infection until, as shown in the picture, both first bicuspid and cuspid are entirely out of line, and lost their normal occlusion. In fact, the first bicuspid was so loosened and the tissues so swollen that it looked as if that

tooth was lost. Treatment consisted in restoring normal contact and normal interproximal space between the first molar and second bicuspid, then after thorough curetting the pyorrheal pockets the first bicuspid and cuspid were restored to normal position and normal occlusion established and retained.

Fig. 13.—Is a photograph from the occlusal of the left lower molar and bicuspid region. It shows the contact point lost between the second bicuspid and first molar, lost by decay and dropped together by force of occlusion. When fillings were made no separation was previously made and consequently flat contacts were made which

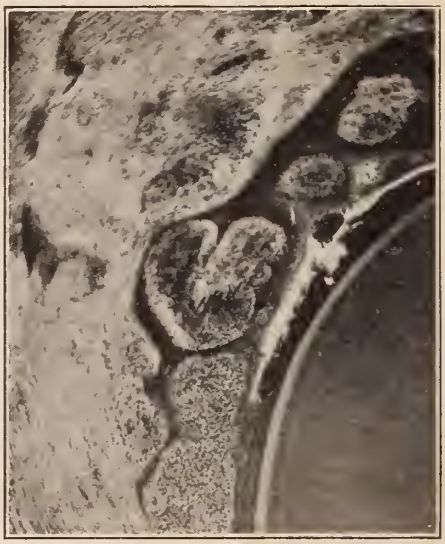

Fig. 7.

extend the whole depth of the fillings. Here the interproximal space is entirely obliterated and the gum has been forced out and is here shown as festooning along the embrasures.

Figs. 14-15 represent the buccal and lingual sides of this same case; note the extent to which this tissue has grown occlusally along the embrasures. The tumor-like growths were removed eight times in as many months only to return as you see them. The usefulness of that side of the mouth is ruined on account of these growths making mastication impossible.

The treatment of such cases is simple, and consists in restoring the interproximal space, removing these tumors, making proper fillings and nature will do the rest, except in this case there has developed a serious pyorrheal pocket on the buccal surface of the mesial root of

Fig. 8.

Fig. 9.

the first molar as a consequence of debris collecting between the tooth and that projection of gum tissue.

We see similar growth of gum tissue where fillings are left rough and overhanging the gingival border of proximal cavities, also from poor fitting bands, accumulations of tartar, etc. A few cases have been reported where the growths of gum tissue became cancerous.

Fig. 16.—Represents the occlusal aspect of a similar case.

Here decay occurred in both bicuspids only. Fillings were placed

Fig. 10.

Fig. 11.

which merely included the contact points, leaving the surface slightly flattened, which made it possible for food to crowd in with the tumor-like hypertrophies of gum tissue shown. Because of the food crowding annoyance the use of this side was abandoned, which further ag-

gravated the trouble. The remedy is the same as for the previous case.

Figs. 17-18 are pictures of the labial and lingual sides of a case in which contact is lost between centrals.

Originally these teeth overlapped each other. In a laudable ef-

Fig. 12.

Fig. 13.

fort to make fillings that would not show on the mesial surfaces where decay had occurred at contact points wide separation was made. By the careless use of separator the principal fibers of the peridental membrane were torn from the cementum on the mesial side of the right central.

The proof of this is that the teeth did not return together but have since separated further until now, at the end of two years, a pyorrhea pocket exists which involves the entire mesial and most of the labial and lingual of the root of the right central.

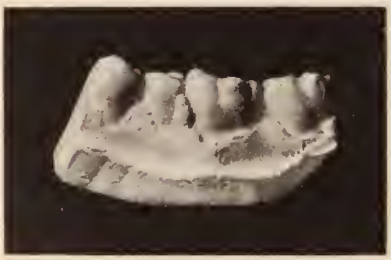

Fig. 14.

Fig. 15.

Treatment of this case consists in proper sealing, polishing and medicating the tooth affected by pyorrhea alveolaris, restoring the teeth to normal position and retaining them permanently by a staple, as recommended by Case.

Your attention is called to this case because it is so common a type. I am fully persuaded that careless operative technique is responsible for much gum and peridental trouble, not only in the careless use of separators and wedges, but also from files, finishing strips,

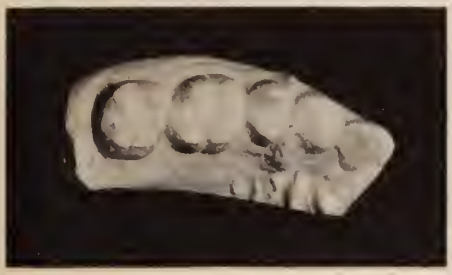

Fig. 16.

Fig. 17.

stones, enamel trimmers, silk, ligatures, etc. Many dentists do not seem to see beyond a cavity of decay or a tooth to be crowned and operate with no thought of the welfare of the soft tissue which surrounds the tooth.

The fact is that no filling, inlay or artificial crown, no matter how perfectly placed is of much value unless the health and integrity of these soft tissues, including gum, periosteum and peridental membrane be maintained.

In conclusion I wish to recite a recent case from practice.

Fig. 18.

A lady of about 35 years was sent to me by her dentist for treatment for pyorrhea alveolaris, which he said involved all of the molars and bicuspids. He had been treating the case for over a year and had become discouraged.

Upon examination I found the molars and bicuspids badly loosened, the gum some swollen and very red, teeth very sensitive to thermal changes, sweets, etc. She stated that she had not been able to masticate for over two years.

I sent her back to her dentist and mailed him a note, calling attention to the poor interproximal contacts between all of the affected teeth and suggested a method of correcting it by replacing certain fillings after full separation and re-occluding.

A few days later she returned with a note from him stating that "You are a dandy if you can cure that trouble by any such means, for several of those contacts are as God made them and the others I made the best I know how, and I claim to know something about it. You have my consent and best wishes to go ahead."

I undertook the case, removing several fillings, properly separating, restoring contacts in normal teeth that had been lost, making proper fillings, inlays, etc., grinding occlusion at certain points—in short, restoring the harmony of all the teeth, which cured the pyorrhea, sensitiveness, etc., without any further or additional treatment.

In treatment of pyorrhea alveolaris both normal occlusion and normal interproximal contacts are important points to be considered in every case. The question is often asked, can anything be done to restore the interproximal gum tissue when once lost, to which answer must be in the negative. All operations that have been suggested for the restoration of this tissue have been proven a failure in my hands. Loose gum tissue unsupported by fibrous attachment to alveolar process and the tooth neck invites disease.

MECHANICAL FORCE—ITS ACTION AND REACTION AS IT IS DEVELOPED IN THE MOUTH.*

BY J. A. BULLARD, D. D. S., CHICAGO, ILL.

It is with a great deal of hesitancy that I come before you with the subject I have selected to present this evening, for it is a large and important subject, and I have prepared a very brief paper, principally on account of insufficient time in which to do it. I should like

*Read before the Odontological Society of Chicago, May 4, 1909.

to have this subject discussed from a broad point of view, as the principles of force enter into all departments of reconstructive dentistry. Usually when this subject is touched upon, it is in reference to orthodontia, and, consequently, receives very little attention from those carrying on a general practice.

The thought has come to me sometimes in the past as to whether it was worth while trying to teach students the application of force in the regulation of teeth when but few would make use of this knowledge afterward; but since I have been paying special attention to orthodontia from having been associated with that department in college work, I have become very much impressed with the necessity of not only the orthodontist, but the general practitioner familiarizing himself with the laws of force, its direct action and consequent reaction, as it is developed in the mouth through the appliances which we are accustomed to place there, whether fixed or otherwise.

Any push or pull, of whatever origin, upon any portion of matter is called force. In the realm of matter these forces always act between two different portions of matter. Now think of the means by which in mechanics you would be able to take advantage to produce force, as the lever, wedge, inclined plane, and screw, and see if we do not find these same things in the mouth.

Dr. C. S. Case in his book on Dental Orthopedia has struck the key note when he refers to a tooth as a tooth lever. Now then, levers are divided into three classes, each having the three factors of power, fulcrum and weight. When the factors are arranged in this manner, the lever is of Class One. With power and fulcrum at the ends and weight in the middle, the lever belong to Class Two. And when the factors are placed as weight, power and fulcrum, it is called Class Three.

A tooth seated in its process, when stress is brought to bear upon it develops the three factors of a lever. For instance, in extracting say an upper cuspid tooth, the crown of the tooth represents the power arm of a lever. We find that the root, seated deep in the process, represents the weight arm, and that to move the weight (that is, the labial process), it is necessary to lengthen the power arm by grasping the crown of the tooth with a pair of forceps, then moving the weight in the direction of least resistance (springing the labial process), the tooth or lever is freed, the fulcrum being at the apex.

A law of levers says that: The middle factor of a lever at equilibrium is equal to the other two.

In looking at a tooth in its normal, healthy surroundings in the mouth, and thinking of it from the standpoint of which we are speaking, we find that the greatest force or power is applied to the occlusal or incisal surfaces. That portion of the tooth which is free from the process is the power arm; the process is the weight or resistance, the root of the tooth the weight arm, and the process at the apex of the root, if it rest in healthy tissue, is the fulcrum. The weight in this case is between the power and fulcrum so that we have the tooth acting as the most powerful kind of lever; and if we always found the conditions typical, the process must resist the action of force on the crown and also its reaction at the apex of the root or fulcrum.

The surrounding tissues of teeth which we wish to use as abutments, or to repair in different ways, may have undergone pathological change at one time or another and will be of less resistance about the apex of a root than at some other point of the socket, so that when we produce force upon this tooth lever, it will correspond to a lever of the first kind, having power and weight at the ends and the fulcrum in the middle.

And now to apply some of these principles with which all are more or less familiar,—suppose, for instance, a case where it is desirable to supply a crown for a root,—say a bicuspid—which is none too solid in the process. In making a prognosis of the length of time this root would give service, if crowned, the length of the crown or power arm must be taken into consideration, for, of course, the longer the crown compared with the length of root the greater resistance the surrounding tissue must offer.

It might be necessary to use this same root as the abutment for one end of a four-tooth bridge from second molar to first bicuspid. Here, then, if you think about it, you will find that the force brought to bear upon this lever is doubled or tripled by the increase of occlusal surface borne by the abutment teeth, or practically an increase in the length of the power arm.

All kinds of appliances placed in the mouth can be classified in this way and so constructed as to increase their usefulness by taking advantage of these principles.

The length of cusps of the teeth play quite a part in the strain

brought to bear upon the crown and root, forming, as they do, inclined planes against which force is exerted. Where we build prominent interlocking cusps on fillings, crowns or bridges, the lateral stress is greatly increased when small bits of hard substances are caught between the opposing inclined planes of the upper and lower teeth during the excursive movements of the mandible.

These same inclined surfaces may often be made of great service if they are formed in constructing crowns, bridges or artificial dentures so as to use the force developed upon them by the wedging action of the opposing teeth as they come into interdigitating occlusion during the mastication of food, to more solidly seat and support them.

And now, gentlemen, this little paper is not much more than an outline of what it might contain; but, such as it is, I humbly submit it for your consideration.

PRESIDENT'S ADDRESS.

BY DR. KIRK A. DAVENPORT, LONDON, ENGLAND.

Gentlemen, the Members of the American Dental Society of Europe: Custom is responsible for many evils. Fluent speakers and the ready thinking capabilities of the early presidents of this society must be responsible for thirty-four precedents and a by-law which makes it a duty for your president to present an address before our society. As you have allowed such a custom to prevail, I fear you must take the consequences.

The few remarks which I shall make must be prefaced by the thought which cannot fail to enter into every mind today.

Since our last meeting, we have been brought face to face with the uncertainty of life. The untimely death of Prof. Miller has caused a deep bereavement to the members of this society, second only to that felt by his immediate family. His personality, integrity, steadfastness of purpose remain a sacred memory of this society and an example

[NOTE:—This address was delivered before the American Dental Society of Europe at London July 31, 1908, and should have appeared in the proceedings of that meeting. Through an oversight it was not forwarded with the rest of the manuscript, which accounts for its late appearance.]

to stimulate all to better things. Further sadness has come to us during the year by the removal of three other members, one of them, Dr. Terry, a founder and the first president of the society, Dr. George, also at one time president of the society, and Dr. Walker, one of the early honorary members. Doctors Terry and George have been retired from practice for many years and have enjoyed the recognition which comes only to those who are worthy, their names having been enrolled on our list of honorary members.

To continue: An obligation implies responsibility, and there is no gainsaying the responsibility which a man assumes who enters the dental profession. In bygone days, indeed only a short time back, it was the rule for a man to husband his ideas with the object of being able to undersell his rivals. A few broader minds began to see the folly of such action, the outcome was the formation of that little school in Baltimore. The die was then cast, which resulted in dentistry becoming a profession. So far as is humanly possible petty jealousies have disappeared. It has become a pleasure for the leaders of thought to give all of their ideas, first hand, to the less capable and needy members.

I look upon the obligation of those, especially the Americans, who enter dentistry, as an inheritance. This inheritance has been met in a truly magnificent manner. Men have risen to the highest rank. Scientific research has been carried on and developed; the younger member of our profession finds himself in contact with traditions which have stood the test; and today, dentistry has attained an honored position among the professions.

In the same way that the Baltimore school of dentistry has been a beacon to the unorganized horde, so this society has stimulated the whole profession in Europe to better work. It is with pride that I state that the American Dental Society of Europe is one of the oldest dental societies in Europe.

The hospitality we have received as a society in the capitals and leading cities of Europe during the thirty-five years of our existence goes to show that dentistry is no longer, if ever, a mere national institution. If further proof were needed, I would remind you of the various international congresses which have been held and are now arranged by that capable body of men—The International Dental Federation.

My thoughts are most occupied by the deeds of this society, and in coming to the important subject of the attainments of its members one is struck with the youth of our profession, at the same time with the enormous and rapid advance which has been made. A Rip Van Winkle of five years in dentistry would have to face the fact that he had become an "old fogey."

The importance of "Articulation" was presented to the profession by one of our members who is only in his prime. The problem of "regulating" and all that has accrued has been the outcome of a thorough understanding of occlusion.

Microscopic research and all that is implied in that magic word "micro-organism" has been developed well within the memory of our older members, and the glory and the highest attainments in that branch, from the dental standpoint, has fallen to the honor of our late lamented friend Prof. Miller.

The artistic development in operative, as well as prosthetic technics (as applied to crown and bridge work) has been introduced and developed by a member of the "Old Guard" of this society.

Every professor and teacher has found it necessary to rewrite his lectures, owing to the introduction of porcelain as a filling material. The inartistic gold fillings have given way to porcelain fillings. The success of the porcelain inlay has been magical. Time has proven it to be one of the most valuable methods extant.

Following on the porcelain inlay we have what might be considered its offspring—"The gold inlay." Isolated cases have been in use many years, but the late introduction of the method seems to be the result of numerous simultaneous inventors—a pure case of necessity. Judging from our program and the published transactions of other societies, I am of the opinion that the gold inlay is the hobby of the moment. I predict, in careful hands, a wonderful future for the gold inlay, but, where used without that essential ingredient, common sense, a tragedy.

My last reference will be to what I choose to think the most important branch of our profession, most important because most difficult. More failures, more post mortems, more heartaches, both of patients and dentists, have arisen therefrom, than from any disease known to dental pathology. I refer to pyorrhea. It would be super-

fluous to mention the name of our friend and honored member who has placed us on the anxious scent of this dread disease.

Dentistry has leaped into its present position and has become recognized by the medical profession, and the world at large, as a most important branch of the healing art; and I wish to record a belief that the position of dentistry in science is in no way inferior to that of the foremost branch of medicine. With this belief fully fixed in my mind, I regret that the main body of dentists must be indicted on a charge which is little short of gross negligence in their duty to their patients as regards the care of pyorrhea alveolaris, and I would say that our profession as a whole, continues to overlook and ignore the presence of this disease until it has advanced almost into the incurable stages. Where the disease has been discovered, I am inclined to think that the treatment is in the main even worse, if possible, than the diagnosis. I can pardon the practitioner who is human and overlooks the obscure cavity of decay, provided the occurrence is infrequent, but I am filled with a deep sense of resentment when I find the early stages of pyorrhea have been neglected for an unsuspecting and trusting patient. To be brief—let us not forget our responsibilities—let us keep always before us our duty to our patients.

I feel, gentlemen, that you have greatly honored me in making me your president. I hope you have not found me too wearying in my remarks. You have been most patient. My message to you all is—Keep the banner of dentistry waving high among the sciences.

PRESIDENT'S ADDRESS.*

BY DR. J. W. GALE, COLOGNE, GERMANY.

Gentlemen: It is with special pride and gratification in opening this meeting that I can welcome such a large number of you here. I hope the meeting may be of special interest and mutual benefit to all of us. As there are a great number and variety of papers, I beg you to be prompt and to the point in your discussions.

In accordance with a custom as old as our society, I take pleasure in extending a most cordial welcome to any reputable professional col-

*Read before the American Dental Society of Europe, at Wiesbaden, April, 1909.

leagues who may find it convenient to be with us. I trust they will feel free to take part in the discussions, and that our becoming better acquainted may be mutually beneficial.

It is my sad duty to report the loss to this society by death since our last meeting in London of three of its members.

Dr. Geo. W. Field died at Rome, Italy, November 9, 1908. Dr. Field was one of the founders of this society, its first treasurer, its acting president in 1875 and president in 1877, and for many years one of its hard working members whose unselfish devotion to his profession, his family, his friends and to this society will remain a fragrant memory and inspiration to every one who knew him.

Dr. A. W. Harlan died in New York March 6, 1909. Dr. Harlan (as you all know) was with us at our meeting in London last August. He was not well at that time and left a sick bed to be present. You who heard him will remember his interest and enthusiasm. In fact, ever since he was made an honorary member of our society he endeavored to be present at our meetings and always did much with papers and discussions to make them better.

Dr. A. H. Chamberlain died at Rome, Italy, March 19, 1909. Dr. Chamberlain became a member of this society in 1880 and was one of six who answered "here" as the lamented Prof. Miller called the roll in this same city twenty-eight years ago. But no answer comes as we call the roll today. The well-known voice is still and we miss the genial, happy face.

I want to say a word here about the banquet given our esteemed member, Dr. John W. Crane, on the fiftieth anniversary of the continuous practice of his profession in the city of Paris, on the 7th of December, at the Continental hotel in that city. To felicitate every one who could be present and to commiserate every one who could not be present on that happy occasion is not saying too much. I am sure we all welcome any occasion of this sort when a worthy man, completing some great task, receives from his professional brethren and friends their approbation and congratulations. It is not necessary to tell you that Dr. Crane became a member of this society at its second meeting in 1874 and has not only done all the work given him to do by the society well, but has also had the honor of holding all the offices within its gift.

It is well to say the kind word, and bring the fragrant flower

when our friends have gone, but how much better to bring them while the tenant occupies his house of clay, before the "silver cord is loosened," while the heart can be gladdened, the eye kindled, and the hand return our pressure. Such men with others, on both sides of the Great Divide, have done noble work for our profession in Europe. We owe them much and I trust may accord them proper gratitude. When we review the professional lives of the founders of this society—founded at a time when the oldest dental college in the world was not yet of age, and many of the most influential ones of today were not yet thought of—we find them actuated by a common impulse to unite for mutual benefit and a closer professional and fraternal intercourse. This was at a time when many dentists on both sides of the Atlantic thought it necessary to protect—as they supposed—certain valuable professional secrets, and no one was allowed inside their laboratories whom they suspected might give them to their competitors. I say this to prove that the founders of a society at that time were not ordinary, but selected men; and the spirit they breathed into their organization has dominated it ever since.

It is said every man is born to a heritage. It is true every man who practices our profession in Europe has inherited a predisposed favorable public opinion to American methods founded upon the practice of our predecessors. Whether he will merit it or not remains for him to prove. This heritage was made for us, largely by men who helped organize this society, or were favorably disposed to its object, or who have been, or are now, members of it. They came over as pioneers and by thorough, hard, honest work, blazed a path over which we may pass in comfort and often, luxury. It is well for us who came later to stop and consider the debt we owe these men who gave American dentistry its high standard abroad.

It seems to be a prevailing opinion in America, that on account of this favorable public opinion almost anybody can come over here and make a fortune in a few years. It is true that the Europeans are more constant as patients than the Americans, though they are more careful to inform themselves as to the ability of the man they choose for their family dentist. But looking over the men who have succeeded here, one is forced to admit that they would not have done badly at home.

Our society has been criticised as too exclusive and too conserva-

tive. But, if considered as the natural custodian of this heritage, which is a legacy to the present generation of dentists and the generations which are to follow, this criticism loses weight. Our society does not stand in the same relation to dentists here, as societies of the same kind do at home. There they are a part of the great law-making and educational body, and it is necessary for them to secure and control as many members as possible that they may become educated in the needs of the profession as well as to serve the people in the best possible way.

What a dental society may, and should do, in regard to the laws governing the practice of dentistry in America, our society is naturally debarred from doing here. If it should begin such a course it would be as open to criticism as if a guest were to assume the direction of the household. Our society is, in a way, an organization of guests in the houses of our European hosts, and one of its capacities for doing good is that of sponsor for the professional character of the men on whom it confers the honor of membership. While its motto should be "With malice toward none, with charity for all" still it should be discriminating. Failing in this, a great part of its influence will be lost. It has also a great work to do as a teacher; and that work it has kept up to a high standard. Its doors have been thrown open wide, not only to brethren from America but to reputable dentists of every nationality who wished to attend its sessions.

For the future usefulness of the society it may be necessary to alter the constitution so that worthy foreigners holding the American degree may find a dental society home. As it is now in some European countries, such men have no opportunity of belonging to any recognized organization. It is certain that for a time at least a chance should be given them to do their part to sustain and advance American dentistry abroad.

But whatever changes may come to our beloved society, may it ever be said that it has lived up to the high professional standard given it by its illustrious founders and that the heritage given to it was appreciated and passed on to our successors undiminished. May it ever play the part of an honored and trusted guest in the house of an appreciative host. May its future career be guided in paths of the greatest usefulness by a loyal, high-minded membership. And may the mantle of all its high offices ever fall on worthy and deserving shoulders.

THE USE OF X RAYS IN DENTISTRY.

BY DR. C. H. ABBOT, BERLIN, GERMANY.

Mr. President, Gentlemen—The great expectations which were raised at first in all departments of medicine by Prof. Röntgen's wonderful discovery were soon dampened by the realization that the time of exposure for the average simple radiograph was between half an hour and an hour, making, of course, the process desirable only in few cases.

But the ingenuity and unremitting perseverance of science and mechanics have done wonders in perfecting X-ray outfits so that the length of exposure has been reduced to such an extent that we can now speak of seconds where before we spoke of minutes.

The object of this paper is to give some practical hints to any of my colleagues who may be desirous of taking up this work. Let us first consider the different parts of an X-ray outfit such as should suffice for the needs of the average dental practitioner.

First the current: We can obtain the current for the production of X-rays from different sources, such as static machines, the most efficient of which is the so-called Holtz influence and the Wimshurst machines, the accumulators and the ordinary street currents, continuous, alternating or three-phased current, also called rotatory. For the ordinary street current the dentist will probably have to have extra wiring to conduct a current of the necessary high amperage, which should be between 5 and 30.

The alternating current may be used for the production of X-rays after changing it into a continuous current by means of a transformer, or it may be employed directly in connection with devices for cutting out one of the opposing currents, thereby converting it into an intermittent continuous current. These devices are based on the principle that currents pass more readily from a small pole to a large one (such as from the point of a pin to a plate or target rather than vice versa), so that the interpolation of one or more such pins and targets practically cuts out the current passing from plate to point,

*Read before the American Dental Society of Europe, Wiesbaden, April, 1909.

leaving the other current to pass through the X-ray tube in one direction.

The Induction Coil: The induction coil forms one of the most important factors in the production of serviceable X-rays.

You all know that it is composed of a core of soft iron contained in two coils, one of which, the primary, consists of a number of windings of comparatively thick copper wire, while the other, or secondary coil, consists of a much larger number of windings of thin wire. This induction coil converts the current into the necessary high tension of from 50,000 to 1 or 200,000 volts necessary for the generation of X-rays, and is, of course, alternating in its nature.

The principle of the induction coil is based upon the fact that an iron core in the primary coil is magnetized and demagnetized. The magnetizing is brought about by the entering current and the demagnetizing by the rapid interruption of the current. If the time of opening and closing is the same we obtain a curve that has decidedly the form of a sinus, like No. 1. The tension of the current passing in one direction is the same as of that going in the other direction, but as was said before we need for the production of X-rays a current traveling in one direction only. For this reason we allow the current to enter the primary coil slowly, but interrupt it abruptly. In this case we get a curve similar to No. 2, which in one direction of the current is flattened out, and therefore cannot enter into the tube, while the other direction shows a high tension caused by the rapid opening of the current, which alone takes effect. You see, about three-quarters of the current is lost, which makes the interrupted current rather expensive.

The Interrupter: Of interrupters there are several kinds, and I only wish to mention those which are most important to us, namely the mechanimal and the electrolytic ones.

Of the mechanical variety the mercury interrupters are the most in demand. The mercury turbine interrupter consists of a turbine driven by a motor making about 2,000 to 8,000 revolutions per minute. The mercury at the bottom of the jar is sucked up and thrown through an opening against the different metallic segments of the revolving motor, which are separated by non-conducting spaces. The mercury and the segments are connected respectively to the two poles of the current. Of the electrolytic interrupters the Wehnelt is the

most efficient, and, according to all I have heard probably the best of all, as the mercury interrupters are hard to keep from becoming clogged and the mercury has to be cleaned by a tedious process every few weeks. The Wehnelt interrupter consists in principle of a jar of dilute sulphuric acid containing for the negative pole a plate of lead, for the positive one a platinum point projecting from the end of a porcelain tube. The high tension, brought about by the difference in size of the lead plate and platinum point, causes intense heat at the latter, and the subsequent formation of a vapor film containing an explosive mixture of oxygen and hydrogen. This mixture explodes when the heat at the platinum point has reached the maximum, which ruptures the film of vapor, and connection is restored, to be followed by a repetition of the same process. This furnishes from 50 to 2,000 interruptions per second. The phenomena in the Wehnelt interrupter are very complicated and, as far as I can learn, not yet entirely explained.

In the modern make of Wehnelt there are three or more platinum points, varying in thickness and length, which can be adjusted by hand and are used one at a time according to the hardness, i. e., the penetrability of the tube in use. The short fine point furnishes the greatest number of interruptions and is generally used with soft tubes; in other words, those offering least resistance. While all mechanical interrupters must be used in connection with a condenser in order to absorb the opening spark, the electrolytic interrupters are used without one, as the opening spark of the primary coil, which would otherwise be absorbed by the condenser, is instrumental in exploding the vapor film that surrounds the gas bubble.

There is a new outfit that has recently appeared in Germany under the name of "Ideal Röntgen Ausrüstung," which consists of a machine producing a continuous current of high voltage, invented by Snook, of Philadelphia, and is said to be the perfection of outfits up to the present time. It is, however, very expensive and its superiority consists not so much in producing more perfect pictures as in the shortness of the time of exposure, which can be termed almost instantaneous.

When in America last autumn I purchased a small, compact X-ray and high-frequency outfit for alternating current, the so-called Kni-Low outfit, advertised in various dental journals, which I have

brought with me and shall be pleased to show to anyone whom it may interest. Good results may be obtained with the tube furnished with it, but I find the length of exposure necessary an objection. Having 110 volts continuous current in my office, it was necessary to order a converter to change my street current into an alternating one, but I found that by this process it lost considerably in strength. So that I now work with a much more powerful apparatus, which reduces the time of exposure to an average of fifteen seconds.

THE SWITCHBOARD.

The switchboard should contain a rheostat, an amperemeter for measuring the strength of the current before it enters the induction coil and in radio therapy a milliamperemeter for indicating the strength of current after leaving the induction coil and previous to its passage through the tube.

Tubes.—Now we come to the subject of tubes. It might be well in this connection to say that a "hard" tube corresponds to one of high vacuum, and consequently high resistance, a "soft" one to a low vacuum and low degree of resistance. There have been a number of forms in use, beginning with the ordinary cylindrical Crookes tubes and followed by the more or less elliptical shapes devised by Dr. William Rollins, of Boston (who is the most distinguished pioneer of dental X-ray work), to the present globular form, which has superseded all others.

There are various excellent makes in Germany, such as the Bauer, Monopol, Gundelach, etc., the most perfect of which seems to me to be the tube manufactured by Mr. Heinz Bauer, of Berlin. My reasons for this opinion will be apparent to you as we proceed. The cathode of the X-ray tube is made of aluminum and is usually a concave disc which serves as a focus for the rays to meet on the anti-cathode or target, which is a flat disc of platinum or iridio-platinum to withstand the great heat that is developed by the impact of the rays. The focus on the anti-cathode should be exceedingly small in order to produce sharp pictures. The target is at an angle of about 55 degrees from the cathode. The anode is usually connected with the anti-cathode. The intense heat generated at the anti-cathode is the cause of the nebulizing of the parts upon which the rays strike most forcibly, and this takes place in proportion to the heat developed

in the anti-cathode and has the effect of causing a deterioration in the quality of the rays, as well as shortening the life of the tube. It is also more liable to cause metallic deposits on the walls of the tube.

Various means for cooling have been devised, such as enveloping the anti-cathode in water and a heavy metal radiator in the Bauer tubes which conducts off the heat very effectively. The question of the relative degree of resistance or so-called hardness of a tube is of the most vital importance in dental radiography, as upon the correct degree of rarefaction depends the distinctness of our photographs.

The higher the evacuation of the tube the greater the resistance, and consequently the more powerful the current will have to be to pass through the tube. These rays penetrate the tissues much more deeply than rays generated in tubes containing a higher percentage of gas, and their shadows are less deep, although they show greater detail. They may be likened to an over-exposure (through a small diaphragm) in common photography and have their uses in other departments of medicine. Tubes of lower resistance are better adapted to superficial parts, those of higher resistance to deeper lying parts.

To determine and regulate these various degrees of vacuum, science has devised a number of most ingenious means. The most common, but at the same time very dangerous way of testing, is the human hand placed behind the screen, and this method has made many operators victims of skin diseases which are all but incurable. A safer device is the so-called "Walter scala," which consists of a hard metal plate with eight holes. Behind each hole is a platinum plate whose thickness increases from hole to hole. This scale, placed behind a fluorescent screen, will determine the resistance of the tube according to the number of holes visible. For dental purposes I find five about correct.

The Wehnelt crypto-radiometer I find still more handy, as it can be used in daylight. It consists of a fluoroscope with a small screen appearing through a slit, half of it being covered by a thin plate of silver (which has the property of showing an equal degree of penetrability irrespective of the resistance of the tube), the other half by a movable, long, wedge-shaped piece of aluminum. Both parts of the slit must correspond in brightness to determine the hardness of the tube, which can be read off on a scale at the side.

Besides these there is the "Benoist scala," which resembles it in principle.

Tubes usually, but not always, become hard after use. Their regeneration, however, has been provided for by various means, one of which is as follows: On the side of one of the terminals of the tube there is an attachment containing some chemical, such as carbon, mica or caustic potash, which gives off gas when heated. This heating is brought about by connecting the cathode wire to it and letting the current pass through for a fraction of a second at a time. The gases given off from the chemical are not, of course, atmospheric air, and therefore not the ideal substance for regeneration. But the problem of letting air into a tube in minute quantities has very recently been solved in an ideal way in the shape of a regenerating air valve invented by Mr. Bauer. This is based on the fact that mercury will not pass through the pores of baked clay while air will do so.

The relative position of the tube, the object to be photographed, and the plate or film is next to be considered. Not only the distance of the tube from the object but the direction of the rays emanating from the anti-cathode play an important part in the process of photographing. I have found the Lambertz stand adapted for dental uses by suggestions of Prof. Dieck, of the Berlin University, most effective, and I will pass round a photo of the same. It is fitted with a handle and ball-and-socket joint. Before I proceed I must now speak of the deleterious effects of the so-called secondary rays.

These rays arise from parts of the anti-cathode other than the center or focus and from the walls of the tube. They interfere to a certain extent with the direct rays and render the photograph indistinct. For cutting these out various diaphragms have been constructed, and the one suggested by Prof. Dieck in connection with a centralizing telescope I consider most excellent. To assure one's self that the rays are striking the object to be photographed correctly adjust the telescope and turn on the current. If a small luminous disc is visible on the fluoroscope the diaphragm is adjusted correctly.

In the wiring of the X-ray tube the positive wire coming from the anode, or point of the induction coil, should be attached to the anode of the tube; the negative, coming from the disc, or cathode of the induction coil, to the cathode.

The correct direction of the current should be determined before use. Besides the ordinary means of determining the direction, it can be done by reversing the current for a second or so. The aspect of the tube is an entirely different one. The light is bluish, appears in flickering circles and the hemispheres almost entirely disappear. The light in the tube should be bright green in the hemisphere facing the anti-cathode and light green in the other half. The quieter the appearance the better the effect. A crackling sound points to an increased vacuum, which, as a rule, is not so well adapted for dental purposes.

In those cases in which the axis of the tooth and the plane of the photographic film which is inserted, and of which I shall speak hereafter, are parallel to each other, or approximately so, there is not much difficulty in obtaining a radiograph of correct proportions. But where this is not possible, that is, where the axis of the tooth and the plane of the film form an angle, the proposition of obtaining a correct picture becomes somewhat more complicated. And to obtain an image that is least out of drawing the angle formed by the axis of the tube and the film or plate should be halved and the rays should strike this median line vertically. It is not, however, in every case desirable to record the correct dimensions on the films, as occasionally this might interfere with the object in view.

For instance, in certain cases of absorption or exostosis these conditions may appear only in a position which precludes an image of the tooth in its correct proportions. In cases, also, of certain pathological conditions of the jaw these may only become apparent at the cost of undue foreshortening or elongation of the tooth.

Occasionally it may become necessary to make different radiographs of the same tooth from different angles to aid in the interpretation of the films. For instance, when one impacted tooth is hidden behind the root of another and may only become apparent in a second radiograph taken from another angle.

The relative distance of the tube from the object to be photographed and the film is next to be considered. The nearer the tube to the object (the distance between the object and the film remaining the same) the larger, of course, the object becomes. The farther from the object the more nearly correct will be the dimensions on the sensitive plate. The nearer a candle is placed behind a hand held up to

the wall the larger will be the shadow of the hand on the wall, and vice versa. Experience, however, has shown that on an average a distance of from 30 to 35 centimeters from the anti-cathode insures the best results. Of course the length of exposure must be longer or shorter in proportion to the distance of the anti-cathode from the object to be photographed.

For dental work the sensitive film takes precedence, with few exceptions, over the plate. It can be so readily inserted into the difference parts of the mouth and adapts itself easily to the shape of the palate. For the upper jaw and certain teeth of the lower jaw it can be wrapped in black photographic paper and covered with a layer of parafine paper, which makes it smoother. Price has recommended a film enveloped in black soft rubber, which offers next to no resistance to the rays. The two layers enclosing the film which they overlap can be easily pressed together to make them lightproof, and the rubber is more agreeable to the patient. Recently I have used the film enveloped in one layer of black and one of soft red rubber, which seems to me preferable, as the sensitive side of the film which lies on the side of the black rubber is more easily determined. The red layer being impervious to the rays by virtue of the mercury it contains, also forms a protection to the finger that holds it.

For the lower molars, and principally the third molars, where the films enveloped in paper or rubber would have to be forced low down into the soft tissues in order to procure good images of the roots, I use this plateholder. I had it made by Mr. Bauer's mechanic, and ask you, please, to handle it gently, as it is rather delicate. The patients take to it kindly, and there are no more complaints of bruised tissues. It is easily sterilized and can be adjusted for both sides of the jaw. The aluminum plate is so thin that the rays pass through it nearly as readily as through paper. Some X-ray operators recommend enclosing a piece of sensitive bromide paper with the film, in order to obtain a print at first hand. Others put two or more films together, and claim that they show different depths of shadow, which may bring out the part in question a little more distinctly in one plate than in the other.

These shadows vary in depth according to the degrees of density of the object exposed.

The developing of the film or plates is the same as in common

photography, and almost any developer may be used. The hydrochinon developer is sure, although not rapid, but should there be reason for haste, the Rodinal developer (1-15 parts of water), will bring out the picture in a very short time, although perhaps not so well defined in every detail. Lately there have been many advocates of glycin developers (1-3 parts of water) who claim great sharpness of outline. For fixing, the common hypo fixer furnished by the Kodak company is as good as any.

Let us now consider the uses of X-rays in dentistry. These should be divided into two classes, namely diagnosis and therapy.

First Diagnosis.—Much has been written on this subject of late years by different authors, which can be briefly summed up as follows:

1. X-rays are of the greatest use in the detection and location of unerupted or impacted teeth and of the position and direction of roots as an aid in extraction. As an example, I cite a case in my practice which occurred a few weeks ago. A lady came to me with the crown of the right lower third molar broken off and the roots in an inflamed condition. As experience on one or two former occasions where extraction was necessary had taught me that her teeth had unusually long roots, I hesitated at first to extract. A radiograph showed exceptionally short roots compared to those of the second molar, and I easily accomplished their removal where otherwise I should not have cared to attempt it.

A curious radiograph was shown to me by Prof. Dieck, of Berlin, of a deciduous molar with absorbed roots but no erupting bicuspid underneath, which proves that the absorption of the roots of deciduous teeth is not always caused by the pressure due to the eruption of the underlying permanent tooth. A similar case observed by Schamberg is cited by Tousey in the June number of the *Cosmos,* 1906.

2. In ascertaining the absorption of bones as well as of roots.

3. In recognizing the destruction of bone through necrosis as a result of abscess, distinguishable from cysts, inasmuch as cysts show a well-defined circumscribed area, whereas necrosed bone shows a less distinct contour.

4. In recognizing the destruction of the alveolus by pyorrhea.

5. To show broken-off instruments.

6. To show fractures of the jaws or roots.

7. In recognizing pulp-stones.

8. For diagnosis of tumors.

9. In investigation of root-canal fillings which are shown up by the radiograph in a manner not always flattering to the operator. In connection with this, I should like to tell you of a very indiscreet remark of mine to a finnicky patient who happened to have ten or twelve pulpless teeth. I told him in an incautious moment that the X-rays would determine the accuracy with which the root canals were filled with guttapercha, whereupon he turned the tables on me by making me turn the X-rays on every single tooth that I had had the misfortune to fill for him, and it took me considerable time to explain to him why it was impossible to reach the apex in every instance. I had reason to curse myself for my recklessness, and recommend caution in similar cases.

10. Empyema of the antrum and frontal sinuses can be recognized by radiograph, and in this case a number of writers recommend a whole-head antero-posterior as well as lateral exposure. While destruction of bone will show dark shadows on the negative or original plate, an empyema will show lighter on the affected side, as the antrum filled with pus or other pathological secretions will absorb the rays more readily than the normal antrum filled with air. Much caution, however, should be observed before drawing too hasty conclusions, and certainly no operation should be undertaken before making the illuminating test with the electric lamp, in which examination particular stress should be laid on the so-called pupil test.

The interpretation of radiographs is a matter that requires considerable experience, and as a guide I refer you to the chart which I have taken from Scheff's "Handbuch der Zahnheilkunde," Band II, "Roentgenologie." [See table of density attached at end of paper.]

We use the words "negative" and "positive" in the ordinary photographic sense, though the terms might just as well be reversed. By the "negative" we mean the original photographic plate. Allow me to show you a few slides I have brought with me illustrative of some of these points.

Therapy.—The therapeutic uses of X-rays in dentistry can only be touched upon very briefly, firstly because it would be trespassing too long on your patience, and secondly, because I have up to now hesitated to expose my patients to the influence of the rays for a length of time sufficient to obtain good results. But many writers advocate their use in pathological conditions of the oral cavity espe-

cially for the treatment of pyorrhea, in connection with the subsequent application of high-frequency currents, and I hope at a future meeting to have the honor of reporting further work in this line. The application of the rays must, of course, be preceded by a thorough mechanical treatment. For further particulars see article in *Cosmos* of June, 1906, by Dr. Sinclair Tousey. For their use in radio-therapy X-rays ought never to be applied (especially to the mucous membranes) unless regulated by the so-called quantimeters or dosimeters, which gauge their strength, or by the intensimetric scale devised by Dr. Tousey and described in the aforementioned number of the *Cosmos*. There is certainly more danger in the application of the rays to the mucous membranes than to the skin.

Many writers have emphasized the power of these rays to relieve pain and soreness of the tissues, and there seems no doubt that X-rays have the property of checking the formation of pus.

A number of cures of epithelioma and epulis have been recorded as a result of X-ray therapy. In connection with this I must mention the danger of burns to the patient as well as the operator, of which so much has been written. The danger to which the patient is subjected in dental radiography with our present apparatus is absolutely nil. It is otherwise with the operator, who is constantly more or less subjected to the influence of the rays, and it is imperative that he and his assistants take measures to protect themselves.

In regard to the question of danger from secondary rays, Albers-Schonberg, of Hamburg, a distinguished German specialist, expresses his fear that even at a distance from the tube they may be injurious, as he considers that the impact of the primary rays upon the walls and furniture of the room converts them into secondary rays more or less harmful to the operator, and he recommends various means of protection.

Among protective materials lead heads the list, owing to its high atomic weight, and consequent impenetrability. It is used in its metallic form as a lining to screens, doors and cases enclosing the tubes, as well as woven into rubber or cloth for the manufacture of gloves, aprons and caps. Perhaps its most important use is its admixture with glass, which combination is, as you know entirely transparent, though impervious to the rays. It is used for protective spectacles, as well as for the covering of fluorescent screens and observation windows.

For the prevention of shocks, unpleasant though not necessarily dangerous, to both operator and patient, a light chain should be attached from the metal fixings of the box enclosing the tube to some gas or water pipe conducting to the ground.

The bursting of the X-ray tube is also a source of danger to all concerned, and though not liable to occur while the tube is in operation an explosion might be brought about by careless handling during its adjustment, causing much damage to the patient's eyes. I therefore consider it advisable to protect the eyes with lead glass spectacles.

While radiography is the most dependable means of X-ray diagnosis, it seems occasionally very desirable to be able to dispense with the photographic process in favor of immediate examination with a sensitive screen, and considerable thought has been given to the carrying out of this idea. A common mouth-mirror frame has been used to hold a small fluorescent screen, and can, in a dark room, serve to recognize in the rough unerupted or impacted teeth, though, of course, the details are lacking. These mouth fluoroscopes can be used either with the fluorescent side of the screen directed towards the tooth, but held far enough away from it to afford a reflected view of it, or the fluorescent side can be reversed and the image reflected from a mirror adjusted behind it. A few weeks ago Mr. Bauer devised this instrument, for which he has not yet found a name, and by means of which the image of every tooth on the fluorescent screen which it contains can be brought into the field of vision, reflected through prisms. It requires considerable practice in its use, but bids fair to become a valuable addition to a dental X-ray outfit. Before closing I wish to express my sincere thanks to Mr. Bauer for his kind assistance from the time I took this work up and the patient ear he has always lent to my questions. To Prof. Dieck, of the Berlin University, I also owe many valuable hints and suggestions, for which I take pleasure in thanking him here. I am fully aware of the many deficiencies of this paper, and I can offer as the only excuse my great interest in this subject and the short time that I have been working at it. If I have succeeded in interesting any of you enough to induce you to take it up (and I am convinced we shall all have to come to it sooner or later), I shall feel that I have not encroached upon your time quite in vain. I thank you all for your kind attention.

COMPARATIVE DEGREES OF DENSITY OF DIFFERENT SUBSTANCES AS THEY APPEAR ON THE PHOTOGRAPHIC PLATE—SUMMARY FROM SCHEFF "HANDBUCH DER ZAHNHEILKUNDE" HALBBAND II, ARTICLE ON X-RAYS IN DENTISTRY.

	Negative.	*Positive.*
I. The density of the air: the least capacity of absorption, almost entirely penetrable by the X-rays.	Black.	White.
II. Density of fats: specific gravity lower than water. Adipose tissue. Subcutaneous cellular tissue. Fatty degeneration of soft parts. Pus.	Dark grey.	Light Grey.
III. Density of water: Liquids having the specific gravity of water (blood, liquid or coagulated, watery pus). Soft tissues, except adipose tissue, connective tissue, muscular tissue, uncalcified cartilage.	Light grey to nearly white, according to thickness of layers.	Dark Grey to nearly black.
IV. Density of lime-salts (acording to the amount of lime contained): Halisteretic, atrophic bone, dentine or cementum, comparatively thin layers of normal bone.	Grey.	Approximately the same as in negative.
Normal cementum or dentine.	Greyish white.	Darker.
Hard bone tissue. Vulcanized rubber. Porcelain and tooth enamel.	Nearly white.	Nearly dark.
V. Density of metals: Heavy metals and their alloys. Salts of bismuth. Iodoform.	White.	Black.

ETHICS.

BY DR. E. S. BARNES, SEATTLE, WASH.*

Your committee has asked me to write something under the caption of "Ethics." Like all other fundamentals, the study of ethics, in a way, is generally dry, but of all the things that we have to consider there is nothing of so much importance to dentists as a profession and to the dentist as an individual. There are innumerable definitions of the intangible thing we call ethics, but we must each of us define it for ourselves.

The greatest antagonist of disease is health. A perfectly healthy

*Read before the King County Dental Society, a component of the Washington State Dental Society, November, 1908.

condition means the greatest possible resistance to the contamination of disease. Health with its splendid life blood eliminating the hy-products of bacterial life, renders it impossible that they poison the host, and this idea if applied to society and fraternity work for the betterment of our profession seems to me to be the only one upon which we may safely build the superstructure of an ideal profession. To this end the elimination of unfriendly feeling and the cultivation of brotherly kindness, and by a system of mutual and self-help measures, stimulate the growth of a good healthy professionalism. Again, I would eliminate any feeling of bitterness for the man who we think is prostituting his profession. The hardest thing on this earth is to be a just judge, so difficult is it that an all-wise God reserved this office to himself. "Judge not that ye be not judged" is pregnant with sound doctrine.

It is true that safeguards of society should be wisely and strongly made and rigidly enforced, but to me the good that we may do lies principally in the example of those of us who are subscribing to our code of ethics, thoroughly good, or as near it as humanity may come. You know we are all limited, but if we are good in as far as possible there is no room for bad.

Another idea in this connection is our increased capacity for good. The same author who said "Judge not that ye be not judged" also said, "First pluck the beam from thine own eye that ye may see more clearly to pluck the beam from out your brother's eye." And, gentlemen, I do not think he intended that this bit of surgery be made under an anesthetic. I believe it is to be accomplished with our eyes wide open and we ourselves wide awake, and it may be after the operation, and we have recovered from the effect, and we are able to sit up and take notice, that our brother whom we so freely and sometimes bitterly criticised may have been developing and with our clearer vision we may discover a great deal of good where we thought nothing but the opposite held sway.

Those of you who have visited the orchards of this state, from which come the foremost fruits of the world, may have noticed some of the bruised windfalls, good for very little, but food for the dumb animals of the ranch. Have you ever stopped to reason why, on the same branch that grew and supported a number of apples that are to grace the table of a king, there are others nourished by the same sap,

ripened by the same sun, watered by the same rains, kissed by the same breezes, which fall and become bruised and ruined? The one is to go on and fulfill its noble destiny, the other to be trodden under foot and reduced to its original elements. This question will help us to understand why we are not to constitute ourselves as a court of last resort.

There is a man in this town who professes to be practicing a noble profession. I see him frequently on the car alone, on the street alone, in the restaurant alone, out riding alone. Gentlemen, stop to think! How would you like to have to pay the price? The remuneration of prostitution is occasionally financially good, but the sacrifice is always certain and terrible to think of.

Yes, the man who is trying to do right has all the best of it, and we can well afford, if we are so doing, to have charity, the largest word on our escutcheon.

A CASE OF TRISM OF THE MAXILLA.

BY DR. G. FIORDELMONDO, ROME, ITALY.

A few months ago I had occasion to meet a poor woman who suffered from an impediment on the left side of the temporo-maxillary articulation. In consequence she was obliged to keep her mouth almost closed, as she did not open it more than one-third of an inch. For three years and a half the poor patient had been living in that miserable condition, suffering, also, from continuous headache. Needless to say that in order to eat she had to crumble her bread and to break other food in small pieces. I made an examination of the mouth and found a good strong set of teeth, except the left upper third molar, the crown of which was entirely destroyed, leaving in place a badly decayed root. This was implanted abnormally, quite far buccally from its ordinary place and high up on the process. At a glance I thought that the cause of all the trouble. I asked the patient about the history of the case.

It had been more than three years and a half since she had suffered from inflammation and swelling of the same side. The woman had recourse, then, to her doctor, who brought almost no relief to her severe suffering. A month after she was advised by the same physi-

cian to look for a dentist who extracted the second and third left lower molars, which were good sound teeth. I do not know what that dentist thought of the case. As a matter of fact, the patient grew worse and remained in that miserable condition for three years more. Some physicians prescribed her a little device which mechanically would force her to open the mouth, but this remedy was an unfortunate once, since the unlucky woman reported from it nothing but pain, and her condition grew worse. Finally she was in Bologna, one of the rather large towns of Italy, famous for its old university, where she was examined by some of the best surgeons of those clinics. Strange to say, nobody thought to examine her mouth. They took a skiagraph of the temporo-maxillary articulation, and as they did not find any affection of it came to the same conclusion as the other people who suggested to her the tantalizing mechanical device.

Although the conditions under which the poor woman came to me were almost desperate, from the point of view of access to that upper third molar root, I did not lose my courage and, remembering one of the mottos of the college where I was graduated, "from aspera ad astra," I went to work with all that ability and patience which I was taught by my professors of the western hemisphere.

The smallest mouth mirror could hardly enter her mouth, but the treatment of that case would have been absolutely impossible without it. I worked several hours through that mirror, and the space was so narrow that it was exceedingly difficult.

After three sittings' treatment I succeeded in so changing the conditions of the tissues around that root that the patient began to open her mouth a little. I was very anxious to gain enough room for a forceps, with the view of extracting the second upper molar (which was out of service anyway, having no antagonist) in order to get the space necessary for the extraction of the root, which had a large base and was firmly implanted. I succeeded with No. 67 Ash forceps.

As soon as the second molar was removed the mouth opened still more, and finally, at the next sitting, the operation was completed with the extraction of the root.

The result was most satisfactory, since the patient, immediately after the operation, opened her mouth almost to the normal and regarded it as a miracle.

A few days afterward the function of the temporo-maxillary articulation was fully recovered, with the greatest satisfaction of my patient and myself.

REPORT OF THE COMMITTEE ON DENTAL SCIENCE AND LITERATURE.*

BY M. R. HARNED, D. D. S., ROCKFORD, ILL.

RESOURCES.

The resources from which the following review of the year's science and literature was drawn were a number of helpful friends, and the following magazines, the *Dental Cosmos, Dental Review, Dental Digest, Items of Interest, American Dental Journal, Dominion Dental Journal* and the *Deutsche Monatsschrift für Zahnheilkunde,* which constitutes a very interesting array of publications.

Magazines seem to possess individuality, perhaps due to the editor, and this individuality is strongly impressed upon the two leading eastern magazines, the *Cosmos* and *Items.* There seem to be two functions of professional magazines, aside from advertising; the one to give the best possible professional information, regardless of expense, of which the *Cosmos* is the type; the other function is to develop the personnel of the members of a great society, of which the *Review* is the type. In this connection, I want to devote a little space to the work of the *Review* in publishing articles not only from the Illinois State Dental Society but from its component societies, thus encouraging and developing a corps of workers. Articles have been published upon the following subjects:

"Are We Living Up to Our Possibilities?

"Lucodescent Light in Control of Pain."

"Ethics."

"General Practice."

"An Operative Dentistry Quiz."

"The Preparation of the Mouth, Impression and Model for the Seating on Base Plates."

"What do We Know Regarding the Blood Supply to the Teeth?"

*Read before the Illinois State Dental Society at Danville, Ill., May, 1909.

"Diagnosis and Treatment of Certain Acute Destructive Diseases of the Dental Pulp."

"Our Little Patients."

"The First Permanent Molar from the Viewpoint of the Orthodontist."

"The Development and Pulp Treatment of First Permanent Molar."

"Filling First Permanent Molar Previous to Full Development."

"Treatment of First Permanent Molar with Pulp Nearly Exposed."

"Condition of Saliva in Relation to Dental Caries."

"The Status of Porcelain Inlays."

"The Gold Inlay."

"Amalgam vs. Gold Inlay."

"What Points in Crown Construction Are Essential to the Preservation of the Health of the Peridental Membrane?"

"How Would You Restore a Lost Upper Lateral if the Central and Cuspid Have Vital Pulps and no Decay?"

"The Comparative Stability of Bridges Anchored with Inlay or Crown Attachments."

"What Are the Chief Causes of Failure in Bridgework, and What Percentage of All Bridgework Lasts Five Years?"

"What Is There New in Detachable Porcelain Crowns and Facings as a Result of Recent Method of Cashing?"

"Inlay Practice."

"Conservation of Nerve Force."

"The Modern Dentist and His Equipment."

"The Porcelain Jacket Crown."

Really a great array, to say nothing of papers printed from the proceedings of this body.

The *American Dental Journal* has adopted a novel feature in "Our Post-Graduate Course," which ought to prove attractive.

In making the report my feeling is that it should be bibliographic and arranged under heads, that it may be used for future reference.

BOOKS.

From the book reviews appearing in the journals read we find some very notable additions to our literature. Conspicuous among them is the work of G. V. Black, M. D., D. D. S., Sc. D., LL. D.,

entitled "Operative Dentistry," in two volumes, published by "Medico-Dental Publishing Company," of Chicago; "A Text Book of Operative Dentistry," by C. N. Johnson, M. A., L. D. S., D. D. S., published by P. Blakiston's Son & Co., of Philadelphia; "A Practical Treatise on the Technics and Principles of Dental Orthopedia, Including Drawings and Working Details of Appliances and Apparatus for All Forms of Irregularities of the Teeth," by Calvin S. Case, D. D. S., M. D., published by the C. S. Case company. A very creditable showing for Chicago.

Other books have been published, as follows:

"Lectures on General Anæsthetics in Dentistry," by William H. De Ford, B. A., D. D. S., M. D., M. A., published by John T. Noble Manufacturing company, St. Louis; "Principles and Practice of Flling Teeth with Porcelain," by John Q. Byram, D. D. S., published by Consolidated Dental Manufacturing company; "Evolution of Mammalian Teeth," by Henry Fairfield Osburn, Sc. D., LL. D., D. Sc., published by the McMillan company; "A Manual of Conversation for the Dental Profession," by Dr. Paul de Terra, contains dental phrases in German, French, English and Italian; "Practical Dentistry for Practical Dentists," by I. N. Broomell, D. D. S., published by the L. D. Caulk company; "State Board Questions and Answers," by R. Max Goepp, M. D., published by W. B. Saunders company; "A Text Book of General Bacteriology," by Edwin O. Jordan; seventeenth revised edition of "Gray's Anatomy" and third revised edition of Burchard's "Dental Pathology and Therapeutics"; "Human Pearls," by Francis Eaton Burnett and Lymington's "Atlas of Skiagraphs," published by Longmans, Green & Co.

EDUCATION OF THE DENTIST.

But few articles have appeared upon this subject during the year. One of them, by Dr. E. C. Kirk, appeared in the June *Cosmos* and is worthy of careful perusal. He starts his article with the story of an eminent physicist who prefaced a treatise upon electricity by saying: "There are two kinds of electricity; one is found upon college blackboards, the other is found in nature. This book treats of the latter." Dr. Kirk applies this story to the treatment of the subject of "Dental Education," and says, "It has been presented and discussed quite as extensively by the theorist and reformer as by the practical and experienced educator."

In discussing the subject Dr. Kirk, with his usual clear insight,

recognizes the original fundamental basis of dentistry to be mechanical and calls it the "mechanical *motif*." He follows the development through its evolutionary processes and finds that the factor which bore dentistry away from the purely mechanical was the factor of vitality (life). The strong plea which Dr. Kirk meakes is for better preliminary education, an improvement in the kind of standard, not its amount; a better educational product, better trained in the subjects of the preparatory curriculum; the recognition by the state that in exercising its right to create standards it also incurs the responsibility of training and educating prospective matriculants up to the intellectual plane which its prescribed standard implies.

He does not defend the professional school "from one iota of just criticism, "but appeals to the individual dentist to consider the preparatory education for dentists a personal matter, which by individual and collective effort may be satisfactorily solved.

In the December *Review* Dr. C. N. Johnson, under the subject "A Fundamental Need in Dental Education," a paper read before the American Dental Society of Europe, makes a forceful and urgent plea for an international standard of "dental education," or at least a uniform system. Probably the most entertaining article on the subject printed during the year is the one in April *Cosmos* entitled "Sense and Nonsense Taught in American Dental Schools," by Dr. E. S. Talbot (the iconoclast of the dental profession). Dr. Talbot's paper was suggested by Dr. James Truman's paper (1907 *Cosmos*) entitled "Wanted, A Pathological Sense." This is sufficiently allied to "degeneracy" to furnish the doctor an enjoyable theme. The article is a refrain of his "Swan Song" of last year, and the accusation is that our dental educators sing three senile songs, first, "Medical College Teaching Is Faulty"; second, the "Touch System"; third, "The Dental Graduate Is Better Prepared to Practice Dentistry than the Medical Graduate Is to Practice Medicine." The doctor's telling sarcasm makes good reading, and his criticisms are not without some justification, but the fact is the professional standard is constantly advancing, despite the isolated cases cited. However, the article ought to do some good, at least to Dr. Talbot.

DENTAL EDUCATION OF THE PUBLIC.

A considerable number of able articles have appeared upon this subject during the year, but the progress is very slow. Two elements oppose it principally, the so-called conservatives, whose principal argu-

ment is that it is socialistic, and the childless taxpayer, who really doesn't believe in public schools, who says "fads." Dr. T. P. Hyatt's article in the July *Items of Interest* is full of helpful suggestion, because it contains a sample of lecture to be delivered before the public, and it is the public we must educate before we can expect dental inspection in connection with our educational system.

June *Cosmos* contains an article by Dr. Johan De La Para entitled "Free Dental Service in the Public Schools of Mexico." They have a volunteer corps doing a little work. Dr. G. K. Thomson, in October *Dominion Dental Journal,* has an article on "Dental Education of Public," which contains many helpful suggestions and outlines plans adopted in Halifax, Nova Scotia.

ANESTHETICS.

Some interesting things are reported under this head during the year. Among them is a report (in November *American Journal*) of "Electric Narcosis," produced experimentally by Dr. Luduc of Nantes, France. Probably the most practical thing is the development of novocain, discovered by Uhfelder & Einhorn. It is an alkaloid, only one-seventh as toxic as cocain. Two articles discussing it have appeared in the *Cosmos* this year. The August number contains an article by Dr. Richard H. Reithmüller, of the University of Pennsylvania, entitled "Recent Studies on Novocain"; in September, one by Dr. Hermann Prinz, "A Rational Method of Producing Local Anesthesia." (One of the very interesting points brought forth in these articles is the property possessed by adrenalin chlorid of limiting the spread of anesthesia.)

The claims of novocain are: 1st, it produces a perfect local anesthesia; 2d, the duration of anesthesia is longer than that of cocain; 3d, even stronger solutions do not irritate the tissues; 4th, it is at least equal to cocain in anesthetic power; 5th, only one-seventh as toxic; 6th, constant in action; 7th, does not produce shock, cardiac or respiratory failure after pain, nor sloughing; 8th, it can be given immediately after eating; 9th, not a secret preparation; 10th, cheaper than other preparations.

PROSTHETICS.

This subject has demanded a great deal of attention this year, some twenty-two articles appearing in various magazines read. Among

the most worthy were the following: August *Cosmos,* "Factors Affecting the Appearance of the Anterior Teeth in Artificial Dentures," by Dr. Charles R. Turner; October *Cosmos,* "Some Phases of Constructing Complete Artificial Dentures," by Dr. George H. Wilson; August *Items,* "A Plea for Higher Ideals in Prosthetic Dentistry," by Dr. S. C. G. Watkins. Probably the most suggestive writing of the year upon the subject is a serial running in the *Digest* since January, being quite an exhaustive treatise upon making of "Artificial Dentures," by Dr. G. W. Clapp. Nothing startingly new or revolutionary has been added to the literature upon this subject.

OPERATIVE DENTISTRY.

Probably the most important literature upon this subject for the year would be the proceedings of the G. V. Black Club at its mid-winter meeting, printed in the May *Review.* Certainly much of interest is contained in this report.

The most important contribution by a single author is the serial beginning with the July number, 1908, printed in the *Digest,* by Dr. J. V. Conzett, on "How to Make Gold Fillings." The articles are full of helpful little suggestions aside from being based upon scientific principles, and embody the personal experience of one of the best "gold-fillers" in the country, written in a charming style.

Dr. R. B. Tuller, under the title "Operative Dentistry," has written for the *American Dental Journal,* as part of "Our Post Graduate Course," a most interesting and instructive series of articles.

ORTHODONTIA.

Dr. Bentley's predictions in his report last year have been at least partly realized, and this department of dentistry certainly has shown a virility quite remarkable.

With one exception, it has received more attention from our enthusiastic recorders than any other subject. More than twenty articles have appeared in the eastern magazines alone; in fact the *Orthodontist* as now known is largely an eastern product. It might be well for us to have the government experts inoculate our soil with this particular bacteria.

Among the notable articles on the subject are the following: July *Items,* "A Contribution to the Knowledge of the Etiology and Treatment of Cases in Class II," by Dr. R. Ottolengui. (Now Class

II pertains to what is known as distal occlusion.) Dr. Ottolengui's theory is stated, "for consideration, not for immediate adoption," thus: "In all cases of seemingly protruded jaws (Classes II or III, exclusive of true monstrosities), we have distal occlusion, due to deficient development. In Class II cases there is distal occlusion of the lower teeth, due to deficient development of the mandible, of the arch, or both.

In Class III we have a distal occlusion of the upper teeth, due to deficient development of the maxillæ, of the upper arch, or both.

The Doctor draws the distinction between this theory and the generally accepted theory and sums up by saying that "while the generally accepted theory renders early intervention advisable, this makes it compulsory."

The Doctor seems to have discovered something, but when viewed closely it seems to be the same old thing. The Doctor's estimate of the value of his theory reminds one of the politician who said that "Theories are like sausages, because their value depends upon who makes them," for probably few would disagree except possibly as to the cause of lack of development.

Dr. Herbert A. Pullen, in the December *Cosmos,* discusses the subject under the title "The Import of Certain Etiological Factors in Treatment in Orthodontia." It is a finely written, logical treatment of the subject, and he winds up with the following paragraph:

"From the carliest infancy to old age, the problems of malocclusion are the problems of abnormal development, the etiological study of which alone reveals the inception and the causative factors of the resultant malocclusion, and yet Dr. Pullen doesn't seem to realize that this is the worm which has just been scratched up and discovered by rooster Ottolengui."

A valuable article on "Infra Occlusion" (failure of one or more teeth to reach proper occlusion), by Dr. Alfred P. Rogers, appears in the April *Digest.* It treats of a rare form of malocclusion in a very interesting manner.

Dr. James D. Eby in December *Cosmos* has an interesting article upon "The Jackson System," in which he describes Dr. Jackson's appliance for expansion of arches, which is very ingenious.

SALIVA.

Undoubtedly the most important contribution to our scientific literature during the year has been made by Dr. Carl Röse and printed in the *Deutsche Monatsschrift für Zahnkeilkunde.*

This series of articles, beginning with the January number and running through August, constitute his deductions from a laborious work, beginning in 1894. He went through Germany, Holland and Sweden, visiting communities where there was little change in population and studied conditions, analyzing the soil, water, milk, food stuffs, including fruit and vegetables, then analyzing the secretions of the body, or rather bodies. This report deals with information pertaining to saliva.

He procured composites of saliva from the communities, in some cases by going into the schools and having the children chew cotton and spit into a common receptacle. This was carefully analyzed, both quantitively and qualitively. He found the flow of saliva greater in localities where lime was plentiful. He also examined and compiled statistics upon condition of the teeth.

His conclusions are that in proportion to the lime salts in the water and food stuffs, particularly milk, which is one of the best vehicles for carrying lime salts, so are the teeth of the people immune to decay, other things being equal. He does not credit Dr. Black's conclusions on density of teeth (Dr. Black has called my attention to this), and does not think Dr. Black has proved his case; he does agree with Dr. Black that saliva is the chief cause of caries. In communities where there is plenty of lime salts in nourishment of the young the percentage of boys, of army age, capable of qualifying for service, is considerably greater than in communities where lime salts are lacking. He also collected information which shows greater strength and development of soldiery from communities drinking hard water.

He discredits the theory of pregnancy affecting teeth, and shows the desirability of rye bread and milk diet for mothers and superiority of nursing habit.

It has been a stupendous undertaking, and Dr. Röse deserves a great deal of credit for the painstaking labor and the valuable scientific information produced.

The May *Cosmos* contains an interesting article upon "The Saliva and Tooth Decay," by Dr. J. Wright Beach, one of the members of the Committee on Scientific Research of the New York State Dental Society, and is practically a report of the committee with some comments. He quotes quite extensively from Dr. Frank Low, chairman

of the committee, as follows: "Experiments which I have personally conducted have proved (1) that saliva from the mouths of patients having an abundance of potassium sulfocyanate will dissolve gelatin to double the quantity of such as have no potassium sulfocyanate; (2) that during a considerable period of immunity from decay the saliva shows strong potassium sulfocyanate provings, while in the same mouth during a considerable period of rapid decay the saliva contained no potassium sulfocyanate; (3) that in a mouth where decay was rapidly progressive and the saliva showed no potassium sulfocyanate, the administration, by the stomach, of that compound, one-half grain per diem (Park, Davis Co.'s compressed tablets) resulted in the abundant presence of potassium sulfocyanate, making the saliva resemble in appearance that from other mouths when no decay is present, etc."

Dr. Beach expresses the belief that "the administration of hydrochloric acid—as for indigestion—will cause the appearance of potassium sulfocyanate."

The test to determine the presence of potassium sulfocyanate in the saliva is as follows: Take 2 c. c. m. of saliva, to which add 2 c. c. m. of distilled water and shake thoroughly together. Add 5 drops of iron perchlorid and shake again. If straw colored, no potassium sulfocyanate is present; if brick colored, the teeth are safe; if wine-colored, treatment is contraindicated.

The April *Cosmos* contains an excellent article, entitled "Ploddings Toward Diagnosis by Salivary Analysis," by Dr. A. W. Doubleday, but space does not admit of a review of the article.

The April *Review* has a historical sketch of the development of consideration of the saliva in connection with dental caries under title, "Conditions of Saliva in Relation to Dental Caries," by Dr. G. V. Black, which, it is to be hoped, every man present has read.

SCIENCE.

Under this head should come, first, Dr. Röse's series of articles, which I have deemed advisable to treat under the title *Saliva.*

Next in importance should come Dr. George W. Cook's article on "Putrefaction and Pathological Changes in Tissues," read before this society a year ago and published in September *Review,* and his long serial in the *American Dental Journal,* part of "Our Post-Graduate Course," entitled "Bacteriology and Pathology."

The June *Cosmos* contained an excellent scientific article on "New Researches Into Amalgams," by Dr. A. Fenchal of Hamburg.

It deals principally with the scientific study of—first, the solution of metal filings in mercury; second, the crystallization of the amalgam out of the solution.

INLAYS, PORCELAIN.

Only about half as many articles have appeared upon this subject during the year as upon cast gold inlays, but this is not accounted for by the "death of porcelain," but rather by the psychological fact that most men in presenting a paper want to write upon the "new thing."

Among the papers well worth reading is one which appeared in July *Dominion Journal,* entitled "Is the Filling of the Anterior Teeth Contraindicated," by Dr. C. H. Land, in which he gives many clever applications of porcelain. March *Review* contains one of Dr. W. T. Reeves' articles, entitled "What About Porcelain?" It contains many quotations from other authors as well as a careful diagnosis of cases to prove that "his baby" is still growing. The *American Journal,* May, June, July, contained a series on "Porcelain," by Dr. T. E. Powell. May *Items* has an article by Dr. J. M. Thompson on "Individuality in Porcelain Work," which contains some good suggestions, as does the article (in September *Cosmos*) by Dr. W. A. Capon, entitled "Porcelain After Eighteen Years."

INLAYS, GOLD.

This is one of the real live departments of dentistry, and yet only about twenty articles have been written upon the subject during the year, a note of warning runs through most of them "to avoid abusing the idea," probably due to the recognition of the tendency, particularly prompted by the radicalism displayed in porcelain. But all seem to recognize the greatness of this contribution to mechanical art.

Among the interesting papers is one (in July *Items*): "The Principle of Retention for Cast Gold Inlays," by Dr. F. T. Van Woert. The point made, aside from the interesting description of principles governing cavity preparation, is that the margins should not be beveled and a lap seam made, for he believes it constitutes a weakness. Undoubtedly the most scientific article on the subject pub-

lished this year was in the May and June *Items* by Dr. Weston A. Price, entitled "The Laws Determining Casting or Fusing Results, Their Control, and a New and Rational Technique." The Doctor gives tables of expansion and contraction of various metals used in casting, also the expansion or contraction of various investment materials. His special point is the reproduction of all the parts involved, in artificial stone, which has an expansion on heating that corrects the contraction of gold in cooling. The wax model of filling is made and cast directly upon stone model and not removed until completely polished, ready for cementing. I have been unable to learn if the artificial stone is available in the market. September *Cosmos* contains an article on "Cavity Preparation for Cast Metal Fillings," by Dr. Thomas P. Hinman, which contains some excellent hints.

PYORRHEA—PROPHYLAXIS.

These subjects are more than ever engaging the attention of the profession, for about thirty articles have appeared during the year upon one or other or both. The work seems empirical as a rule, and while men are becoming expert in some form of treatment, and claim to know the cause, yet there is grave reason for doubting their conclusions.

The May *Cosmos* contains an article on "Pyorrhea Alveolaris and Malocclusion," by Dr. Paul B. H. Quedenfeldt, in which he tells how he cures the disease by rendering the teeth stationary. The same magazine contains another article entitled "Some Disjointed Etiologic Factors of Pyorrhea Alveolaris," by Dr. F. L. Fossume, in which he decides that the cause lies in lack of power of tissues to resist and overcome micro-organic invasion, and feels that the cure lies along the line of raising the "opsonic index."

Many articles appear advocating the removal of deposits and polishing with pumice or similar substances the roots of teeth affected. The March *Cosmos* contains two articles of warning, one by Dr. R. MacDonald, entitled "A Possible Predisposing Cause of Pyorrhea Alveolaris," the other "Mechanical and Chemical Changes that Can Be Produced in the Tissues of the Human Mouth," by Dr. George W. Cook. Dr. MacDonald believes that the initial gingivitis which frequently results in pyorrhea is caused by sharp crystals and insoluble grit, such as is found in tooth powders; and Dr. Cook's article will

nealy paralyze you when you read it. He shows the dangers of prophylactic treatment and says: "Of the many agents that I have tried as mechanical irritants of the gingival tissue, the finest pulverized pumice is the most effectual"; again, speaking of hydrogen dioxid: "It affects the mucous membrane and the mucous cells in a very detrimental manner. If applied around the necks of teeth and under the gingival margin once a day for six days the tissue would lose all its bacterial resistance." He also warns us against the use of many other preparations, including chloroform, the phenols, and especially cresol. This is very timely and well worth our consideration. March and April *Items* contain a treatise upon "The Bacterial Vaccines in the Treatment of Pyorrhea Alveolaris," by Dr. Frederick Hecker, which every one should read. Dr. C. E. Bentley, in his magnificent report on Science and Literature last year, gave a simple and interesting outline of the theory of what is known as the Opsonic or Vaccine treatment for pyorrhea, which I would advise reading again before reading these articles by Dr. Hecker.

Dr. Hecker, after giving an outline of the evolution of bacteriology, treats his subject under the following heads:

"The Processes of Immunity Conferred by Natural and Specific Serums."

"The Opsonins of the Blood; What They Are."

"The Common Organisms Seen in the Malady."

"The Technique of Obtaining the Organisms for Growth; the Methods of Isolation."

"The Technique of Making a Bacterial Vaccine; the Standardizing of a Vaccine."

"The Technique for Making the Opsonic Index."

"The Value of the Opsonic Index in Ascertaining the Number of Organisms that Should Be Given in Each Vaccination."

"Treatment."

"The Clinical Evidence that Is Presented After Vaccination."

"The Technique of Cleaning the Teeth and the Removal of the Calculus."

"A Report of Cases."

Wouldn't you like to know all that? It's worth while reading the article, for it is well and clearly written.

CONCLUSION.

A comparison of this report with those previously given will show a change of classification, due to difference of thought direction; for instance, *Erosion* and *Abrasion* were omitted because there was not a single original article upon either subject. I should like to have reproduced in full that gem of the year's dental literature, in January *Review,* "Our Little Patients," by Dr. C. B. Rohland; "The Teeth of the Igorots," in July *Cosmos,* by Dr. Louis Ottofy. Having planned such a work on one of my vacation trips among our Pueblo Indians, and knowing the difficulties, I wish to compliment Dr. Ottofy on what he accomplished, and commend it to you for perusal as a rare thing, and many other excellent articles have not been mentioned because you are already tired.

I wish to remark in conclusion that the general literary style of the articles of this year has seemed to me decidedly better than in previous years, and there is a marked steady progress toward a broader professional knowledge and better dentistry.

I wish to express my thanks to Dr. G. V. Black, Dr. A. D. Black, and Dr. H. C. Meyer for their assistance in interpreting Dr. Röse's articles, and to many others for kindly and helpful words.

REPORT OF THE COMMITTEE ON ART AND INVENTION.*

BY DR. J. P. LUTHRINGER, PEORIA, ILL.

The above committee submits the following report:

The present committee, like its predecessor, is impelled to the belief that manufacturers of things dental do not entertain an adequate appreciation of the value of the work of this committee in so far as the benefits accruing to them is concerned.

It would seem a good business policy to mount the various offerings in suitable trays, yet only one firm grasped the importance of an attractive display. The committee was compelled, with the limited means at hand, to arrange the offerings of the other firms as best he could.

In only one instance were concise descriptions of articles sent.

*Read before the Illinois State Dental Society at Danville, Ill., May, 1909.

For the remainder we were compelled to read a mass of descriptive matter from catalogues and circulars in an attempt to determine what features the manufacturers wished to emphasize. All were requested to observe these requirements.

In response to the first letter asking for new material for exhibit, less than fifty per cent replied, although a stamp was enclosed for this purpose; a second request brought this up to eighty per cent, leaving twenty per cent which have not accorded us the courtesy of a reply on which the carrying charges had been prepaid.

These observations are not intended in the spirit of complaint, but are given merely to convey an idea of a rather regrettable condition which confronts this committee. And, although they may not come to the notice of the manufacturers, they may be of some benefit to my successor in that they may serve to lighten a moment of depression now and then.

The list of contributors, together with the new articles of dental interest, follow.

The S. S. White Dental Mfg. Co. offers these new dental appliances:

Soldering Flux Paste. A new form of dental flux. Its foundation is borax glass, held in vaselin. It does not boil up, and the binder burns out without residue, leaving the powdered flux to do its work.

Inhaler No. 4, with Celluloid Face Piece. An inhaler fitted with a transparent celluloid face piece, permitting an unimpeded view of the lips and affording an opportunity to watch the progress of the patient when under gas. The celluloid face piece is non-absorbent, cleanly, and easily detachable from the soft rubber hood. The hood is inflatable for close adaptation to the face.

Contra Angle Plate Burnisher No. 9. Designed by Dr. J. H. Prothero. A plate burnisher having a short checkered handle. The blade is rounded, contra-angled and flattened in form, permitting application of force with no tendency to rotate, as the working point is in line of the axis of the instrument.

Corona Gold. A new form of crystal gold which, owing to the closeness of the fibers, is exceedingly plastic and can be worked rapidly. Put up in strip form.

Oraline Tooth Paste in New Container. Each tube is supplied with a winding device consisting of a link and ring by which the paste

is expelled smoothly and evenly. The ring permits of the tube being hung up until wanted again.

Perfection Polishing Strips—New Form. The improvement in this strip consists in the quality of the linen containing the abrasive material. The strip is slightly shorter in length than the older style.

S. S. W. Dental Swager. For forming inlays and matrices, backing teeth, making seamless crowns by split-mold method.

Accessories for S. S. W. Dental Swager. Four in number.

1st. *Dividing Mold Cup.* A metal cup, one inch in diameter, slightly coned inside, with an opening in the bottom so that when inverted over the model, fusible metal can be poured through the perforation to form the mold.

2d. *Knock-out Block.* A cast-iron ring, 1¾ inches outside diameter, with coned top and internal annular shoulder, forming a rest for the dividing mold cup to facilitate the knocking out of the fusible metal mold. In connection with this a punch of hard wood is provided.

3d. *Mold Splitter.* An appliance working like a nut cracker. The mold is easily split while still warm by inserting the blades in the grooves and bringing a gentle pressure upon the handles.

4th. *Bridge Flask.* A metal ring, 1½ inches diameter inside, with removable cover provided with a hollow neck to enter the barrel of our dental swager. Large enough for the casting of four or five-tooth bridges.

No. 4 Heating Frame, with No. 13 Burner and Spider. A frame of heavy woven wire, 6 inches square, for drying out investments over a Bunsen burner. Heavy enough to withstand a high heat.

Inlay Flask Tongs. These tongs are 12 inches long, with the jaws shaped near the beaks so as to grasp and carry the casting rings. The beaks are curved as in solder tongs.

Silver Probe. A nicely balanced instrument with solid silver rounded point. Supplied with a hollow handle so that point of instrument can be reversed and inserted in handle when carried in pocket.

Johnson & Johnson:

This firm has added a few new articles which will be of interest to those who strive for surgical cleanliness in appearance as well as in fact.

Paper Pinafores, for protecting the patient's dress, are made of

impervious paper, 15x20 inches in size, cut out for the neck and are to be used but once.

Head-rest Napkins, made of soft cloth, size 9x12 inches, for sectional and other head rests. To be destroyed after using once.

Aseptic Japanese Bibulous Paper is sterilized and put up in a flat sealed box, from which one sheet may be taken at a time without exposing the balance of the package.

Glass Base for the sanitary dental waste receiver, replacing the metal standard. It looks bright and clean.

Lukens & Whittington present these instruments:

Beale Utility Pliers for crown and bridgeworkers. The beaks are of unequal length and rounded save for the lower third, where the approximating surfaces are flattened. Used for contouring, crimping, straightening, etc.

Cornell Spatula. It has a nicely rounded spoon at one end for wax work, and a chisel edge, pointed knife blade at the other, suitable for carving and trimming wax and rubber, and strong enough to do the heavier work of prosthetic dentistry.

Fletcher's Bone Curetts. A set of eleven slender instruments for cutting away dead and diseased bone about or beyond the roots of teeth.

Wedelstaedt's Trimmers, for reducing metal fillings to form prior to using strips and disks. Well adapted for removing excess along the cervical margin and trimming to form metal fillings on buccal and labial surfaces. The ends are filelike on one side, three being push-cut and three pull-cut.

Wedelstaedt's Knives. Three in number, the blades being bent at obtuse, medium and right angles. They are used in connection with the trimmers to cut away the excess filling material to bring the filling to form.

Younger's Pyorrhea Instruments. A set of fifteen, revised by Dr. Good from Dr. Younger's set of twenty-seven. In construction they are made very thin to pass under the gum easily, and are used with a pull motion. They may be held at an angle, as the entire point is a cutting edge.

Simpson's Automatic Chisels. A set of thirteen chisel-excavators, the blades of which cut on the sides as well as the edge. While the edge is accurately shaping the cervical margin of a cavity the side is automatically shaping the pulpal wall.

Lane's Excavators. A modification of the Darby-Perry excavators. The spoons are so bent as to insure cutting of the decayed dentin instead of scraping it. There are three pairs.

Swing's Universal Lower Molar Forceps have quite a decided bend in the handle, making it possible to grasp any lower molar with ease.

The Hatch Cervical Clamp. The points of the clamp bearing on the tooth are fine and thin, being secured in place by a thumbscrew. It is universal in its application to the anterior teeth and seems useful in cavities extending far rootward.

Woodward's Cervical Clamp, for retaining the rubber dam above the cervical margins of labial cavities where such cavities are much farther rootward than the gum margin on the lingual surface. It is designed for the upper anterior and bicuspid teeth, although it may be of service in the corresponding lower teeth. This clamp seems to be one of the really good new things.

Buffalo Dental Mfg. Co. has submitted the following:

Lewis Sanitary Spittoon Trap is made to fit any fountain spittoon. It acts as an effective water seal at the spittoon outlet, blocks it so no odors can enter the room and incidentally serves as a gold and amalgam scrap catcher.

Pullen's Impression Grooving Knife for Orthodontia is used for sectioning either upper or lower impressions, so shaped as to protect the lips while being used.

The Pullen Universal Band-Forming Pliers for Orthodontists.— Especially adapted for pinching bands upon the labial, buccal and lingual surfaces of the teeth. One edge being convex and the other concave permit a very close adaptation of the bands.

Pullen's Diagnostic Chart for Orthodontia contains the entire angle classification of malocclusion in condensed form. The arrangement is easily comprehended and gives the prospective patient a clear impression of the extent and difficulty of the treatment. Suitable for framing.

Self-Lighting Bunsen Burner, for illuminating gas only. A Bunsen with by-pass to keep gas lighted when turned low. A touch of the lever gives any size from pilot to full flame.

Trigg's Universal Tooth Swage, made of soft rubber, is intended for backing flat back teeth, accommodating practically any size tooth.

Whitney Reversible Vulcanite Flasks, made in malleable iron and brass. Top and bottom plates are detachable, the two rings are of different depths, and, as all parts are interchangeable, a deep, medium and shallow flask may be made. No. 20 R is the largest vulcanite flask made. No. 2 R is slightly smaller.

Lee S. Smith & Son Co.:

This firm has perfected a line of aseptic dental furniture that will appeal strongly to those striving for surgical cleanliness in everything pertaining to daily operative work. Among others we will mention the following:

Pressed Steel Aseptic Dental Cabinets are constructed exclusively of steel, iron and glass; no wood is used. They are done in white enamel which is baked on. All the trays swing on end hinges and are equipped with opal glass bur and instrument racks and aluminum disk and strip trays.

Aseptic Bracket Table. Made of pressed steel and glass and is white enameled. The general construction is the same as the cabinets.

Aseptic Examination Chair, designed for examinations, treatments, adjustment of regulating appliances, etc.; several styles of the Superior cabinet sterilizers, dressing table and table stand are also worthy of note.

Minimum Aseptic Porcelain Trays, nine to the set, are intended to fit the drawer of the ordinary bracket table, enabling one to classify the little things in daily use.

The Dentists' Supply Co.:

A new anatomical mould of bicuspids and molars in the Twentieth Century teeth. They are shaped for anatomical articulation and are intended to combine with narrow or medium wide anterior teeth from different moulds to make sets of different widths for different cases.

The Consolidated Dental Mfg. Co.:

This firm offers the New Consolidated Vulcanizer. The cover or top carries the new features. Pliers, wrenches and levers are rendered unnecessary. By means of a compound worm and gear a slight turn of the knob transmits great pressure to the cover, making it secure and non-leaking. Reversing the knob lifts the cover from the seat and it swings easily on a post, permitting unobstructed access to the vulcanizer.

A. C. Clark & Co.:

A washbowl attachment to use in connection with a fountain cuspidor has been perfected by this firm. Only one set of supply and waste plumbing is required, a special arm holding the washbowl and the spittoon. It is intended especially for those who through lack of space or plumbing complications are unable to install a stationary wash stand.

Dr. F. E. Roach:

Dr. Roach offers the Suction Wax Carver. This apparatus is designed to facilitate the making of hollow metal inlays. The heated tubular point of the carver is applied to the wax model, and as it melts the wax is drawn back into a reservoir containing absorbent cotton, with suction established by the mouthpiece.

PROCEEDINGS OF SOCIETIES.

CHICAGO-ODONTOGRAPHIC SOCIETY.

A regular meeting was held April 20th, with the president, Dr. Fred W. Gethro, in the chair.

The following papers were read on "The Contact Point":

1. "The Contact Point with Reference to Caries," by Dr. G. V. Black.

2. "The Contact Point with Reference to the Gum Tissues," by Dr. Elgin MaWhinney.

DISCUSSION.

Dr. George W. Cook: It is quite impossible for me to discuss these papers as presented. Dr. Black's paper is so striking in its conclusions that there is but little comment necessary. The points in the paper have been brought out and with the illustrations the paper explains itself. It has been illustrated by both pen and stereopticon slides what normal contact is. He has also illustrated what abnormal contact will produce on the tooth structure itself. Not having an opportunity to see Dr. MaWhinney's paper or knowing exactly the points that he wishes emphasized, the remarks that I will make will not be specially upon a normal contact of the teeth, neither will it touch upon any of the points that Dr. MaWhinney has brought out in his paper. But the point that I feel should be emphasized is this:

That if the soft structure that occupies a large portion of the interproximal space is not preserved that you not only have a recurrence of decay, but there is a possibility of establishing a disease process that the best dentists in the country seem to be unable to control, nor even do they sometimes have the ability to arrest the changes that manifest themselves in the interproximal space as tissue abnormalities.

There seems to be a law manifesting itself both in a physical and chemical way in tissue in the interproximal space and surrounding the entire tooth or teeth, and that is an extremely sensitive irritability; and on the slightest interference in any way with the tissue there is a cell irritability that manifests itself in the interproximal space with a greater variation of form of abnormality than is to be found in any other tissue of the body. In some individuals, and under some circumstances, it has the greatest power to throw irritating agents off and immunizing itself against the action of bacteria, and oftentimes prevents the most dangerous infectious organisms from setting up morbid processes in that locality. Dr. Black has dwelt, to a more or less extent, on the so-called broad contact points, and especially in teeth that are short and very large around the gingival line. This class of cases will apparently resist greater irritation, so far as establishing an inflammatory process; but the soft tissues in these interproximal spaces have more of a tendency to atrophy, in other words, the degeneration that takes place manifests itself in the form of atrophy where the volume of tissue gradually diminishes with a gradual decreasing of the size of the cells and the intercellular structure. In other words, there is a wasting away of tissue in the interproximal space, and in a little while a pocket may be produced along and just beneath the gingival line, not a pocket with pus but one that has cellular degeneration and will contain food, perhaps only small particles, but bacteria in abundance. Such imperfect spaces cannot fail to produce one of two things—caries of the teeth or disease of the peridental membrane. In a large majority of cases the latter condition will first appear. When fillings are placed in such teeth as just mentioned, as well as other teeth, the most essential point to take into consideration is the finishing of the gingival margin. Many practitioners have seen these cases in abundance, and it has been brought forcefully to their minds that it is important to have a properly finished filling at the gingival line as well as at the contact point. When there is a proper

contact point made and an improper margin is left at the gingival line of the filling the results will be the same, regardless of a proper or an improper contact point, only with the proper contact point the condition may be deferred for a longer time. I do not consider that the recurrence of decay is as detrimental as the pathological condition that may be established in the soft tissue. When a disease process is once established in the mucous epithelial structure in the interproximal space, it is liable to remain a pathological tissue during the life of the individual, while the carious condition can be refilled and practically a normal tooth re-established. But the mucous epithelium that has once become pathological may always have a tendency in that direction as long as the interproximal space remains as an interproximal space. When the interproximal space is once destroyed, or partially so, we can say that the skill is very seldom inherited or acquired by anyone to restore absolutely and perfectly that anatomical provision of nature for self-preservation.

With all of the mechanical and technical skill that has been developed in dentistry, few men have acquired a clean, clear conception of how to observe the importance of the function of the interproximal space, and this phase of the subject has been most beautifully brought out by that master of operative dentistry, Dr. Black. And I want to say that his description and his emphasis upon this very important anatomical provision of nature has done, and will do, more for the dental profession and for the poor patients who place themselves in the hands of dentists than almost any other of the very many things that he has given to us in the past.

There are three points that I wish to emphasize at this time: First, a proper contact point should be made on a filling; the gingival margin of the filling should be left perfectly smooth without the slightest blemishes on the filling at the gingival line; and that no patient should be dismissed until that margin is properly cleansed and the tissues in the interproximal space left in an aseptic condition. My experience and close study of the tissue in this locality, as well as in other localities about the teeth, is that this can be accomplished by a solution of potassium iodid, ranging anywhere from a ten to a saturated solution. If a cauterizing or oxidizing agent is placed on tissues after an operation for the establishment of proper contact and proper gingival margin of a filling, in the mouths of some

persons you may establish the very condition that you wish to avoid, because the mucous epithelial structure in this locality can many times restore itself from a mechanical injury far easier than it can from the action of a chemical agent.

If time and space permitted it might be interesting to go over the degenerative changes that take place in the mucous tissues as a hystolytic process, or in the pathological atrophy of such tissue, but the discussion of this subject at this time would be quite out of place. The contributions of this subject tonight have brought to our minds the most important phases of operative dentistry, and I think we have all learned a lesson that will be of the greatest importance in the practice of dentistry. If we will study more closely each individual case as the conditions require, remembering as Dr. Black has emphasized more times than once, that the filling of teeth is a biological as well as a mechanical problem, and that can only be carried out in the best possible manner by each individual practitioner studying every case that comes under his observation, purely from the standpoint of variation of cases rather than from the standpoint that all cases are the same.

Dr. J. N. Crouse: When we made V-shaped separations with a curved file we thought we had a method that would get us out of all our trouble. When I first attended lectures we had no rubber dam; we had to keep the cavities dry without it. The method employed then was to take an orange wood stick, whittle it down on two sides, and drive it in above the cervical margins so as to keep the moisture from coming down. The young men of today escaped all these trials and tribulations because much progress has been made since the day of us older men. It has been said that recession of the gums between the teeth and decay of teeth occur because the contact point is not proper, but I have seen many of these things occur even when there was a good contact point. I saw a case only today where the patient was tearing her gums to pieces with floss silk, crowding it in between the teeth and sawing it back and forth.

Then, when the first engines came out, we used carborundum wheels to separate the teeth and to make V-shaped spaces. The patients would come back and ask you to do something to stop the pain when eating. Next came the electric mallet. It is a different proposition when you have good appliances and the skill to use them, all of

which illustrates the advancement in the practice of dentistry.

Dr. C. N. Johnson: Drs. Black and MaWhinney covered this subject so well that there is really nothing left for me to say. I am also thankful to Dr. Crouse for his description of the mutilation of the teeth by filing and grinding. I have spent the very best energy of my life in the practice of dentistry in restoring the proper spaces between teeth mutilated in this way and in reproducing the normal mesio-distal width. As for the contact point, there are two things to consider in this connection, the form of the contact point and the density of the contact point on fillings. The contact point should be small. We cannot expect to have comfortable mastication if the contact point is broad. In some cases where we have a normal contact point and a normal interproximal space, with the space filled with normal tissue, patients complain of food wedging in this space. I had a case of that kind in my own mouth—two lower bicuspids with normal rounded form of contact—and still I was troubled incessantly with fibrous food wedging between these teeth. I took an impression and bite and examined the models from the lingual aspect, and found an upper bicuspid twisted a little and a cusp turning in so that it would spring the lower teeth apart in mastication. I ground the lingual cusp from the upper bicuspid, flattened it, and from that day on had no more difficulty with food wedging between those teeth.

We have patients come to us complaining of food wedging in places where we have taken the utmost pains to make a good contact, and in these cases we should look carefully to the occlusion.

In regard to the character of the contact point in our fillings, we must make it as dense as possible, and even then we will sometimes find it worn. One of the greatest virtues of the inlay, whether of gold or of porcelain, is the fact that out of the mouth we can make a contact that we cannot make in the mouth. We can make a perfect interproximal space and a perfect contact point of sufficient density.

Dr. MaWhinney in his beautiful description of the gum tissue in the interproximal space reminded me of the form of the tissue, that of an arch, with the crest of the arch at the contact point. When this point is normal that arch tends to the deflection of food both buccally and lingually, but when broken down the change in form of the gum tissue admits of the wedging of food between the teeth, and instead of the normal arch we have an inverted arch, with the gum

standing crownwise at the buccal and lingual embrasures. That leads to the formation of a pocket and all sorts of destruction not only of the enamel but irritation of the gum tissue, and the retention of foreign matter which produces pyorrhea pockets. So far as regeneration of the gum tissue is concerned, that is impossible. The most we can hope to do is to check the process.

Dr. Black (closing the discussion: I brought forward the illustrations of bad dentistry because I believe the time has come when the better element of the dental profession should make its influence in opposition to such operating felt. It is terrible that dentists continue to do such things. Of course, we made mistakes years ago, and those who come after us will point to the mistakes the best of us are making today, because they will know a great deal more than we do. Improvement has been rapid, but it still remains for us to stamp out carelessness in dentistry. If men are going to be professional men, let them be professional men. Only a short time ago I was going to illustrate the placing of rubber dam before my class. A student took the chair and I noticed indications that somebody in filling the teeth of this man had tied ligatures and forced them on to the gum tissue, creating a condition from which he will never recover. The student said "that this was done four years ago and that he was hurt terribly. His teeth had never been well since." They never will be well, because the gum tissue when once destroyed does not regenerate itself. We may improve things and give a reasonable degree of comfort, but the imperfection remains. Study these things carefully. Do not do dentistry mechanically. You are treating pathological codditions, and your treatment must be carried out in accordance with indications.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held May 4, 1909, with the vice-president, Dr. J. W. Wassall, in the chair.

Dr. J. A. Bullard read a paper (by invitation) entitled "Mechanical Force: Its Action and Reaction as It Is Developed in the Mouth."

DISCUSSION.

Dr. George W. Cook:

There was one thought in the paper which impressed me very

much, and that is the scientific aspect of studying force. We lose sight of some of the principles laid down in this paper in practically all of our substitute constructions; that is, just how to make application of the force in accordance with the principles herein mentioned.

Dr. Bullard has taken the members of the society a little unawares as to what the meaning of the subject was, and I believe if he does not get a good discussion of his paper it will be because most of us have misunderstood what he has said with regard to the question of force, its action and reaction.

It is becoming more and more apparent that we have to study scientific principles; it does not matter what branch of dentistry we may be interested in. Very seldom, since I have been a member of this or any other society, have we had a discussion in just this way, and I believe this paper will not only do a great deal of good but bring us to a deeper realization of the importance of taking into consideration all of the principles of physics and its relation to the movement of teeth and the carrying of artificial substitutes.

I am thankful to have heard the paper, and I feel that after reading the paper and giving it more thought I will be in a better position to discuss it than I could hope to do at the present time.

Dr. J. G. Reid:

If there is any one thing that I know nothing about it is force, and it is impossible for me to discuss this subject intelligently.

I am satisfied in my own mind that we overlook many times a study of physics in relation to the construction of any artificial substitutes that we use in the mouth, because I think mistakes are frequently made in the construction of dentures by not being more familiar with the philosophy of physics. I am sure we all profit by our mistakes along lines of this kind in practical operations. That is brought clearly to view many times. Our mistakes are made manifest by the fact that we have not had a sufficient knowledge of physics, and this paper undoubtedly brings to our minds in a vivid way the things that we ought to think about more.

Dr. L. L. Davis:

I want, first, to thank the essayist of the evening for having brought to the notice of the profession a line of study that will probably simplify matters for the great majority of practitioners. The average practitioner does not take into consideration certain laws of

physics, for the reason he may not know anything about them. However, he is obliged to do so, more or less, in his daily practice, and the man who becomes a successful practitioner, the man who is able to cope with difficult cases, is the one who from experience or from natural intuition decides what is best under certain conditions, although he may know nothing about this general law of physics and the lever and the fulcrum and such like.

This subject will benefit the profession a great deal, in that it will simplify matters for the younger members of the profession. There is no doubt that many of us in constructing a crown for a tooth or a root that is already decayed, with two-thirds of the length of the root and crown together lost, take into consideration, first of all, how short a bite can we attach a substitute to this root and get any result from it? And there are cases where we would refuse to attach a substitute to a root in one mouth, where in another we might do it, simply from the condition of the articulation with the opposing teeth.

There is also considerable to be said about the arrangement of the occlusal surface. If we have a deep bite or deep cusps we cannot construct a crown on a third or one-half of a root and get any lasting results, where we might obtain for a considerable time a good masticatory organ if we would do away with the cusps, simply having a flat surface. These are practical things that come to us from our general knowledge and experience, and these things we have considered for a long time.

Dr. J. H. Woolley:

I was not aware that the trend of thought of the essayist would be in the direction which it has taken. I thought he would discuss the subject of force as applied to the operative department, such as the condensation of gold, etc.

There are two gentlemen present tonight who, judging from their writings and from the thoughts expressed by the essayist, understand physics, which is the basic principle of a knowledge of all force. There is a hidden force, a condition arising in the movement of teeth that one ought to understand. Someone has said that these hidden forces are mighty potentialities.

I was one time sitting at a luncheon with a graduate of Ann Arbor. There was a dentist on my right discussing the movement

of teeth in a case that he had under regulation, and he described what he was doing. My friend, Dr. Case, said at the time: "That dentist is misusing force. He does not understand physics, because he is losing his force rather than gaining it."

The proper regulation of teeth from a mechanical point of view is important. It is a subject that requires a great deal of preliminary education, and I fear that the world at large, but particularly patients, do not realize the principles of force underlying the regulation of teeth and of bringing them into proper relation one with the other.

Dr. C. S. Case:

I think if Dr. Bullard had selected for the title of his paper "The Application of Mechanical Force" the members would have been better prepared to discuss it, because there are so many forces about the mouth that might be construed as indicating the central thought of the paper.

It is not so long ago when a large proportion of the profession, in their endeavor to be very professional, thought it was rather beneath them to know much about mechanics. But I have noticed in recent years that the profession is coming to appreciate more and more the laws of physics and the application of mechanical force in dentistry. It applies to all departments of dentistry. It does not apply merely to orthodontia and prosthodontia, but to every department of dentistry, in the filling of teeth, and even in surgery, a knowledge of mechanical laws and forces and their application lies at the very foundation of a large proportion of operations.

Dr. Bullard is, perhaps, a fair example of an advanced dentist in all departments of dentistry. Up to a year ago he had paid but little attention to mechanics from a scientific standpoint, and it is therefore pleasing to me to listen to his paper tonight and to see the effect of this knowledge of mechanics which he has been forced to acquire as my auxillary in the teaching of orthodontia. This has brought him to a more perfect realization and appreciation of these laws, not only in orthodontia, but in every department of dentistry, and if dentists in general would appreciate that fact more, and take up the real study of mechanics from a scientific standpoint, they would find they would be equally improved as Dr. Bullard feels he is

today, and far more capable of performing nearly all operations in whatever department.

In speaking of the application of force in surgery particularly, and the different methods of applying force and its activities under different stresses, I have had recently two very interesting cases, one of which is now completed, showing the possibility of overcoming the tension due to cicatricial contraction on the one hand and ankylosis on the other.

The first case was a woman about 45 years of age who was nearly killed in an automobile accident, sustaining an extensive comminuted fracture of the lower jaw. The sections between the second molar on one side and the cuspid on the other were broken into so many different fragments that it was impossible for the surgeon who had the case in charge to save that portion of the jaw. When the patient came to me the two remaining portions of the mandible were wired to the upper teeth to prevent them from being drawn in toward each other with a power that seemed almost impossible to overcome by any immediate action of force. The wires were removed and the remaining teeth and tissues of the mouth were placed in as healthy a condition as possible, knowing that I should need these teeth (which consisted of a single molar upon one side and a cuspid, bicuspid and molar upon the other) for buttresses to sustain the apparatus I contemplated making, to first place the fragments in the proper relative positions, and finally to sustain the artificial denture she is now wearing. By placing between these two sections a curved jackscrew that extended from one fragment to the other and fastened so as to distribute the force as much as possible over the teeth and to not force them by an inclination movement out of position, they were gradually and continuously forced apart and the contained teeth finally brought to their normal occlusion with the uppers. The cicatricial contraction of the tissues drew the fragments towards each other until their mesial ends nearly touched, and, as I said before, with a power of resistance which no immediate action of force seemed possible to overcome. This position of the fragments greatly interfered with her speech and power of swallowing, while the mastication of food was impossible, to say nothing of the facial deformity that arose by the almost entire obliteration of the chin.

A few at this table saw this case soon after the first sustaining

denture was placed, but I should like to have you all see this patient now in her remarkably restored condition. The casual observer would hardly notice any facial imperfection. She can now masticate her food fairly well and perform all the functions of the mouth without the slightest disturbance. What is of the greatest importance, also, the tissues lying between the mesial ends of the fragments are becoming gradually solidified to a cartilaginous quality, so that the parts are held quite firmly in position by this alone, when the denture is removed.

I think it will be impossible for me to describe in words the sustaining denture because of its ingenious complication. To understand and fully appreciate it you will need to see it in the mouth. I think you can all understand that any attempt to place a sustaining denture between the two fragments with a rigid attachment to the teeth would prove a failure, because in every effort to masticate upon one side, with substances which held the teeth apart, there would be such a strong force exerted to bring the teeth of the other fragment to occlusion it would soon either break the attachments or loosen the teeth so that they would last only a short time. The denture was, therefore, constructed to permit a hinge movement at the points where it was attached to the teeth.

This case is interesting in that it shows what may be accomplished by a positive slow application of force upon cicatricial tissue which powerfully resisted immediate action.

I am now at work on another case with the same kind of force, with the view of overcoming ankylosis and the establishment of a movable joint action. The patient is a girl about 18 years of age who during childhood was attacked with a disease which resembled la grippe, which was followed with deep-seated abcesses in different parts of her body. One of the abcesses was located at the tempero-maxillary articulation, which caused the left joint to become ankylosed, though they managed to keep the jaws from becoming set with the teeth closed until about 10 years of age. At about this time the condyle was amputated at the neck to establish an artificial joint, and for some reason the amputated ball was removed. This allowed the mandible to settle back upon that side, soon resulting in a return of the ankylosis. In an attempt to forcibly open the jaws at some time after this two incisors above and two below were broken off. Since

this time, by the daily frequent use of a hardwood pry, she has prevented the teeth from becoming completely closed. When I started with the case about two weeks ago the bicuspids could be opened about ⅛ of an inch. It was with the greatest difficulty that I constructed appliances to distribute the required force over nearly all the teeth upon that side. These pieces were arranged to be slowly and forcibly opened with a jackscrew. The jack and its attachments were constructed so that it could be easily removed and reattached by her at meal times and at several other times during the day. The treatment as outlined has consisted in opening the jaw as widely as possible by repeated applications of force, a little at a time, and never to a painful degree. Then, after allowing it to remain in that position for an hour or more, remove the jack and work the jaw voluntarily for a while. Then reinsert the jack for another slow forcible opening. In this way I hope to establish some kind of joint mobility, though it may be years before she can abandon the artificial force. This force was started about a week and a half ago, and we are now able to open the jaws at the bicuspids fully one-half an inch.

So impressed am I with this method of overcoming ankylosed tissue that I believe the time is not far distant when the amputation of jaws for the establishment of false joints will not be practiced as frequently as now, and I hope never whenever there remains the slightest possible mobility in joint action.

Dr. J. E. Hinkins:

I must confess that I am under a handicap in discussing this paper. I thought we would have the latest theories from the prosthetic studio presented to us, and it did not enter my mind that this paper would be along the lines of orthodontia.

I think all of us, as practitioners of dentistry, in a general way look at the application of force, and it does not make any difference where the force is to be applied, whether in inserting a filling, constructing a bridge or making an artificial denture. We have to learn how to apply force in anchoring fillings, in supporting bridges, etc., and the only thing I had in my mind which might be of interest to the society and to Dr. Bullard was a little experience I had this winter. I will relate the case briefly.

The man has been a patient of mine for some time. He was dissipating and in one of his carousals he was so unfortunate as to

loose most of his upper teeth and it was necessary to have them extracted. In his lower jaw his teeth were in from a second bicuspid around to the other second bicuspid, which were perfect—no molars at all—and he came to me for an upper denture. I made him five. There was fair adaptation. I made the denture with end occlusion on the central incisors, with over-bite, but he swore he would never have a partial lower denture. I was up against it, and I sent him to several different laboratories without any success. He came back to me and said: "I want you to make me a plate with which I can chew." While setting up that set of teeth on wax Mr. Powell, a civil engineer, came into the office with an abscessed tooth. I lanced the abscess, and as there was quite a hemorrhage following it, I told him he had better wait a little while. He did so. I went into the laboratory; and confess to you frankly that I did not know what I wanted to do or what I was going to do. I had five sets of teeth on rubber, and neither one was satisfactory. Money was no consideration with him. Mr. Powell was sitting there and said to me: "What are you trying to do?" I told him. The cusps on the lower bicuspids were worn off. I may not describe this very clearly technically, but I will try and make it plain to you how the case looked. Mr. Powell asked what the trouble was and I told him. This gentleman was still in the other room waiting. I put in two or three different sets of teeth and then dismissed the patient. Mr. Powell said to me: "The trouble is you have not exerted your force in the right direction." I replied: "For God's sake, tell me what is the right direction." He said: "Go to work and grind off the outer cusps on these upper teeth, draw them in, so that the lingual cusps will bite on the inside of the lower teeth," and in order to do that I had to dispense with the upper cuspids. He said: "Do not let the cusps extend on the outside of the arch, but bring the force on the inside." If anything they came in one-quarter or one-third. I ground the teeth as he suggested, tried them in, and I wish to say that I never put in a plate that was more satisfactory in my life.

Here was a case illustrating a knowledge of the law of physics. It seemed to me ridiculous, when I put the plate in the mouth, that he could masticate with it at all, which he did with a great deal of comfort.

Dr. C. N. Johnson:

I have been much pleased with the presentation of this subject tonight, because the study of force in our various operations is an immensely practical one.

There were two or three points suggested by the essayist that I want to refer to. One is in regard to the length of bite of a crown for an artificial crown, relative to the length of the root upon which the crown is placed, introducing the factor of leverage, which I believe accounts for the loss of many of these roots.

Another point is in regard to the cases where we have a very long cusp, where the wedge principle he speaks of was introduced in the stress of mastication, where bits of hard materials are brought between the inclined planes of the cusp, and sometimes in the construction of crowns in an attempt to follow nature too closely we make crowns with cusps that are too pronounced, introducing the factor of wedging force which will lead to the loosening of the roots very quickly, and in many instances we will do better service to our patients not to try to attempt to follow nature too closely in the length of the cusps, but make a crown that is more nearly flat, with not so deep a depression between the cusps as nature originally had. It may not be quite so artistic in appearance, but it is usually more practical and more permanent in its results in these cases.

The question of wedging force is a practical one, not only in prosthetic dentistry, but in operative dentistry. It is something that has appealed to me strongly in the protection of teeth from splitting, from the fracture of cusps, particularly the upper bicuspids. We sometimes see cases in which the lingual half of a bicuspid has been split off in a tooth that has been filled when the cavity originally was not very large, and that is due to the fact that the sharp lower buccal cusps come between the cusps of the upper bicuspid, introducing the factor of wedging force. In many of these cases I do not hesitate to grind a sharp buccal cusp of a lower bicuspid to change it rather than to have the wedging force exerted upon the upper bicuspid.

All of these factors are practical, and I am very glad this paper has been read tonight. We need a paper dealing with this subject in its different phases, in the relation of force to the bridgework we do and the factor of lateral pressure that has been spoken of, loosening bridges in cases where there is no other thing to account for it.

In some instances a short bridge, with an apparently perfect anchorage in the jaws, with firm roots, will loosen quickly, while in other cases larger bridges will last longer, and some of these things can be explained on the basis of the longer cusps, introducing the factor of lateral pressure in the force of mastication.

Dr. J. W. Wassall:

The paper tonight has brought out a very good discussion, and I want to thank Dr. Bullard in the name of the society for it.

The question of force in the mouth is one of vast importance to us as dentists, and it has its application in every branch of practice. While the paper dealt with the application of force in orthodontia especially, which is of great interest to us, it, of course, will appeal to each man present in the way he himself applies force, and while one man would think of its effect upon a gold filling, another upon crowns, still another would think of its effect upon bridges, and in that way the essayist has brought out the many bearings of force in our work.

Dr. Johnson has spoken of the effect of the cusps of occluding teeth upon the opposing teeth that have been restored, and he has made an excellent point. It should be a point that is carefully looked after to see that none of the wedging stress will be applied later on, and we have got to look far into the future. It is important that we should trim these cusps in the teeth that we restore as well as the occluding member, and it is just as important as removing the buccal cusp of the lower bicuspid. The forces in the mouth are obscure many times; they are mystifying, but if we give them careful study it is astonishing what can be done where apparently the force would be too much.

The application of force, too, is lost sight of very often with many of us when patients come back to us repeatedly with the facings broken from bridges, and if we could make a deeper and closer study of the action and reaction of forces in the mouth we would avoid some of the calamities that are annoyances to our patients and are such a humiliation and bother to us as practitioners.

Dr. Bullard (closing):

There have been a great many good points brought out in the discussion of this paper. I was particularly interested in hearing what Dr. Hinkins had to say about the piece of prosthetic work he mentioned. He brought out some principles in regard to that case that

are very good to remember, pertaining to the adjustment of the upper and lower teeth, grinding the cusps so that the occluding force on the teeth as they come together under pressure shall exert a seating instead of a displacing action. If Dr. Hinkins had sent that work out to a dental laboratory to have it done he would not have had such a successful result.

Dr. Johnson brought out a thought that I intended to convey in regard to the force of cusps in occlusion developing lateral stress, and that was the idea in my paper; namely, force developed in the mouth, we might say unintentionally, by improperly shaping the restoration work we do and making no particular reference to orthodontia.

I recall the case of a lady for whom I did some work six or seven years ago. I remember her lower anterior teeth as being regular and close together. She was about 50 years of age. When I saw her a short time ago I noticed the left cuspid had drifted away distally, opening up quite a space between it and the lateral, and at first I could not understand why that should be. I had crowned the roots of the six upper anterior teeth and inlaid the tube for a Roach attachment in the left upper cuspid crown to help retain a partial denture. This plate settled up, as time went on, allowing the sloping surface of the cuspid below to come in contact with the tube above, so that the lower tooth was forced away from the lateral.

Another case was that of a lady who had some work started and was taken ill. Cavities had been prepared in the mesial of the lower first bicuspid and packed with gutta-percha. The force of mastication on this stopping crowded the cuspid forward, separating it from the bicuspid, causing the incisors to overlap. This movement, in turn, carried the corresponding teeth above along in the same direction until it formed quite an irregularity from the constant force of gutta-percha.

PROCEEDINGS OF THE AMERICAN DENTAL SOCIETY OF EUROPE, HELD AT WIESBADEN, GERMANY, APRIL 9 TO 12, 1909.

DISCUSSION OF THE PAPER BY DR. G. H. ABBOT, BERLIN, ON "THE USE OF X-RAYS IN DENTISTRY."

Dr. William Dunn, of Florence, in opening the discussion, personally thanked Dr. Abbot for the very clear radiographs he had

obtained, which he believed only a dentist could have obtained. The great difficulty in radiography up to the present had been that of keeping the films steady, and Dr. Abbot had supplied a little apparatus which was very compact and very efficient, as could be seen by the radiographs he had obtained. It was a very ingenious idea to use an aluminum screen, and the idea of photographing through the aluminum was quite new. He desired to know whether exposure with an aluminum plate necessitated a prolongation of the time.

Dr. Abbot said the exposure was about two seconds.

Dr. George Northcroft, of London, said that in listening to the very able exposition of the use of X-rays in dental surgery it had struck him that Dr. Abbot's method dealt entirely with the use of films in the mouth. According to the work of Witzel and Symington and other investigators it had been thought, on grounds that he need not go into, to be much wiser to use glass plates outside the mouth and to place the head at an angle in relation to the rays and the plate. That method undoubtedly gave some very beautiful results. He did not know whether the members of the society were acquainted with the Atlas that Professor Symington had brought out showing skiagrams of skulls at different ages, illustrating the various stages in the development of teeth. The beautiful radiograms in that atlas were produced by the glass plate method. One of the greatest difficulties in X-ray work where films were used in the mouth was the extreme movability of the film, and he thought Dr. Abbot had shown how to get over that difficulty in a most admirable manner. Another advantage of using a glass plate outside the mouth was that the same position for the same patient could be obtained at subsequent visits and thus comparative results obtained, whereas it was not possible at present, with the use of films inside the mouth, to obtain comparative photographs to the same degree of accuracy.

Dr. Paul Guye, of Geneva, said the subject was a very interesting one, but he thought, more interesting for describing at congresses or conferences than for describing to general practitioners, because he found that dentists as a rule fought shy of the subject. Some six years ago he bought an X-ray outfit and began experimenting, and subsequently lectured a good deal on the subject to various societies, but he found that up to the present no pupils of his had taken the subject up, and therefore he was very glad Dr. Abbot was

putting forward the matter again. There were a few points that might be of interest. First of all, Dr. Abbot had not mentioned the making of stereoscopic pictures, which were very useful in locating a missing tooth. The process was a simple one, requiring only a small apparatus to move the tube a distance of about two inches, the distance between the two eyes, in order to take a second picture. By the ordinary process of superimposing the photographs a very good stereoscopic effect was produced. In one of his own papers on the subject he mentioned a little device which he had found extremely useful, the making of a special network of lead wire, the meshes of which were two millimeters apart. That little net of wire he placed on the gum, and thus obtained on the picture an easy method of measuring the distance, the length of the crown, and so on. Another simple way was to put lead wire into the canals in order to be quite sure of the number, length and direction. In that connection the use of a lead point carefully measured beforehand was of very great use. Another point was the importance of not including too many teeth, because it was in that connection that most practitioners generally failed. When too many teeth were included in the picture there was a blurred effect and the teeth were all jumbled togther, and it was not possible to distinguish sufficiently well the contours. Dr. Westland Price, one of the pioneers of the work, had recommended the use of a film not larger than a postage stamp, and from personal experience he could say that the suggestion was a very good one. As to outfit, he advised anyone who desired to purchase an outfit not to be too economical, especially in the purchase of the coil, because in dental work there was no possibility of exposing for a longer period than thirty seconds as a maximum. Any longer exposure gave bad pictures, especially of the lower jaw. In the case of the lower jaw it was very important to hold the jaws apart with some sort of guard if no apparatus was used such as Dr. Abbot mentioned. If nothing was used for holding the film it was important to have a coil the spark of which was not less in length than 22 inches. With his own outfit he had a coil which, with an alternating current and an interrupter, gave a 52 centimeter spark, and he found it was quite necessary to have the spark as large as that. There was another point mentioned by Dr. Abbot that needed emphasizing, i. e., the quality of the vacuum. The vacuum in a tube for dental work must be

extremely low, such as no ordinary radiographist would use, a vacuum that would be too low even for the hand; otherwise pictures were obtained that looked as if they had been over-exposed. A method had been invented by a Parisian physician which, in his hands, gave some very good results, but he had not had the nerve to apply it in practice. That physician invented a tube which he called a unipolar tube. He grounded one of the poles of the coil and one of the poles of the tube, and that allowed the introduction of the anti-cathode into the mouth, and thus permitted of radioscopy instead of radiography. He had himself devised a tube of that sort which overcame some of the bad points possessed by the Parisian tube. For one thing, there was no metal about it, as he found the metal which surrounded the anti-cathode would produce shocks in the patient's mouth. He had only made experiments in that way because he had been scared to death by specialists who told him it was a really dangerous thing to introduce a tube into a person's mouth and would require some experimental work on animals, a work that he had not had time to do. He wished, also, to add a few words of caution to what Dr. Abbot had said with regard to therapeutics. It would be a very dangerous thing, in his opinion, to apply X-rays to mucous membrane for any length of time in any quantity. In order to get any therapeutic results one had to approach very closely to the X-ray burn, and it would be a very serious matter to produce such a burn in a patient's mouth.

Dr. George Cunningham, of Cambridge, England, spoke highly of the excellence of the paper and the able demonstration that had accompanied it. He thought Mr. Northcroft had not done the essayist justice when he alluded to the excellence of the skiagrams taken by Professor Symington. It had to be remembered that Professor Symington had the advantage of taking his radiographs on glass instead of films, and, also, the radiographs had been made from the dead subject and not the living one, which made all the difference. Further, the skiagrams were made only on half sections of the jaw and not through the whole of the head. He had brought with him some skiagrams which he wished to put upon the screen during the meeting, because he believed they were the finest that had been taken of their kind, and he knew that Dr. Abbot would appreciate them better than anyone else.

Dr. George Northcroft pointed out that he had particularly

said that Professor Symington's X-rays were taken from the skull, and he thought in that way he had made it clear it was not from the living subject. He hoped he had not done any injustice to Dr. Abbot, because that was far from his intention.

Dr. C. H. Abbot, in reply, said that what Dr. Northcroft had said was perfectly true, and he thought very much more beautiful pictures could be made by the process Dr. Northcroft had suggested; but in the living patient it was not so easy. For empyema the radioscope must be made with the plate outside the mouth. He had been very much interested in the idea of making stereoscopic pictures, but found it was a very difficult matter. He had been talking it over with his friend, and they were trying to put the thing into better shape. He was very glad to have Dr. Guye's suggestion on the subject, and perhaps Dr. Guye would be kind enough to show him his appliances. He found it was very difficult to get the film exactly in the same place for the second exposure, and he would be interested seeing how that was done. The idea of using lead wire was also a very excellent one, and, for the purpose of measurement, certainly very valuable. He agreed it was better to get as few teeth as possible, but, of course the practitioner could not be always restricted to one tooth, and much depended on whether one or more teeth were in question. He agreed, also, as to not being too economical in the outfit. The best was not too good. His own induction coil furnished a spark of 50 centimeters. With regard to the question of introducing a tube into the mouth, Mr. Bauerrohre constructed a tube which was tried once or twice, and one of the experimenters had a terrible inflammation in consequence of the experiments. Therefore he fought shy of it too.

ILLINOIS STATE DENTAL SOCIETY, FORTY-FIFTH ANNUAL MEETING, DANVILLE, ILLINOIS, MAY 11-14, 1909.

DISCUSSION ON THE REPORT OF THE COMMITTEE ON DENTAL SCIENCE AND LITERATURE.

Dr. C. N. Johnson, of Chicago:

I want to take this opportunity of congratulating the society on having listened to a report of this character. We have been favored in the past by the presentation of reports on dental science and liter-

ature that have been almost classical in their scope, and in this instance it appealed to me that the arrangement and classification of the report had some features better than anything we have had in any previous report, and that is paying as high a compliment to the committee as I could possibly pay.

I want to call attention to the fact that the labor involved in preparing such a report is inconceivable to the average practitioner who is not familiar with the work. When we consider the amount of matter that must be gathered, sifted and boiled down, the labor means a great deal to any practitioner, and yet I believe the greatest benefit from that report will come to the man who makes it. The man who writes a paper gets the greatest benefit from it, and the man who formulates a report gets a general idea of the literary output of the profession in that way. To discuss this report in detail would be impossible, and I simply take the opportunity of expressing my appreciation of the report and to compliment the society and Dr. Harned on it.

Dr. Thomas L. Gilmer, of Chicago:

This report is certainly of great benefit to those of us who wish to study any particular subject of dentistry, because we have the references at our fingers' ends, so that we can get at whatever subject we may be studying, which in the past was out of the question.

There is one thing I would like to speak of, though I hesitate for fear of hurting the feelings of some most excellent editors. I wish the committee had gone a little further and said it would be for the betterment of dentistry did the editors of our journals confine themselves strictly to the publication of scientific matter. Some of the non-professional articles are most delightful reading, and I would like to see and read them in an outing or other literary magazine, but it seems to me such articles might be left out of a professional journal. We might have a journal devoted to such writings, which would be a legitimate outlet to the non-professional literary productions of dentists who write so well. It seems to me the committee might well suggest that non-professional writings be left to other publications. I do not know how the majority of the members feel about this matter, but many of the dentists with whom I have talked on this subject are of the opinion indicated.

I heartily approve of the report of the committee.

Dr. J. N. Crouse, of Chicago:

I have been engaged in a great many enterprises from time to time, and among them journalism. When I started the *Dental Digest* I had in mind to make a digest of all the good things in all the other dental journals and publish them in my journal. A journal that will undertake this work now ought to get a large circulation. But I found it was a much larger task than I had anticipated, and I could not find anyone competent to make these digests for what I could afford to pay. It takes money to manage such a journal, and when one has, say, a thousand subscribers, and many of them refuse to pay, you can readily see how difficult it is to publish such a journal on a paying basis. Nevertheless, a good journal of that kind would be of incalculable benefit to the members of the dental profession, but as long as the profession does not want to pay for these things, and it takes money to run them, they must get along without them.

Dr. G. V. Black, of Chicago:

Unfortunately, I did not hear the report of Dr. Harned, as I was out of the hall at the time, but nevertheless I have some idea as to its contents.

The question of making digests of articles appearing in our dental journals is a very serious one. There are very few men who are mentally fitted for doing excellent work in the way of digesting our dental literature. At best, it is a difficult proposition, and most men who undertake it fail to make digests that are interesting and profitable. There are a few men, however, in the medical world and in other lines who are doing digest work that is very excellent. We should do more to encourage this kind of work, but to do so means to find somebody who can do it well, and that is the difficulty. The men who can do it very well cannot afford to do it. That is another difficulty. Of course these difficulties are met in some degree by a careful card index system of cataloguing, enabling each man to find the treatises on any subject that are in existence easily and quickly, and this will, perhaps, do more than anything else to enable the profession to find out just what they want and consider it carefully.

As to introducing other matters into our journal literature not pertaining to our profession properly, I have sometimes thought that in a city like Chicago we should have a local outing journal, not confined exclusively to dentists, but a general local outing journal. It

would result in immense good if such a journal were well-conducted and the articles well written, and particularly if the articles are reliable as to the places described. Such a journal could be made profitable for pleasure and for the enjoyment of the beauties of nature, and so forth. It would be an excellent thing, and I do not think we have any such journal in Chicago as yet.

Dr. G. D. Sitherwood, of Bloomington:

I always feel, when I hear a report of this kind, that if it were possible to have such reports printed in advance and ready for distribution after read, so that we could take them back home with us, they would prove very valuable for reference in looking up our literature in the dental journals and in the books. It is true, this report will be printed in the transactions, but by the time our proceedings are published in book form we have forgotten part of this report.

Just a word or two about the outing articles of Dr. Johnson's in The Dental Review. I do not quite agree with the gentlemen who have spoken with reference to that. I think it should be the privilege of any editor of a dental journal to put in a small amount of such reading when there are so many articles printed in a dental journal of so little value that we wonder why they are printed. It is a relief to have something of this kind along with articles on professional subjects, especially when written by such men as Dr. Johnson. It is much better to read one of these outing articles than some of the articles on professional subjects which convey very little information of benefit to the profession.

Dr. Harned (closing the discussion):

I would like to say a word or two emphasizing the good work that The Dental Review is doing in developing the personnel of this society. By giving us an opportunity to appear in the printed pages of that journal our interest is aroused and we are stimulated to do better work next time. I think The Dental Review is doing an important work for this society and its members.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL.

A NEW DENTAL LAW FOR ILLINOIS.

At the recent session of the legislature a bill was enacted which gives Illinois a most effective and equitable law. This bill will be published in full in our next issue in connection with the report of the Legislative Committee of the Illinois State Dental Society. Its new features may be briefly stated as follows: It empowers the Board to issue a license without examination to a legal practitioner from another state, territory or country, who desires to locate in Illinois, provided the board of the place from which said practitioner comes will in like manner recognize certificates issued by the Illinois Board.

It provides for a biennial registration of the legal practitioners of the state, the fee being not to exceed one dollar.

It exempts dentists of this state from jury service.

It provides that any company or association engaged in the practice of dentistry shall cause to be displayed in a conspicuous place at the entrance of its place of business the name of each and every person employed by said company or association in the practice of dentistry.

It is believed that the law as a whole is one of the best ever enacted by any state, and the unanimity with which it passed speaks volumes for those who had the matter in charge. When it came to a vote of the House it passed 161 to 0. Great credit is due Senator A. C. Clark, who introduced the bill, and who looked after its interests throughout, and also to Dr. C. R. E. Koch, the efficient chairman of the Legislative Committee of the state society. Another factor in the case was the organized effort of the state society by means of which several thousand letters reached the senators and representatives at Springfield within a few days urging the passage of the

bill. When a strong organization makes an appeal it goes much farther than any individual effort.

The status of legal affairs in Illinois is at present very satisfactory, and it remains for the profession to devote itself to the promulgation of scientific knowledge.

DOMESTIC CORRESPONDENCE.

DR. TAGGART, AGAIN.

To the Editor of the DENTAL REVIEW:

The DENTAL REVIEW for May contains a defence by Dr. Thurston of those who are casting inlays without any pecuniary acknowledgement of their obligations to Dr. Taggart, and this writer has received one letter setting forth similar views. (A number of others have been received thanking him for the two communications about Dr. Taggart and the Dental Profession.) The argument may be briefly stated without exact quotations, as follows:

It is recognized that professional men have a different standpoint from business men and that it is our duty to freely give to our fellow practitioners any knowledge or discovery found in the course of our investigations, and there are many discoveries of great value for which it is impossible to recompense the men who have given up time and money for the good of their profession, their investigations in many cases extending over their life periods, and further. "If users of casting machines other than Dr. Taggart's are theiving the privilege, then every dentist is on the same plane and under monetary obligation, the value of which it would be well nigh impossible to compute, to a great many of our greatest researchers. Who is there among us who can estimate the value to him of the discoveries made by our Dr. Black? Who is there who has not derived benefits from such men as our present orthodontists and Dr. Atkinson in mechanics, and has any word from any of these venerated gentlemen been forthcoming in reference to commercial obligations on the part of the profession?"

The plea for justice to Dr. Taggart does not require that we forget or disparage the services or inventions and discoveries that other men have freely given to their profession. Personally I believe that the services of Dr. Black to the dental profession have been far

greater from every point of view than those of Dr. Taggart, probably greater than those of any other man of this generation. The argument ignores an important distinction and one or two important limitations. The distinction between receiving as a free gift and demanding as a right, or taking because the giver cannot help himself. The duty of giving is necessarily limited by what a man has to give, and by what he can spare without injustice to other demands upon him, and as a matter of fact by his willingness to give, for most men concede the right of every man, professional or otherwise, to judge for himself as to what he has to give and what he can afford to give.

The duty of giving to the profession is very closely similar to the duty of giving our professional services in charity to those who cannot pay for them. Very few men would deny that obligation, but none of us would allow any one to come into our offices and *demand* gratuitous services, even if we knew he could not afford to pay for them. That is just about exactly what the dental profession are now doing to Dr. Taggart, and they can afford to pay him too. It is the duty of a man who has anything valuable and interesting to say, to read papers before dental societies, but the societies do not *demand* that he shall travel a thousand miles to do so. They *invite* him, and if the distance is great usually pay his expenses, and generally speaking all professional men are allowed to be thier own judges of the nature and the extent of the sacrifice that professional duty requires them to give for the benefit of their brethren.

For many years Dr. Taggart belonged in the list of the free-givers to his profession, but in this instance he found himself facing an opportunity and a process or method that required for its development and perfecting an investment of time, and money, and credit, and the scattering to a great extent of his practice, that he could not possibly afford without compensation. He believed the method would be worth enough to the profession to justify the investment, and he believed that he could require from the profession a suitable compensation for it. If the method had proved worthless or impracticable, or if very few had been willing to adopt it, he would of course have lost what he had put into it as others do who make bad investments, but it did not prove worthless, and it is pretty safe to say that twenty thousand dentists are now using the casting method. It is equally safe to say that none of them would quit if they were

obliged to pay one hundred dollars apiece for the privilege, and very few would charge their patients any more either. The only excuse for the restriction in respect to holding patents contained in the medical code of ethics is to prevent any restriction of the use of any medicine or instrument or process for the benefit of patients wherever needed, but if the principal use of this article of the code were to enable the masses of the profession to rob their benefactors the sooner it were eliminated from the code the better. The dental code of ethics has never had any similar section and there is nothing whatever in it to prevent any member of the dental profession from holding and enforcing any kind of a patent.

One hundred dollars apiece for twenty thousand dentists amounts to two millions of dollars, and this is a very moderate estimate of the value the dental profession themselves will put upon this process if they are ever forced to choose between paying for it or doing without it. Some of us can remember the time when there was no dentist anywhere too poor to pay fifty dollars or more every year to the Goodyear Dental Vulcanite Co., and the uses of vulcanite were not appreciably restricted nor the prices to the people appreciably increased by the millions of dollars which the Vulcanite Co. collected from the dentists at a time when their aggregate incomes were less than one third of what they are at present.

I have written these communications because I very earnestly desire two or three things. First, that justice be done to Dr. Taggart, and even more than that I desire that our professional ideals and standards should be maintained at their highest level and that our unwillingness to pay an office license should be respected. I have seen no way to accomplish all these ends except by the purchase of Dr. Taggart's machines or individual settlements with him in sufficient numbers to fully accomplish these ends.

Dr. Thurston, in the article in the Review referred to says: "Would the profession be justified in acknowledging the Taggart machine as being the only one and smothering the other conveniences? Does Dr. Taggart wish to cut off his generosity to the profession at the completion of his machine and say "I wish to smother all other methods and progress along this particular line"? This is sheer nonsense. Pay to Dr. Taggart a hundred dollars because the process you have received from him is worth that much to you and take his machine or leave it as you may prefer, or having taken it lay it aside

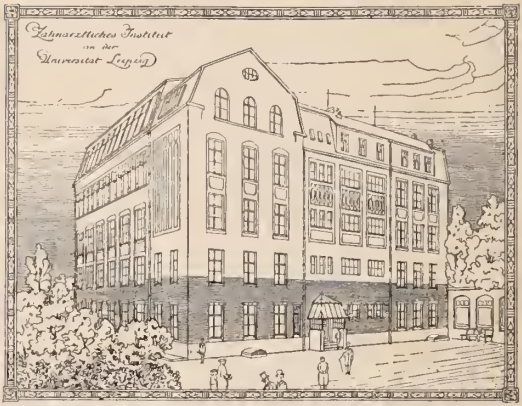
and get a better one whenever you find an opportunity exactly as you would do with an electric furnace or a vulcanizer. It seems to me that either the winning or losing of Dr. Taggart's suit will be very unfortunate. If he loses the result will be very disastrous to him, and likely to lead to the disgrace of our profession, for a business man could plainly say to us "If your boasted high ideals and standards of ethics call for such treatment as you are giving to Dr. Taggart then our business standards are better than yours, for we do recognize the duty of men to pay for what they got unless they receive it as a gift." If Dr. Taggart wins his suit he will have the power to collect from us the hated office licenses and to an amount in the aggregate six or eight times the price of his machines, and if he did not choose to do so it would still be a misfortune to the profession to have a decision on record that confers such a power.

Gentlemen of the profession, this case is no exception to the rule that it is wiser, is often cheaper, and always in every way more satisfactory to do what is right and discharge obligations voluntarily than to wait for the result of a lawsuit to compel us; or to permit us to repudiate just debts, as the suit may happen to result one way or the other. What I have written is not to be taken as necessarily calling in question anybody's motives or intentions. What I have desired to do is to strip the question of side issues and subterfuges and prevent if possible the gross misapplication of our highest ideals of service and duty to the profession. It is a personal question and it is up to you, and you, and you, the whole twenty thousand of you who are casting inlays, and I beg you, each one, to take it up and settle it in your own minds and discharge to your own satisfaction your obligations to Dr. Taggart.

There appears to be a very general demand that Dr. Taggart withdraw his suit. He faced the alternative of defrauding his creditors by becoming a bankrupt or finding out by a lawsuit whether he has any legal rights in the premises. No honest man could hesitate which to do. The profession forced this alternative and it is up to the profession to remove it.

There is perhaps enough probabilty that some who do not know me may suppose that I have some financial interest in the success of Dr. Taggart's suit or the sale of his machines to justify saying that I have none except that I bought one of his machines as soon as I could get it and have paid full price for it. EDMUND NOYES.

FOREIGN DENTAL COLLEGES.



Dental College, Leipzig, Germany.

Dental Hospital, Sydney, Australia.

FOREIGN DENTAL COLLEGES.

Dental College of the University of Graz, Graz, Hungary.

Dental College, Jena, Germany.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Condensing Gold:—I use only smooth surfaces in packing or condensing and welding gold fillings, never a serration. I believe a gold filling made after this manner is as hard as rolled or hammered gold, I mean hammered on an anvil.—W. A. Heckard, New York.

Treatment of Canker Sores: — Local treatment of herpetic ulcers of the mouth is generally curative. If they are touched with silver nitrate they respond quickly. If the ulcer is cleansed with peroxid of hydrogen, then dried and a 20% solution zinc chlorid applied, a cure usually follows one application.—Thomas L. Gilmer, Chicago.

Manipulating a Blowpipe:—In turning the blowpipe on a backing of a tooth I usually tease at the backing with the trip of the flame (bush flame and soft) for sixty seconds before I flow the gold or solder. At first very slowly, large soft flame, passing at a distance and coming nearer and waving it by and on and off the case until I get it all heated up, and then melt the solder with the small hot flame in my other hand.—W. A. Heckard, New York.

Hemorrhages:—A point which may be of particular benefit to the dentist is with regard to hemorrhages and discolorations which accompany hemophilia. Therefore, when a patient with pigmental mucous membranes presents for extraction of a tooth it will be well for the dentist to inquire if previous severe hemorrhages have occurred, and if so, he might be spared a fatal hemorrhage from the extraction of a tooth.—H. A. Potts.

One Objection to an Inlay:—One of the principal objections I have to an inlay is the material with which we have to set it. I have been convinced for several years that we cannot get a cement thin-

ner than one seven-hundredths of an inch, because if we get it thinner than that the center of the molecules will separate. If you press the cement flat there is an air space left in the center, and if you mix the cement thin to get a certain consistency, you also get an excess of the acid, to the extent that you get a soluble cement.—J. E. Hinkins, Chicago.

Method of Making a Cast Gold Crown:—I think we ought never make an entire cast gold crown. I think it impossible to cast a gold crown in its entirety, using only wax for the whole substitute, and make a perfect crown; consequently I do it this way: I make a thimble which fits over the end of the root, using 34-gauge pure gold. Over this I make a casting of 22 K. gold as thick as is necessary to give the crown the proper form. The crown, being firm and having sufficient reënforcement of gold over the gold thimble, is one of the strongest substitutes that can be placed in a root.—G. W. Dittmar, Chicago.

Syphilis:—From the standpoint of the dentist, syphilis is undoubtedly the most important and practical disease of the mouth with which he has to contend. There is no class of medical practitioners who, in my opinion, are so much in danger of accidental infection with syphilis as dentists; and this is on account of the mucous patches. Mucous patches are extremely insidious, because they may cause almost no pain and there may be no other easily found evidence of syphilis. They are highly contagious, and the dentist cannot be too careful in guarding against the possibility of danger from this source.—William Allen Pusey.

Preparation of Tooth for Porcelain Jacket Crown:—With a very thin stone and with a small jet of cold water or compressed air playing on it constantly, the tooth is ground on the mesial and distal surfaces, removing all undercuts and contour from the neck to the cutting edge; then, with small stones, grind on the labial and lingual surfaces, removing as little of the tooth as possible consistent with alignment to the adjoining teeth and the bite, which leaves the tooth in a sort of a square and cone-shaped appearance; then, with sharp fissure burs the corners are rounded and a square and distinct shoulder is cut all around the neck, slightly above the free margin

of the gum, so that the adaptation of the crown to the neck of the tooth may be perfect, leaving no shoulder at the junction of the crown and root after the crown is adjusted permanently.—Harris J. Frank, Chicago.

Administration of Somnoform:—To those who use somnoform I wish to give a point in connection with its administration which may save some of them at least from an embarrassing position. Somniform should not be administered to a patient in a room where the temperature is below 68° F., for the reason that somnoform does not evaporate readily at that temperature, and particularly so if the inhaler is cold. To dentists who occupy buildings that are poorly heated or where the temperature is low in the morning this advice may be helpful. I have given somnoform to a number of patients shortly after opening the office in the morning on cold days when the temperature of the room was not what it should have been, and it took no effect whatever, and, dismissing them until the afternoon, when conditions were more favorable, had no trouble.—B. H. Harms, Belle Fourche, S. D.

Insertion of Silicious Cement Fillings:—I want to call attention to the value of oxychlorid of zinc as a cavity lining and as a pulp protection in connection with the making of silicious cement fillings. Silicious cements are excellent conductors of thermal changes, so that a proper non-conductor will be often called for, and very often an intermediate layer having germicidal properties will be indicated. A silicious cement cannot be counted on for even the sterilizing properties of oxyphosphate of zinc, because of its inert ingredients and because the compound is not acted upon by the reagents present in the mouth. I think that oxychlorid of zinc fulfills the requirements more thoroughly and with fewer objections than any material available.

Silicious cements should be manipulated with non-corrosive instruments. An agate spatula I consider the only proper instrument for the mixing process.—W. V.-B. Ames, Chicago.

The Use of Argyrol:—I would suggest, in the treatment of patches on the mucous membranes of the mouth, the use of argyrol in preference to the use of peroxide of hydrogen. In fact, I do not use peroxide of hydrogen. It is so often used injudiciously, carried into cavities containing pus and blood, and thus carrying infection

oftentimes into parts quite remote from the center of disease, causing a great deal of distress and a great deal of destruction to the surrounding parts, I have abandoned it, because other agents will serve the purpose quite as well. I do not think there is any agent that is more potent in the destruction of pathogenic microörganisms we find in these surfaces than argyrol. It has been shown conclusively that argyrol will penetrate as deeply, if not more deeply, into the tissues and destroy microörganisms more certainly than almost any of the agents with which we are acquainted.—Truman W. Brophy, Chicago.

The Lock Joint Matrix for Porcelain Jacket Crowns:—The open or soldered matrix has many serious objections, such as change of shape, distortion of platinum, difficulty of burnishing over solder, removing platinum from finished crown and volatile gases resulting from solder.

In my new method these objections are entirely eliminated and we have such precision of contact that the entire matrix tightly hugs the model. Place the platinum foil 1/1000 firmly over labial surface of the cement tooth or model, draw the two ends together, holding firmly with fingers and thumb. By digital manipulation of the thumb and fingernail make the platinum closely conform to the outline of model and be careful to sharply outline the shoulder. Remove and trim away excess of platinum below the shoulder and anneal if necessary. Replace on model and cut platinum for the lap, removing excess, leaving sufficient, however, to slightly more than cover the end. Draw the lap down firmly to place, bring the sides closely together and trim, leaving sufficient for a double lock made by bending together and over *twice* the two ends and firmly place joint against lingual surface. Burnish until smooth and free from all wrinkles. The result will surprise you and will be practically a perfect fit, with no ends to spring or fall apart, for they are safely and securely locked.—Robert Steele, Chicago.

MEMORANDA.

AMERICAN SOCIETY OF ORTHODONTISTS.

The ninth annual meeting of the American Society of Orthodontists will be held in Cleveland, Ohio, on Monday, Tuesday and Wednesday, October 4, 5 and 6, 1909.—Frederick C. Kemple, Sec'y, 43 West Forty-eighth street, New York City.

ILLINOIS DENTAL SOCIETY.

At the forty-fifth annual meeting of the Illinois State Dental Society, held in Danville, May 11-14, the following officers were elected: President, E. H. Allen, Freeport; vice-president, C. C. Corbett, Edwardsville; secretary, J. F. F. Waltz, Decatur; treasurer, C. P. Pruyn, Chicago; librarian, H. F. Lotz, Joliet.

The forty-sixth annual meeting will be held in Springfield, May 10-13, 1910. J. F. F. Waltz, secretary, Decatur, Ill.

DAVIESS COUNTY DENTAL SOCIETY.

The dentists of Owensboro, Ky., have organized the Daviess County Dental Society. The object of this organization will be to promote social intercourse, good feeling and the mutual improvement in modern dentistry in all its phases, that the public interests may be best served. The beginning is certainly most favorable, as we have almost the entire number of resident dentists of the city as members, and already there is an era of good feeling never known before. It is very probable that the local society will become a part of the State Association. The following officers have been elected: President, W. B. Armendt; vice-president, R. E. Morrison; secretary and treasurer, Gordon L. Burke.

MISSOURI STATE DENTAL ASSOCIATION.

At the forty-fourth annual meeting of the Missouri State Dental Association, held at Kansas City, May 26, 27 and 28, 1909, a resolution was adopted to reorganize the association and redistrict the state, and we hope it will work great good for the profession in Missouri. The following officers were elected for the ensuing year: President, R. E. Darby, Springfield; first vice-president, O. J. Fruth, St. Louis; second vice-president, C. C. Allen, Kansas City; recording secretary, J. F. Wallace, Canton; corresponding secretary, F. W. Patterson, Tipton; treasurer, J. T. Fry, Moberly. The next meeting will be held in St. Louis next year.—F. W. Patterson, corresponding secretary, Tipton, Mo.

RECENT PATENTS OF INTEREST TO DENTISTS.

920,013. Dental appliance. R. Bradbury, Broadstairs, England.
920,023. Instrument case. M. S. Chism, Philadelphia, Pa.
919,717. Dental syringe. H. F. Hamilton, Boston, Mass.
919,593. Dental engine. M. Kelly, Hammond, Ind.
919,374. Head-rest. A. A. Patnode, Springfield, Mass.
919,777. Adjustable wall bracket. R. B. Savin and W. C. Harvey, Philadelphia, Pa.
920,265. Dental cuspidor. M. N. Callender, San Francisco, Cal.
920,561. Dental inlay casting machine. E. M. Fredericks, Chicago, Ill.
920,483. Appliance for making dental castings. A. P. Lee, Philadelphia, Pa.
920,768. Artificial tooth. F. M. MacDonald, Detroit, Mich.
921,367. Adjustable bracket. E. B. Craft, Chicago, Ill.
921,015. Root-canal filling dental injector. P. R. Skinner, Amsterdam, N. Y.
922,078. Tongue depressor. C. B. Benson, Tippecanoe City, Ohio.
921,791. Crown for teeth. J. L. Benson, Winnipeg, Manitoba, Canada.
921,709. Attachment for artificial teeth upon bridgework. H. M. Jackson, New York, N. Y.

Copies of above patents may be obtained for 15 cents each, by addressing John A. Saul, Solicitor of Patents, Federal Building, Washington, D. C.

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SOME OBSERVATIONS ON THE SO-CALLED ADENOID VEGETATIONS IN INFANCY AND CHILDHOOD.

BY HENRY GLOVER LANGWORTHY, M. D., DUBUQUE, IOWA.

Dentists have been hearing so much about the evil effects of enlargement of the pharyngeal tonsil, that at first glance another article on so familiar a subject would seem unnecessary. Likewise the dentist's opportunity for diagnosing these cases in the chair has been dwelt upon by writers as well as the relation of mouth breathing to maldevelopment of the arch, so that here again further repetition without being able to offer something distinctly new, might be considered questionable. In discussing some of my adenoid and tonsil cases referred for operation, however, I find that as familiar as the dentists may be with the condition, a much clearer impression would remain and better working knowledge be obtained, if special attention was given to three very necessary features of the subject. First, a study of gross anatomical plates of the normal naso-pharynx plus the same with the vegetations in situ; second, closer attention not to end-results such as may be expressed by caries, faulty eruption of the teeth or deformity of the jaws, but to earlier and more constant symptoms often only general in character; third, securing some actual experience by feeling for the vegetations with the finger through the mouth and following if possible a few operations for their removal by the side of the specialist.

While the above may smack too much of student days or as some might say with considerable truth, turn the dentist into a nose and throat specialist, until this be done at least in part, advances so far as the co-relation of dentistry and rhinology is concerned will be necessarily slow. Many of the problems bearing on the rela-

tion of nasal obstructions to faulty eruptions of the teeth or other deformities, are so complex as to baffle solution without the united efforts of many workers in the field. The following observations bearing on the subject of adenoids are the facts so far as we know them today:

SYNONYMS, DEFINITIONS AND PATHOLOGY.

The term "Adenoid" is a misnomer. The vegetations are not adenomatous in structure, but are composed of lymphoid cells unimmeshed in a delicate reticulum of fibrous connective tissue to all intents and purposes, identical with the faucial tonsils below. Indeed, with the exception of their possessing an epithelium covering, the so-called adenoid differs little from an ordinary lymphatic gland. This is one reason for considering the adenoid as a third tonsil high up in the naso-pharynx and subject to exactly the same degree of disturbance, acute and chronic inflammation, as the other tonsils. From this we see the justifiction of modern authors referring to these adenoid vegetations by such terms as hypertrophy of the lymphoid tissue of the naso-pharynx, enlargement of the third or Luska's tonsil, epipharyngeal tonsil, etc. The essential pathology has never been more than hypertrophy.

ETIOLOGY.

The chief cause for the enlargement of the lymphoid tissue of the naso-pharynx is undoubtedly irritation from constantly repeated bacterial infection. Lymphoid structures in children become enlarged very easily in response to bacterial stimulation. Adenoids are probably not hereditary. They sometimes seem to be a family characteristic, more, however, by reason of a similar anatomical construction of the nose and throat which under the same environment may predispose to infection. In my records of some six hundred operations, adenoids were associated with enlarged tonsils in over eighty per cent. The vegetations are located chiefly on the superior and posterior walls of the naso-phaynx and may extend into the fossae of Rosenmüller and also plug the mouths of the Eustachian tubes.

EXAMINATION.

As it is difficult to make an examination of the naso-pharynx with a mirror in a child under six years of age, the diagnosis is made by feeling with the finger. The forefinger introduced gently through the mouth recognizes by the sense of touch the worm-like masses or

mushy material partially filling the vault. The examination with the finger need occupy but a second. The finger when withdrawn will often be coated with thick white egg-like mucous and streaked with blood. Adenoid vegetations occurring in infancy and in children from three to twelve years of age are rarely mistaken for anything else.

SYMPTOMS.

The symptoms of adenoids require the most careful study. In some instances they may be well marked and the diagnosis easy, while in many cases the child may show no other effects than frequent attacks of colds in the head, ear-ache, various reflex disturbances and under-development in general. The dull expression of the face, open mouth, thick lips, inability of the patient to blow the nose, nasal voice and the well known classical "adenoid facies," are observed only in advanced and very marked cases. In carefully analyzing a series of adenoid and tonsils relieved by operation, the following symptoms in the frequency of their occurrence were encountered: Deafness, mouth-breathing, nasal discharge, backwardness at school, irritating cough, thick voice, frequent sore throats, poor appetite, headache, intestinal disturbances, bronchitis, convulsions, pleurisy, retro-pharyngeal abscess and rheumatism. In infants snuffles, convulsions, sweating, slighter impediments in breathing, croupy cough and catarrhal laryngitis were the most prominent signs. Few of the baby series had the classical "adenoid facies" so often described, and not all were mouth-breathers. The prevalence of conjunctivitis, noted above and not given in most of the treatises on this subject, is important.

The adenoid and lymphatic ring is probably the common atrium of infection, not only in tuberculous adenitis, but in other forms of tuberculosis of the head involving the temporal bone, spine and meninges. The subject of adenoids in infancy is of as great importance as dental caries in later childhood and should receive special attention.*

COMPLICATIONS AND SEQUELAE.

The evil results of marked or even partial obstruction may leave its mark on the physical, moral and mental life of the child. The development of the face may be materially altered, as seen in the open

*Langworthy, H. G., Throat Diseases in Children, Ill. Med. Jr., March, 1909.

mouth, thick lips, flat nose, protruding central incisors and general expression of stupidity. The interior of the nose is improperly developed, the arch contracted or otherwise altered from normal, the teeth irregular and the chest, neck, ears and voice in various ways share in the process. As every dentist is undoubtedly more familiar with the malformation of his particular region than the author, it is unnecessary to more than allude to some of them.

PROGNOSIS AND TREATMENT.

While normally some adenoid tissue exists in every child's throat, with a tendency to atrophy toward puberty, when it becomes enlarged by repeated infections and becomes a cause of either local or remote symptoms, there is hardly any question but that it should be removed. The younger the child the more necessity there is for immediate removal. In infants, especially, the evil results are most apparent. The operation itself is simple and almost devoid of danger. One of the important duties of the dentist is to do his share in directing these cases to a competent nose and throat specialist for operation, so that every child may have at least a fair chance of being a vigorous and well formed man or woman. But little is needed sometimes to mar physical beauty, and the only treatment worthy the name is surgical removal of the vegetations. If thoroughly remover, they rarely if ever recur. It is never safe or even wise to advise waiting for possible shrinkage of the adenoid perhaps years ahead after all damage has been completed. Atrophy, when it does occur after puberty, is due to sclerosis from an increase in connective tissue elements. Even moderate adenoid hypertrophy should be operated upon whenever necessary. I would repeat that little permanent benefit can be derived from drugs, such as cod liver oil, syrup of iodid of iron or Fowler's solution of arsenic. The removal of these lymphoid structures is the only proper treatment to be considered. Under no conditions should the finger be introduced into the nasopharynx and the adenoid simply mashed or left otherwise intact. This last sort of an operation must be condemned as being utterly unfit to meet the conditions.†

†Langworthy, H. G. Adenoids and Tonsils. From the standpoint of the general practitioner, with special reference to an examination of the throat in chronic systemic infections and a consideration of the question of status lympaticus. Boston Med. and Surg. Jr., January 30, 1908.

OPERATION.

The preparation of the little patient is about the same as for any surgical operation. The bowels are usually emptied by a mild cathartic a day previous and the nose and throat cleansed with a simple spray. As a rule the child should be free from acute inflammation of the throat. The heart is examined as a precaution. The patient is placed under a general anesthetic lying on either side. Ether is preferred by most physicians as the safer anesthetic. My first four or five hundred operations were performed with the patient in the upright position, but the side position is less work for everybody excepting, perhaps, the operator. Adenoids and tonsils should be removed at one sitting. As soon as the child is under the anesthetic a mouth gag is placed between the teeth, the jaws separated and the tongue held down with a stout metal tongue depressor. Some form of an adenoid curette is then passed through the mouth above and behind the soft palate and the handle depressed against the lower teeth. The cutting blade is then swept along the upper anterior portion or vault of the pharynx and down the posterior wall exactly in the median line. Second and third sweeps may be made more laterally if required, care being taken, however, not to injure or cut the eminence of the Eustachian cartilages on either side wall. Having removed all vegetations possible with the curette or whatever instrument is used, the forefinger is passed behind the soft palate and all offending shreds or films of mushy material about the tube mouths and elsewhere thoroughly removed. Hemorrhage is brisk at first but soon ceases spontaneously. The blood does not tend to flow into the larynx. The after-treatment is simple. The patient is placed on the side and kept warm and quiet until complete recovery from the anesthetic has taken place and the tendency to vomit or attacks of vomiting overcome. For the first two or three days the mouth and throat are kept thoroughly clean with a cleansing spray and the diet restricted more or less to cold fluids and semi-solids. Hot food and drinks are avoided for the reason that they cause smarting when passing over cut surfaces and also tend to encourage bleeding. Beneficial effects of the operation become more and more apparent as the weeks or months pass by. It is remarkable, considering the large number of adenoid and tonsils operated upon annually under a general anesthetic, how really few serious accidents occur. In closing I

wish to again emphasize the importance of a thorough knowledge of this subject by every student of medicine or surgery, no matter what special branch of the healing art he may pursue.

REPORT OF COMMITTEE ON LEGISLATION.*

BY DR. C. R. E. KOCH, CHICAGO, ILL.

Your legislative committee begs leave to report that carrying out the wishes of your society as expressed at the last annual meeting, they have held several consultations with reference to the legislation that might be obtained from the present general assembly of the state. They finally concluded to ask for an amendment to the present law that would exempt dentists from service as jurors in the courts of this state, an amendment that would authorize the state board of dental examinations to enter into reciprocal relations with the boards of other states in the recognition of licenses to practice dentistry, and after consultation with a number of the profession and in view of the fact that the general book of registration of the state board of dental examiners is now incumbered with over nine thousand names who are supposed to be legal practitioners of this state, when it is believed that there are not over three thousand actually in practice. Your committee also determined to obtain an amendment that should provide for a re-registration of the legal practitioners.

In a recent decision with reference to the medical act, the Supreme Court held that the power to revoke a license for statutory cause rested with the state board of health only as regards to licentiates who were admitted to practice after the enactment of the last law, and that those licentiates who obtained the right to practice prior to the enactment of the last law were not subject to the exercise of that power by the board. As Section 7 of the dental act was identical with that of the medical act, your committee caused Section 7 to be amended so as to make the provision respecting revocation of license to cover all licentiates or registered dentists without reference to the date of their licenses.

Your committee caused a bill to be prepared covering these

*Read before the Illinois State Dental Society at Danville, May, 1909.

amendments and the attorneys have seen fit to draft an entirely new bill repealing the old law and re-enacting the provisions of it with these amendments added. Senator A. C. Clark of Chicago, who was the champion of the present law, was again invited by your committee to take charge of this bill, which became known as Clark Senate Bill No. 145. The Senate saw fit to add to this bill at the sole suggestion and demand of Senator A. C. Clark, a provision that is calculated to give the board power to closely scrutinize associations and corporations practicing dentistry and to make these report to the board within ten days the name of each and every person employed in the practice of dentistry, whenever demand for such report is made by the secretary of the board.

This bill thus amended passed the Senate on April the 15th, and went to the House, where it is now up to the third reading, and information has this day been received by your committee that unless crowded out by greater questions absorbing the attention of the House, it will pass that legislative body today. It this is not accomplished, we are assured that it will pass next week. Your committee has no fear but that the governor will approve this new bill and the same will be in operation on and after July the first.

Before closing this report your committee desires to inform this society that it sent out a circular to the members, scattered all over the state, requesting them to write letters to their members in the general assembly and requested them to return a postal card informing the committee what action they had taken. Within forty-eight hours 600 answers were received reporting that 2,400 letters had been sent to the members of the legislature and before the end of the week more than 900 such postal cards were received by your committee. We feel it due to the members to make this record of their prompt loyalty and co-operation. It is an exhibition of unified strength that gives great promise for future undertakings of the society.

Fearing that a bill that had been introduced in the House to repeal the dental act altogether might be confounded by some of the members with the Clark bill, your committee sent out anorther circular warning the members to notify their representatives not to be misled by this other bill, and the promptness with which response to this second call was made, was almost as remarkable as the action in response to the first letter. There are fifty-one legislative districts in the state and each and every one of these districts was heard from

with a favorable response, varying from one answer in the fourth and fifteenth district to sixty-five in the fifth district.

Your committee feels it incumbent upon them to especially emphasize the great services rendered by Senator A. C. Clark to the dental profession of this state for his singleness of purpose, for his devotion to our cause and for the labor and expense this has devolved upon him. A fitting recognition of his services should be given him by this society.

In view of the fact that the legislation ask for, this year, seemed to be quite extensive your committee has deemed it unwise to take any steps towards the securing of the appointment of dental internes in the state charitable institutions, and your committee very respectfully recommends that the campaign so far as our profession is concerned before the next general assembly be devoted exclusively to the attainment of this very desirable consummation.

All of which is respectfully submitted.

CHARLES R. E. KOCH,
C. N. JOHNSON,
D. M. GALLIE,
Committee.

The text of the new law passed by the Senate and General Assembly is as follows:

A BILL

For an Act to regulate the practice of dental surgery and dentistry in the State of Illinois, and to repeal certain Acts therein named.

SECTION 1. *Be it enacted by the People of the State of Illinois represented in the General Assembly:* That a board of examiners, to consist of five practicing dentists, to be known as the Illinois State Board of Dental Examiners, is hereby created, whose duty it shall be to carry out the purposes and enforce the provisions of this Act, as hereinafter specified. The members of said board shall be appointed by the Governor, and at the time of their appointment upon said board, must be actual residents of the State and must have been, for a period of five years, or more, legally licensed to practice dentistry or dental surgery in this State: *Provided, however,* that no person shall be eligible to appointment to said board who is in any way connected with or interested in any dental college or dental department of any institution of learning. The term for which the mem-

bers of said board shall hold office shall be five years: *Provided,* that the members of the dental board, in office at the time of the passage of this Act, shall be permitted to serve out their respective terms of office for which they were appointed, and until their successors shall be duly appointed. In case of a vacancy occurring on said board, such vacancy shall be filled by the Governor, as herein provided.

SEC. 2. Said board shall choose one of its members president and one secretary thereof, and it shall meet at least once in each year, and oftener if necessary, in the discretion of the board, and at such times and places as it may deem proper. A majority of the members of said board shall, at all times, constitute a quorum, for the transaction of the business of the board, and the proceedings thereof shall, at all reasonable times, be open to public inspection.

SEC. 3. No person, unless previously registered or licensed to practice dentistry in this State at the time this Act shall become operative, shall begin the practice of dentistry or dental surgery, or any branches thereof, without first applying for and obtaining a license for such purpose from the Illinois State Board of Dental Examiners. Application shall be made to said board in writing, and shall, in every instance, be accompanied by the examination fee of twenty dollars ($20), together with satisfactory proof that the applicant is of good moral character and twenty-one years of age or over at the time of making the application. Application from a candidate who desires to secure a license from said board to practice dentistry or dental surgery in this State shall be accompanied by satisfactory proof that the applicant so applying for a license has been engaged in the actual, legal and lawful practice of dentistry or dental surgery in some other state or country for five consecutive years just prior to application; or is a graduate of and has a diploma from the faculty of a reputable dental college, school or dental department of a reputable university; or is a graduate of and has a diploma from the faculty of a reputable medical college or medical department of a reputable university, and possesses the necessary qualifications prescribed by the board. When such application and the accompanying proof are found satisfactory, the board shall notify the applicant to appear before it for examination at a time and place to be fixed by the board. Examination may be made in whole or in part, orally or in writing, at the discretion of the board, and shall be of a character as to test the qualification of the applicant to prac-

tice dentistry or dental surgery. All examinations provided for in this Act shall be conducted by the board, which shall provide for a fair and wholly impartial method.

SEC. 4. Said Board of Dental Examiners shall make rules or regulations to establish a uniform and reasonable standard of educational requirements to be observed by dental schools, colleges or dental department of universities, and said board may determine the reputability of those by reference to their compliance with said rules or regulations.

SEC. 5. Any person shall be regarded as practicing dentistry or dental surgery within the meaning of this Act, who shall treat, or profess to treat any of the diseases or lesions of human teeth or jaws, or extract teeth, or shall prepare and fill cavities in human teeth, or correct the malposition of teeth, or supply artificial teeth as substitutes for natural teeth: *Provided,* that nothing in this Act shall be so construed as to prevent regularly licensed physicians or surgeons from extracting teeth: *Further,* this Act shall not prevent students from performing dental operations under the supervision of competent instructors within a dental school, college or dental department of a university recognized as reputable by the Illinois State Board of Dental Examiners.

SEC. 6. Any person licensed to practice dentistry or dental surgery in this State by the Illinois State Board of Dental Examiners, as hereinbefore provided, shall personally and within ninety days from date of issue, cause such license to be registered with the county clerks of such county or counties in which such person desires to engage in the practice of dentistry or dental surgery, and the county clerks of the several counties of this State shall charge for registering such license a fee of twenty-five cents (25c) for each registration. *And it is hereby provided further,* that every person who engages in the practice of dentistry or dental surgery in this State shall cause his or her license to be registered with the county clerk before beginning the practice of dentistry in said county, and to be, at all times, displayed in a conspicuous place, in his or her office wherein he or she shall practice such profession, and shall further, whenever requested, exhibit such license to any of the members of the said board or its authorized agent.

SEC. 7. The board may refuse to issue the license provided for in this Act, or may revoke any license now in force or that shall

be hereafter given, if issued to individuals who have, by false or fraudulent representations, obtained or sought to obtain practice or by false or fraudulent representations obtained or sought to obtain money or any other thing of value, or have practiced under names other than their own, or for any other dishonorable conduct. The board, when written charges have been filed with its secretary, and seem sustained by proof, shall fix a time and place for the examination of a person so charged and shall give written notice to the said person of the time and place and furnish him with a copy of the charges, at least twenty days prior to the date fixed for the examinations.

SEC. 8. Any failure, neglect or refusal on the part of any person obtaining a license to practice dentistry or dental surgery from the said board, to register such license with the county clerk of some county in this State, as above directed, within ninety days from the date of issue of the same, shall work a forfeiture of such license, and no license when once forfeited, shall be restored, except upon payment to the said board of the sum of fifteen dollars ($15), for such neglect, failure or refusal to register such license and the surrender of forfeited license.

SEC. 9. In order to provide the means for carrying out and enforcing the provisions of this Act, the said board shall charge each person applying to it for examination for a license to practice dentistry or dental surgery in this State, an examination fee of twenty dollars ($20), and in addition thereto, a license fee of five dollars ($5), for every license or duplicate license issued by said board, and out of the funds coming into the possession of the board under the provisions of this Act, the members of the said board shall each receive as compensation the sum of ten dollars ($10), for each day actually engaged in the duties of the office and all legitimate and necessary expense incurred in attending the meetings of the said board: *Provided* that the secretary of the board, for the purpose of enforcing the provisions of this Act shall receive a salary to be fixed by the board, instead of the per diem of ten dollars ($10). All expenses shall be paid from the fees, fines and penalties received and recovered by the board under the provisions of this Act: *Provided,* that no part of said expense shall be paid out of the State treasury. All moneys received in excess of said per diem allowance and other expenses herein provided shall be held by the secretary of the said board

as a special fund for meeting expenses of said board; and said board shall make an annual report of its proceedings to the Governor by the 15th day of December of each year, together with an account of all moneys received and disbursed by them pursuant to this Act.

SEC. 10. Any person filing or attempting to file as his own the diploma or license of another, or a forged affidavit of identification or qualification, shall be deemed guilty of a felony, and upon conviction thereof, shall be subject to such fine and imprisonment as is made and provided by the statutes of this State for the crime of forgery.

SEC. 11. The State Board of Dental Examiners may, in its discretion, issue a license to practice dentistry or dental surgery without examination to a legal practitioner of dentistry or dental surgery, who removes to Illinois from another state or territory of the United States, or from a foreign country, in which he or she conducted a legal practice of dentistry or dental surgery for at least five years immediately preceding his or her removal: *Provided,* such applicant present a certificate from the Board of Dental Examiners, or a like board, of the state, territory or country from which he or she removes, certifying that he or she is a competent dentist or dental surgeon, and of good moral character: *And, provided, further,* that such certificate is presented to the Illinois Board of Dental examiners not more than six months after its date of issue, and that the board of such other state, territory or country shall in like manner recognize certificates issued by the Board of Dental Examiners of the State of Illinois, presented to such other board by legal practitioners of dentistry or dental surgery from this State, who may wish to remove to or practice in such other state, territory or country.

SEC. 12. Any one who is a legal and competent practitioner of dentistry or dental surgery in the State of Illinois, and of good moral character and known to the Board of Dental Examiners of this State as such, who desires to change his or her residence to another state, territory or foreign country, shall, upon application to the Board of Dental Examiners, receive a certificate over the signature of the president and secretary of said board, and bearing its seal, which shall attest the facts above mentioned and giving the date upon which he or she was registered and licensed.

SEC. 13. The fee for issuing a license to a legal practitioner from another state, territory or foreign country to practice dentistry

or dental surgery in this State under Section 11 of this Act shall be twenty-five dollars ($25), and the fee for issuing a certificate to a legal practitioner of this State, under Section 12 of this Act, shall be five dollars ($5), and in each case the fee shall be paid in cash before the license or certificate, respectively, shall be issued.

SEC. 14. For the purpose of correcting and revising the register of legal practitioners of dentistry, as kept by the State Board of Dental Examiners, it shall be the duty of each person registered or licensed by the board to practice dentistry in this State, to procure from the secretary of the board, on or before November 1, 1909, and on or before November 1st bienially thereafter ,a certificate of registration. Such certificate shall be issued by the secretary upon payment of a fee to be fixed by the board, not exceeding the sum of one dollar. All certificates so issued shall be prima facie evidence of the right of the holder to practice dentistry in the State during the time for which they are issued, and the same shall be exposed to public view in the operating room of the holder. Any certificate or license heretofore granted, or that may be hereafter granted, by the board, shall be cancelled if the holder thereof fails to secure the renewal certificate herein provided for within a period of six months after November 1, 1909, and biennially thereafter: *Provided,* that the license or certificate thus cancelled may be restored by the board upon the payment of a fee of twenty dollars without further examination of the holder as to his competency and ability to practice. It shall be the duty of the secretary of the board to mail to each person whose name appears upon the register of said board on or before October 1, 1909, and at the same time biennially thereafter, a printed blank form, to be filled out by the holder of such license or certificate, which shall be returned by such holder to the secretary of the board, properly filled out, together with the fee established by said board for this purpose. The board shall cause a notice to be inserted in not less than three newspapers in the city of Chicago, and two newspapers in the city of Springfield, informing the dentists of this State that such registration will be required. Such notice shall be printed in such newspapers in one of each of three successive weeks between the first day of October and the first day of November, 1909, and during the same period biennially thereafter.

SEC. 15. That all dentists or dental surgeons now legal practitioners of dentistry or dental surgery in this State, or those who

may hereafter become such, shall be exempt from service as jurors in any of the courts of this State.

SEC. 16. Any person who shall practice dentistry in this State without being registered or without a license for that purpose, or violates any of the provisions of this Act, shall be subject to prosecution before any court of competent jurisdiction upon complaint, information or indictment, and shall, upon conviction, be fined for each offense in any sum not less than fifty dollars ($50) nor more than two hundred dollars ($200). All fines imposed and collected under this Act shall be paid to the Illinois State Board of Dental Examiners for its use.

SEC. 17. All licenses issued by the said board shall be signed by all of the members thereof, and be attested by its president and secretary.

SEC. 18. Any association or company of persons, whether incorporated or not, who shall engage in the practice of dentistry under the name of company, association or any other title, shall cause to be displayed and kept in a conspicuous place at the entrance of its place of business, the name of each and every person employed in said company or association in the practice of dentistry, and any one so employed by said company or association whose name shall not be so displayed as above provided, and the said association or company, if incorporated, or the persons comprising the same, if not incorporated, shall, for the failure to display the aforesaid names, be deemed guilty of a misdemeanor, and upon conviction thereof, each shall be punished as provided in this Act.

Any manager, proprietor, partnership, association or incorporation owning, running, operating or controlling any room or rooms, office or dental parlors, where dental work is done, provided or contracted for, who shall employ, keep or retain any unlicensed person or dentist as an operator; or,

Who shall fail, within ten days after demand made by the secretary of the Illinois State Board of Dental Examiners, in writing sent by registered mail, addressed to any such manager, proprietor, partnership, association or incorporation at said room, office or dental parlor, to furnish to said secretary the names and addresses of all persons practicing or assisting in the practice of dentistry in his place of business or under his control, together with a sworn statement showing by what license or authority said persons are practicing

dentistry, shall be guilty of a misdemeanor and subject to the penalties provided for in this Act: *Provided, however,* that such sworn statement shall not be used as evidence in any subsequent court proceedings.

SEC. 19. "An Act to insure the better education of practitioners of dental surgery, and to regulate the practice of dentistry in the State of Illinois," approved May 30, 1881, and in force July 1, 1881, and "An Act to regulate the practice of dental surgery and dentistry in the State of Illinois, and to repeal an Act therein named," approved May 18, 1905, and in force July 1, 1905, and other Acts and parts of Acts amendatory of either of said Acts, are hereby repealed: *Provided, however,* that such repeal shall in no wise affect any suit, prosecution, or court proceeding pending at the date of the passage of this Act, or the right of the State Board of Dental Examiners created under either of said Acts or the board created by this Act, to claim or receive any moneys paid in by way of fine or license fee, and the board created by this Act shall have the power and authority to use any funds received by it in discharging any obligation of the board or boards existing under the Acts above repealed.

REPORT OF THE COMMITTEE APPOINTED TO REVISE THE CODE OF ETHICS.*

BY C. N. JOHNSON, CHICAGO.

When the president of the society suggested the desirability of revising the Code of Ethics and appointed the present committee to take the matter in charge, there were two aspects of the case which presented themselves for consideration. The first was the natural reverence with which the old code should be looked upon in view of the character of the men who framed it, and the great good it has accomplished, and the other was the change in the time since it was written, which seemed to demand a slight change in the wording of the code. Each generation becomes less redundant in its use of language to express a given idea than the generation before, and without wishing to reflect in any way upon the revered names of

*Read before the Illinois State Dental Society, May, 1909.

those who have preceded us, there is assuredly today less pedantry than when the original code was written. And in this connection it will just as certainly follow that the code presented for your consideration today will in time outlive its usefulness, and require to be rewritten.

Your committee respectfully submits the following Code of Ethics:

"Section 1. In his dealing with patients and with the profession, the conduct of the dentist should be in accordance with the Golden Rule, both in its letter and spirit."

This one section would constitute all the code that was really necessary provided men were capable of correctly interpreting the purport or intent of specific acts and were all agreed as to what the Golden Rule implied as it relates to professional conduct. It is hoped that the day may come when this will be the only code written.

"Section II. It is unprofessional for a dentist to advertise by hand bills, posters, circulars, cards, signs, or in newspapers or other publications, calling attention to special methods of practice or claiming excellence over other practitioners, or to use display advertisements of any kind. This does not exclude a practitioner from using professional cards of suitable size, with name, titles, address and telephone number, printed in modest type, nor having the same character of card in a newspaper. Neither does it prevent a practitioner who confines himself to a specialty from merely announcing his specialty on his professional card."

This section is naturally the most specific in its restrictions of any in the code. It is usually over violations of this section that the greatest trouble arises, and the line is most closely drawn between members and non-members of dental societies. If this section is subscribed to it will prohibit pretentious signs of any kind which are glaringly conspicuous to the public, and thereby calculated to lower the dignity of the profession. It will prohibit alike the electric-light signs of the city and the board-fence signs of the country. The question of public advertising or non-advertising is one of evolution in the professions. It is not so very many years ago that the public advertisement was quite common among dentists, and in the early days little was thought of it. But in very close ratio to our development along professional lines has the ethics of advertising advanced and the restrictions been closer drawn. It may confidently be pre-

dicted that the time will come when they will be more exacting than they are today as we have developed into a higher professional atmosphere.

In stating this we are not contending that a man has not the legal right to advertise. We might even go farther and admit that he has the moral right to advertise provided he tells the truth in his advertisements. But when he exaggerates, as most advertisers do, he not only violates professional codes, but he is morally at fault. And in prohibiting advertising in our code the object is to raise a man's ideals of life and increase his respect for professional obligations. We have therefore taken the position that a man cannot advertise in the manner specified and become or remain a member of a dental society.

"Section III. It is unprofessional for dentists to pay or accept commissions on fees for professional services or on prescriptions or other articles supplied to patients by pharmacists or others."

We believe that this is the first time this clause has been introduced into a dental Code of Ethics, but we do not believe that it is any too early in our professional life to have it made an integral part of our code. Your committee does not wish to be harsh in its criticism of men who have paid or accepted commissions in the past, but it sincerely believes that the time has come in our professional development when this practice should be rigidly stamped out of our ranks.

The sentiment of the better element of the people has in recent years been strongly expressed against the practice of what has been called "graft" in commercial life, so much so that in many instances stringent legislation has been enacted making it a misdemeanor. If this is true of commercial life, what must be said of such methods when practiced among professional men? There has been and there can be no plausible argument in favor of it and the time is ripe for this society to place its seal of disapproval upon it.

"Section IV. One dentist should not disparage the services of another to a patient. Criticism of work which is apparently defective may be unjust through lack of knowledge of the conditions under which the work was performed. The duty of the dentist is to remedy any defect without comment."

For one dentist to disparage the work of another is not only unprofessional but it may be extremely unfair, and it is in this rela-

tion that we should practice the Golden Rule and treat the matter in precisely the way we should wish a fellow practitioner to treat a case of ours under the same circumstances. We should develop the broadest charity toward our brother dentist and practice it in every instance where we can do so without detriment to the patient. We should protect the patient against injustice, needless suffering, or malpractice, but should do all in our power to allay suspicion and maintain harmony.

"Section V. If a dentist is consulted in an emergency by the patient of another practitioner who is temporarily absent from his office, the duty of the dentist so consulted is to relieve the patient of any immediate disability by temporary service only, and then refer the patient back to the regular dentist."

The tendency of some men to take advantage of an emergency and perform more work for the patient than is really necessary is, under the circumstances, not equitable, and should be discountenanced.

"Section VI. When a dentist is called in consultation by a fellow practitioner, he should hold the discussions in the consultation as confidential, and under no circumstances should he accept charge of the case without the request of the dentist who has been attending it."

The ethics of consultation sometimes places a man in a difficult situation, but if he has a high conception of his duty to all parties concerned, his course will be made perfectly plain to him. Sometimes the patient or his friends will request the consultant to treat the case, but he should not be influenced by such a request. If he feels that the case is not being properly treated, he should state his opinions with all frankness to the practitioner in charge, but to no one else.

"Section VII. The dentist should be morally, mentally and physically clean, and honest in all his dealings with his fellow man, as comports with the dignity of a cultured and professional gentleman."

This section is more admonitory than restrictive and prohibitive, and might be amplified in many ways were it not the sense of your committee that the code should be made brief and should deal more with the specific and concrete rather than with the general and abstract. Many excellent ideas connected with professional conduct and culture could have been introduced, but none of them would be

really binding and it was deemed unnecessary to incorporate them.

The code as suggested reads as follows:

CODE OF ETHICS.

Section I. In his dealings with patients and with the profession, the conduct of the dentist should be in accordance with the Golden Rule, both in its letter and its spirit.

Section II. It is unprofessional for a dentist to advertise by hand-bills, posters, circulars, cards, signs, or in newspapers or other publications, calling attention to special methods of practice, or claiming excellence over other practitioners, or to use display advertisements of any kind. This does not exclude a practitioner from using professional cards of suitable size with name, titles, address and telephone number, printed in modest type, nor having the same character of card in a newspaper. Neither does it prevent a practitioner who confines himself to a specialty from merely announcing his specialty on his professional card.

Section III. It is unprofessional for dentists to pay or accept commissions on fees for professional services, or on prescriptions or other articles supplied to patients by pharmacists or others.

Section IV. One dentist should not disparage the services of another to a patient. Criticism of work which is apparently defective may be unjust through the lack of knowledge of the conditions under which the work was performed. The duty of the dentist is to remedy any defect without comment.

Section V. If a dentist is consulted in an emergency by the patient of another practitioner who is temporarily absent from his office, the duty of the dentist so consulted is to relieve the patient of any immediate disability by temporary service only, and then refer the patient back to the regular dentist.

Section VI. When a dentist is called in consultation by a fellow practitioner, he should hold the discussions in the consultation as confidential and under no circumstances should he accept charge of the case without the request of the dentist who has been attending it.

Section VII. The dentist should be morally, mentally and physically clean, and honest in all his dealings with his fellow man, as comports with the dignity of a cultured and professional gentleman.

(This report when read and laid over from one session to another was unanimously adopted by the Society, thereby substituting this code for the one formerly in use.)

REPORT OF THE COMMITTEE ON NECROLOGY.*

BY DR. M. L. HANAFORD, ROCKFORD, ILL.

Since our last meeting eight members of our society have been called by death:

Dr. Warren Elliot Rose, Okawville, May 15.
Dr. H. N. Lancaster, Chicago, May 24.
Dr. Emanuel Honsinger, Chicago, September 18.
Dr. Charles R. Hammond, Chicago, November 29.
Dr. Peter A. Campbell, Chicago, January 15.
Dr. A. J. Elmer, Bloomington, January 25.
Dr. A. W. Harlan, New York City, March 6.
Dr. C. W. Cox, Batavia, April 14.

Dr. Rose was born near Rushville, Ill., January 27, 1873, graduated from the Marion Sims Medical College Dental Department in 1901, and in 1902 located in Okawville, and began the practice of his profession. By his genial ways and public spirit, he made many friends, built a large and successful business, and was also able to be of service to his town, having held office on the village board and in various civic organizations. He joined our society in 1906.

Howard N. Lancaster was born in Chicago in 1877. He is said by those who knew him, to have been highly successful in his profession, and a writer of considerable ability. He joined our society in 1905.

Dr. Emanuel Honsinger was born September 12, 1823, at Henrysburg, Canada East. At the age of 17 he left his father's home and undertook by his own efforts to obtain an education. He studied during the days and worked mornings and evenings for his support and thus secured the fundamentals of a fair education. Dr. Honsinger studied dentistry under Dr. H. J. Paine, of Troy, N. Y., and in 1847 commenced practice in the same city where he remained until his removal to Chicago in 1853. He retired from active practice in 1898. In the years of his activity he was known as a leader in the department of operative dentistry, praticularly in the use of crystal gold. He was a life member of our society and for many years was

*Read before the Illinois State Dental Society, May, 1909.

a regular attendant at meetings. An honored, upright gentleman and citizen, he was admired and loved by all who knew him.

Charles R. Hammond was born November 21, 1863. He began the study of dentistry when but seventeen years old, with Dr. Smith, of Golden, Colo. After six years he began independent practice in Golden. Four years later he removed to Lander, Wyo., where he remained seven years. From thence he went to Chicago, entered the Northwestern University Dental School, and in due time graduated and located practice in West Chicago. For eight years and until failing health, he held a lucrative practice. He joined our society in 1908.

Peter A. Campbell was born March 23, 1876, in Clinton, Ontario, Canada. Educated in the public school and afterward taught in the schools of Canada. He was a thirty-second degree Mason. He joined our society in 1905 by membership in the Englewood component society. His active work was confined to his local society, of which he was secretary for one year, and president elect at the time of his death.

A. J. Elmer was born October 3, 1873, educated in the public schools of Rochelle, Ill., graduated at the Chicago College of Dental Surgery and began practice in Rochelle, removing to Bloomington in 1901. He joined our society in 1899, and was a regular attendant at its meetings.

Dr. Elmer had all the elements of popularity, being of genial temperament and disposition, with a pleasant greeting and hearty handclasp for all. We shall miss his rare good cheer at our annual meetings. In society work he will be remembered as a writer of ability, an able clinician and a brilliant speaker. He was secretary of the McLean County Dental Society at the time of his death.

Allison Wright Harlan was born in Julietta, Harlan county, Indiana, November 15, 1850. Educated in the district school, he began the study of dentistry in the office of Drs. Kilgore and Helms. He went to Chicago in 1869, entering the office of Dr. J. B. Bell. Even at this early period he must have shown marked ability for the writer, who followed him in the office of Dr. Bell, remembers hearing him spoken of as a young man of great promise. Dr. Harlan soon established himself in practice in Chicago, and from that time began to exert a powerful influence for the uplifting and betterment of dentistry as a profession. He joined our society in 1872. In 1880 he graduated from the Ohio Dental College.

He was of service in urging the passage of the first law regulating the practice of dentistry in Illinois, and served two terms on the State Board of Dental Examiners. In this society he was ever an enthusiastic worker, serving as president in 1882, and holding the important office of Committee on Dental Science and Literature for several years. His literary contributions to our programs were many and varied. His "Notes on New Remedies," were an interesting feature for several years, and his clinics on pyorrhoea and alveolar abscess always attracted marked attention. But it was in debate on the floor of the convention that Dr. Harlan particularly excelled. Of commanding presence, with a keen incisive manner and wonderful diction, he was a foeman worthy of any man's steel. He scorned pretense and superficiality, and often in the heat of debate made use of the most scathing sarcasm. But withal his heart was kindly, and any help within his power was to be had for the asking. As an organizer, Dr. Harlan's work as director general of the Columbian Dental Congress is fresh in our minds. He founded the DENTAL REVIEW and was its editor for about fifteen years. He held the chair of Materia Medica and Therapeutics in the Chicago College of Dental Surgery for many years.

Altogether the life and work of Dr. Harlan was that of a giant leader and teacher, and his memory remains as an inspiration to us, and to all who shall come after.

Cecil Whitman Cox was born in Fairfield, Ohio, August 5, 1856. He studied dentistry with Dr. C. W. Kendall of Woodstock, Ill., and opened an office for himself at McHenry, Ill., in 1877. In 1879 he went to Batavia where he made his permanent home. Dr. Cox was a man of kindly nature and high professional ideals and was successful in attracting to himself a large and appreciative clientele. His literary work along professional lines was of a high order and but for a natural modesty, which always held him back, he might have had a wide reputation as a writer. As it was his name often appeared on the programs of his local societies, notably that of the Northern Illinois, of which he was a charter member.

He joined our society in 1905 by membership in the Fox River Valley Society.

M. L. HANAFORD.
T. W. PRITCHETT.
GEO D. SITHERWOOD.

REPORT OF COMMITTEE ON POST GRADUATE COURSES FOR YEAR ENDING MAY 11, 1909.*

BY DR. ELGIN MA WHINNEY, CHAIRMAN, CHICAGO, ILL.

This committee held its first meeting in Chicago in May, 1908, at which time the post graduate course problem was thoroughly discussed and the following points decided:

I. If the Illinois State Dental Society is to maintain its present membership and bring into its roll all the eligible dentists of the state, it must render some special service in addition to that given at its regular annual meetings.

II. The prosperity of the Illinois State Dental Society, in fact its very life, depends upon the prosperity of its component societies. The Illinois State Dental Society is merely the central point at which the interests of the component societies meet. Therefore, the problem of this Society is the problem of the usefulness of its component societies. The first problem, therefore, for this committee was to decide how we could make this Society a real factor in increasing the efficiency of its component parts. A careful study of reports from these societies which were accessible convinced the committee, first, that much difficulty was experienced in nearly all societies of providing interesting programs and getting members to attend and take part in the meetings. Second, that our members were not good readers of our available literature, and really did not assimilate what they read.

It was therefore decided that the committee could do its best work by stimulating thoughtful reading and discussion of the important discoveries and advancements made by the dental profession as reflected by its accessible literature during the past six years. In short, to convert such component societies as felt the need and inspiration into study clubs.

The text books selected as most available are—The *Dental Review,* The *Dental Cosmos, Items of Interest,* The *Dental Digest,* for the years 1903 to 1907 inclusive. In order to make this material accessible it was necessary for each component society to provide a library containing these volumes. Also that these volumes be care-

*Read before the Illinois State Dental Society, May, 1909.

fully indexed, which was no small undertaking and has practically been accomplished by the labor of Dr. Arthur D. Black, our president.

It was decided to only attempt to provide courses in Operative Dentistry, Prosthetic Dentistry, Dental Pathology and Materia Medica and Therapeutics for the present year. The courses confined to such questions and answers on these four subjects as could be obtained from the text decided upon. For the purpose of outlining each subject in accordance with this plan four committees were appointed (one for each subject) and the real work of providing definite courses was begun.

These committees were made up as follows:

COMMITTEE ON DENTAL PATHOLOGY.

Dr. W. H. G. Logan, Chairman, Chicago.
Dr. J. P. Luthringer, Peoria.
Dr. J. F. F. Waltz, Decatur.

COMMITTEE ON MATERIA MEDICA AND THERAPEUTICS.

Dr. J. P. Buckley, Chairman, Chicago.
Dr. E. S. Barber, Chicago.
Dr. C. M. Cahill, Chicago.
Dr. G. C. Poundstone, Chicago.
Dr. E. C. Jones, Chicago.

COMMITTEE ON PROSTHETIC DENTISTRY.

Dr. E. H. Allen, Chairman, Freeport.
Dr. Geo. D. Sitherwood, Bloomington.
Dr. T. W. Pritchett, Whitehall.
Dr. E. T. Evans, Decatur.
Dr. C. L. Snyder, Freeport.

COMMITTEE ON OPERATIVE DENTISTRY.

Dr. M. L. Hanaford, Chairman, Rockford.
Dr. G. W. Dittmar, Chicago.
Dr. E. R. Baker, Evanston.
Dr. B. H. Biglow, Rockford.
Dr. H. T. Weaver, Chicago.

The work of these committees is progressing splendidly and already thoroughly substantial courses, though not complete, have been provided which have been published and made available through the Bulletin.

The wisdom of maintaining the Bulletin, even in the face of serious discouragement, is now made very apparent.

The following cities and towns have the required libraries practically complete and other centers are being rapidly supplied.

Alton, Belleville, Bloomington, Champaign, Charleston, Chester, Danville, Decatur, Dixon, East St. Louis, Effingham, Elgin, Freeport, Galesburg, Joliet, LaSalle, Macomb, Monmouth, Mt. Carmel, Olney, Ottawa, Paris, Peoria, Quincy, Rockford, Rock Island, Sparta, Springfield, Sterling, Streator, Urbana. In Chicago there are libraries at the following places: Northwestern University Dental School, Chicago College of Dental Surgery, Illinois School of Dentistry, John Crerar Library, Englewood, Sixty-third street and Stewart avenue, Circulating 87 Lake street.

About fifteen of the component societies have already begun to use these courses and are reporting splendid results. From recent correspondence with program committees of these various societies some valuable suggestions have been received which can be worked out in the near future.*

From this report some idea can be had of the immense amount of work that has been already accomplished, and yet the work has only begun. The committee believes this to be the most important work ever undertaken by any Dental Society, a work which has certainly laid the foundation for inestimable good to the members of this Society.

If it be true that the success of dental societies depends upon having interesting and profitable programs, then surely we are planning in the right direction for the post graduate courses as outlined will provide a means of having helpful, interesting material for each program, and, best of all, it provides a way whereby each member can take part in the work and be a real factor in the success of his local society.

In conclusion, I wish to thank my committee associates and all who have helped us in the work, and especially should the thanks of the entire Society be tendered to our president, Dr. A. D. Black, for his unceasing devotion to this work. On account of serious illness I have

*So many dentists from other states have asked for the privilege of taking the postgraduates' work that the officers of this society were forced to create a new kind of membership temporarily, so that such men could get the Bulletin containing the course outlines.

been prevented from doing all I had hoped to do and by my special request he has acted as chairman of the Post Graduate Committee and relieved me of duties I could not perform, for which I thank him sincerely.

A SERMON ON THE LACK OF AMBITION ALONG INTELLECTUAL LINES IN THE PROFESSION.*

BY CHARLES B. ROHLAND, A M., D. D. S., ALTON, ILL.

Text: St. Mathew xxv. 29.—"For unto every one that hath shall be given, and he shall have abundance; but from him that hath not shall be taken away, even that which he hath."

The complaint has at times been made that in proportion to their numbers there are very few writers among dentists; that the masses are disinclined toward intellectual effort save such as they are required to bring to the solution of the technical problems of every day practice, and that as carried on by so many, dentistry seems to have a narrowing influence on the minds of its followers.

In conversation recently with your program committee, he gave me in detail some of his experiences with members of the profession throughout the state, in his efforts to enlist their participation in the program. These experiences, which I know are not at all peculiar to this section alone, would seem to corroborate this charge and have given me the text for a few observations which may perhaps not be out of place at this time, and for which I crave your kind indulgence.

I have therefore selected for our consideration on this occasion the twenty-ninth verse out of the twenty-fifth chapter of the gospel according to St. Matthew:

"For unto every one that hath shall be given, and he shall have abundance; but from him that hath not shall be taken away even that which he hath."

In this verse, my brethren, is contained the essence of the lessons taught in the parable of the talents.

Different versions of this parable and of this text are given by different evangelists, but the deductions and the lessons taught are in all cases the same.

*Read before the Illinois State Dental Society, Danville, May 11, 1909.

There is a paraphrase on this which might possibly be attributed to St. Apollonia, the patron saint of dentistry.

Now, just why St. Apollonia was selected to be the patron saint of dentistry may not seem quite clear. She certainly never practiced dentistry so far as is known. She suffered during the persecution of the Christians at Alexandria during the last year of the reign of the Emperor Philip, about A. D. 249.

She was an old maid, and she had teeth, for the chronicler speaks of her as the "Admirable Apollonia whom old age and the state of virginity rendered equally venerable," and further states that "the repeated blows of her persecutors, on her jaws, beat out all her teeth."

Presumably, these were artificial, the difficulty of knocking out all one's natural teeth with a club, would preclude any other supposition, but whether these were just an ordinary five dollar set, or the more expensive bridgework, does not appear. If the latter, and if the chronicler is to be believed, this is the first mentioned of "removable bridgework" that is known.

But it is clear, therefore, she must have patronized a dentist.

Wherefore, presumably, she became, after canonization, the patron saint of the cult, and this will perhaps explain why her version of the parable should bear such an unmistakable application to dentists.

She had had experiences, and with dentists of varying degrees of ability, for doth she not speak wisely and truly of him that had five talents, him that had two, and him that had but one, the latter of whom she doubtless found in some "Painless Dental Parlor" of the period.

She evidently had had trouble in her search for a set "that would fit," and that "she could eat with," the "condyloid path" not yet having been discovered, nor the "anatomical articulator" invented.

Now the paraphrase runneth somewhat as follows: "For the profession of dentistry is as a man traveling in a far country, who calleth unto him his servants, and delivereth unto them in trust all his possessions.

"Unto one who hath been well equipped by reason of natural endowments and many previous educational advantages, he giveth five talents, even up to the full measure of his capabilities.

"And to another, not so well endowed by nature and opportunity, he giveth but two talents, with the responsibilities attached thereto.

"And to another, who had brought to his service but a modicum of natural equipment he giveth but one talent, to every man according to his several ability; but, mark you, not one was excused from some share in the task of developing and increasing his master's trust.

"Then he that had received the five talents went and traded with the same. He realized his duty and his responsibilities, and began by study and hard work, and much burning of midnight oil, to prepare for his master's return. He took all the journals, and read them, attended many conventions and took part in them, and followed his bent in fields of original research, and spared not himself, that he might grow in professional stature, and thereby increase that which had been entrusted to him, and add to the glory of his profession.

"So when his lord returned and demanded of him his reckoning, he had so improved his opportunities, and had increased his talents two, three and some even ten fold, that his lord was greatly pleased thereat and said unto him, "Well done, thou good and faithful servant, thou hast been faithful over a few things, I will make thee ruler over many things; enter thou into the joy of thy lord.'

"Then he that had but the two talents given unto him, who had inherited fewer of the gifts and opportunities than his fellow servant, repined not, nor murmured in the least thereat, but straightway began to make the most of what he had. And he traded with his talents and cultivated them, even as he of the five talents did, and they increased even two and threefold, so that he, too, earned his title clear to the commendation of his lord, who said unto him also, 'Well done, thou good and faithful servant, thou hast been faithful over a few things, I will make thee ruler over many things.'

"Then he that had been given but one talent, and upon whom a proportionately light burden of achievement had been placed, influenced thereto by the spirit or sloth and a hankering after the flesh pots, wickedly and stubbornly refused to cultivate even that he had.

"Although knowing well there would be a day of reckoning at the coming of his master he did not even keep in use the talent given him, but straightway dug a hole in the earth and buried it, and gave

himself up at times to sloth, at other times to riotous living and the smoking of many cigarettes and the playing of much poker.

"He neither read his text-books, nor the journals, nor was he seen at any dental meetings. And as one stricken with blindness he saw not that the procession had long since passed him by, and that he had wandered from the highroad of advancement, and become lost in the by-paths of ignorance and darkness, while at the same time the spirit of pride entered within him and so puffed him up with conceit that he was like to burst.

"Wherefore, when his lord came and demanded of him his reckoning, he was suddenly filled with much peturbation, and he hastened him and dug up the talent which he had buried, and taking it to his lord all musty and moldy, he began to apologize and said:

" 'Lord, I knew that thou are a hard man and that thou exactest to the last farthing that which is thine own, and I was afraid to trade, and it was too much work and worry, anyway, so I went and hid thy talent safely in the earth. Lo, there thou hast that is thine own.'

"Whereupon his lord answered and said unto him, 'Thou wicked and slothful servant, thou knewest I was an hard man, and that I exacted mine own to the last penny, and yet thou didst not even put thy talent out at interest, so that at my coming I should have received mine own with usury!'

"And turning to his attendants he said, 'Take, therefore, the talent from him, and give it to him that hath ten talents;

" 'For unto every one that hath shall be given, and he shall have abundance; but from him that hath not shall be taken away even that which he hath.

" 'And cast ye the unprofitable servant into outer darkness; there shall be weeping and gnashing of teeth.' "

Wherein the especial application of this parable to dentistry is made doubly apparent.

And thus readeth the parable according to the paraphrase attributed to St. Apollonia.

How true it is, my brethren, that human experiences never vary.

This parable is just as applicable today as it was two thousand years ago, when it recorded the deductions from the experiences of twice two thousand years before.

The principle lesson conveyed in its story of rewards and punishments is the paramount duty we owe to ourselves and the profes-

sion that we have taken up, to make use to the very uttermost of every opportunity to promote our growth that we may the better do our part toward its advancement, and, furthermore, that no one is so poor in natural endowment but that he can increase that endowment and contribute something of value to this end, and that if he does not, he himself will be the principle sufferer.

Sometime ago a paper was read by Dr. S. H. Guilford at Boston before the Northeastern Dental Society, entitled "A Plea to the Young Men of the Profession," in which the writer deplored the apathy that, in his judgment, prevailing so generally among the younger men, in working along intellectual lines, and in preparing themselves to take up and carry out the work of those who preceded them, and to whose activities and achievements the wonderful growth of our profession has been so largely due.

Dr. Guilford's long experiense as an educator and his consequent familiarity with the tendencies of the younger men, as well as his long and intimate connection with society work, give him exceptional opportunities for judging, and impelled him to deplore the lack of ambition among the masses of the profession in this direction.

Now, this condition is not merely local. It prevails everywhere as will be attested by all who are or have been active in society work.

The great obstacle in the way of keeping societies in a state of active, healthy virility, lies in the apathy of the great body of its members, in the difficulty of getting them to work,—to do something.

Our societies are doing good work. They are wonderfully active, and the profession through them is still making great progress, but, as a rule, the burden is borne by comparatively few.

Indeed the same names become identified right along, year after year, with the work of their society, until the minutes become almost a record of their individual mental growth and activities, while the masses of the membership plod along stolidly for years, and finally pass off the stage without having left even a trace of themselves on the history of their society and their profession.

I am not unmindful of the splendid activities of many of our younger men, who are diligent in the study, in the laboratory, and in the workshop, and are adding to the glory of their profession, and by

their contributions, richly repaying their indebtedness to the past, but they are comparatively few.

In proportion to our rapid growth in numbers, there are not enough of them.

This is a reflection not only on the intelligence, and the progressiveness, but also on the morality of our guild, and gives point to the ill-concealed prejudice of many against our calling, and to the reluctance of many others to concede to dentistry its proper social and professional standing.

I have spoken of the immorality of this apathy. The immorality consists in entering into the rich heritage of the past, of accepting and making use of the contributions of those who have made dentistry what it is, without giving evidence of the least disposition to pay at least a part of the debt by voluntarily assuming their share of the heat and the burden of the day in carrying on the work so gloriously begun by their predecessors.

The lack of intelligence is shown in ignoring the fact that only by constant exercise of the talent we have, can we escape the deadly blight of deterioration and keep from becoming dwarfed and stunted professionally. Without that exercise, without constantly "trading with the same," as the evangelist puts it, or putting out "at usury," we will lose even that we bring with us into the profession, "for unto him that hath not shall be taken away even that which he hath."

It is not enough to attend strictly and faithfully "to business."

On the contrary, to expend all one's time and thought on daily routine of practical office work, is narrowing in the extreme, and tends in no way to broaden or increase one's mental horizon.

It is hostile to the development of all general culture and refinement, which in our calling is such a valuable asset, and upon which it must depend to secure for it the recognition which it craves, and without which it cannot hope to be considered other than a mere trade.

Dr. Kirk once said, when admitting the narrowness and lack of general culture among the masses of the profession, that he often wondered whether dentistry did not in itself have a narrowing tendency on the minds of its votaries.

I should answer, not necessarily. I should say that the tendency is not inherent in the calling itself, but rather in the manner in which it is followed by so many. Any profession that is permitted

to exclude from the minds of its followers all intellectual effort save the study of small, petty practical details is bound to be narrowing.

Too many, both young and old, among us, are too exclusively given to the mechanics of the calling. In their desire to acquire skill in manipulation, which so many place above all else, they neglect almost entirely the cultivation of the theoretical and the scientific, the very fundamentals of their profession.

Their interest in their society meetings and in their journals centers in the "practical papers" and the clinics. This is good and praiseworthy as far as it goes, also it is essential, but should not be allowed to exclude all else, upon which the intelligent application of even these "practical" details absolutely depends.

Every dentist should have some hobby, some interests outside his daily toil, but there is also a wide field in the intellectual side of his own profession, that will give him the opportunity of acquiring a larger and broader view of things, and of promoting even a general culture that will fit him to take his place socially and intellectually with the best in his community.

And there is no better means to this end than the habit of writing.

It is a process that if followed with sincerity and honesty of purpose, and with a determination to do one's very best, leaves one after each effort with a wider mental outlook, and invariably profits the writer himself even tenfold more than those to whom the results of his labors are given.

On the title page of the *Cosmos* appears, and has appeared since the mind of man runneth not to the contrary, the following:

"Observe, Compare, Reflect, Record."

That motto is a sign post that points the way to intellectual development and professional success.

Observe whatever comes within your ken and what others are saying and doing.

Compare the experiences of others with your own.

Reflect over the differences, try to account for their discrepancies, and then

Record your conclusions, that you may master them and make them your own. The very act of recording them will make them clearer and increase your understanding.

Under the reorganization scheme now prevailing in this state,

the local and component societies give splendid opportunities for this kind of exercise, and furnish a hearing to all.

Also with the post-graduate course now under way, and the indexed and classified libraries put at their disposal, the dentists of Illinois have exceptional facilities for this kind of work.

The way has been well cleared and the road lined with guide posts, so that he who is familiar enough with his native tongue to ask a question, gossip with his neighbor, or express an opinion on the standard oil case or local option, can, if he is so minded, say things on paper.

Many who have it within them to do good work in this way never try, because, forsooth, they imagine they have neither the gift nor the education, and that without these they could never succeed as writers. This is a mistake. Let me whisper something in your ear, my friends; this, however, mind you, without meaning to decry in the least the value of a college education, as a preliminary training.

The average so-called college education is only one-fifth knowledge, one-fifth mental training, and three-fifths gall, of which the last is the most valuable asset.

It simply gives their possessors confidence in themselves to try their wings in flights at which they otherwise might balk.

Their real education comes, if it ever comes at all, afterwards, through the exercise of these wings.

While it is unquestionably true that there are some who may have a natural gift in that direction, and while it is also unquestionably true that a brilliant education may add to the polish of one's diction, and give increased facility of expression, these possessions are, after all, not an absolute necessity and of themselves will never make a good and useful writer.

Diligence, sincerity of purpose, the impelling force of a motive, otherwise the missionary spirit, these are some of the essentials.

It may be said of any paper worth listening to, as Edison once said of his achievements, when complimented on his genius for invention, that they were all the result of inspiration 2 per cent, perspiration 98 per cent. Now, there you have it! The honest opinion of the "Wizard of the Age."

Therefore, whenever you contemplate writing a paper, do not wait for inspiration, do not wait for the gift to materialize, but go at it with the sincere purpose of putting into it some good, hard, solid

work, of stamping upon it the hall mark of thorough, careful preparation, and do not be stingy with your perspiration, no matter how unimportant the occasion for which it is being prepared may seem to you. Do not try to dash off a paper in a few minutes' time, and expect to draw at sight on your inner consciousness for the material needed.

Good, useful papers, worth listening to, are never written that way. Indeed, to offer to any society, no matter how small, or to any publication, no matter how insignificant, that has honored the writer with the privilege of hearing, a half-baked paper that bears in every line conclusive internal evidence of lazy, thoughtless, sloppy preparation, is a distinct discourtesy—an affront to his hearers—and clouds his claim to good breeding.

He loses not only the educational advantages the effort had in store for him, but he has occupied valuable time to no purpose.

The making of a good paper may be said to involve much patient *investigation, verification, meditation, combination* and *classification* through *condensation* and sometimes *amplification.* To this should be added one more phrase—*perturbation.*

The more ambitious the work, the more surely does this last become a feature during the constructive process.

So, if you should become disgusted with your paper and yourself, and you wish you had never undertaken it, just console yourself with the reflection that this is a mood that invariably overtakes all good writers,—hence, as it has overtaken you, you surely must be one, too!

But, as something cannot be evolved out of nothing, and material is needed to work with, it is necessary that you keep in touch with current professional literature, and with the progressive members of your profession, which means that you should take all the principal journals, all the latest books and attend all the society meetings you possibly can.

The recent experiences in gathering the publications needed for the local dental libraries to be instituted throughout the state demonstrated how few of the dentists took any of the principal journals, how many took only one or two of the minor ones, and how many took none at all, except such as were sent them gratis, and also how few preserved what they did take, treating them with the consideration accorded their daily paper, which was read more or less carefully and then used to light the kitchen fire.

Such a condition, which it is fair to presume is general, will, in my judgment, account for much of the disinclination to intellectual effort on the part of the masses. They lack the storehouses from which to gather material, hence also the stimulus thereof.

The journals now, the very best of them, cost but a dollar a year, and every dentist in Illinois should take at least the publications which are being classified and indexed for our local libraries, and as many more as he can, and he will then have at hand at least some of the means to promote his mental growth, and give him a broader and saner view of things professional than he could by feeding upon himself within the narrow confines of his office.

Therefore, my brethren, let me enjoin upon you to heed the lessons contained in my text, that the charges of sloth and apathy and narrowness and intellectual stagnation may not lie against you.

Be ever ready to answer the call of duty, with tongue and hand and pen, that your brethren may profit thereby, that you may contribute your share toward the progress of your calling, and that the talents which have been entrusted to you may be greatly increased, to your profit and the glory of your profession.

"For unto every one that hath shall be given, and he shall have abundance; but from him that hath not shall be taken away even that which he hath."

FURTHER EXPERIENCES WITH HIGH FREQUENCY CURRENTS.*

BY DR. WILLIAM DUNN, FLORENCE, ITALY.

Mr. President and Gentlemen: It was only last August, in London, that I had the honor of addressing this society on the "Use of High Frequency Currents in Dentistry," dealing especially with their stimulating and curative properties as a subsidiary treatment for pyorrhea alveolaris.

So short a time having elapsed since then, it is not possible now to bring forward many novel observations or to report much that is worthy of your notice. Yet it is a pleasure for me to say that, so

*Read before the American Dental Society of Europe at Wiesbaden, April, 1909.

far, all practical results are only confirming the utility of these applications and increasing the reliance placed in the treatment.

As some colleagues have manifested a wish to know more of the nature of these currents and their therapeutic action, I trust you will allow me to briefly recapitulate some of the principles underlying these manifestations.

You will recognize in these diagrams schematic drawings of electric currents.

If we take the figure on the left to represent a continuous current, we may consider the electric waves to be passing steadily across the field from positive to negative, in a given space of time and leaving a broad, even band similar to this.

We will suppose the line in the middle to represent the neutral point; the distance of the current from this neutral line will repre-

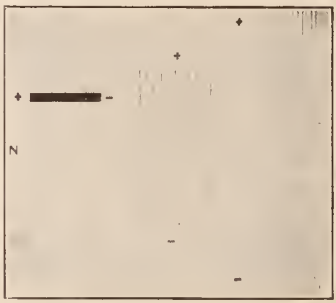

Fig. 1.

sent the potential, say 100 volts, passing from positive to negative within this space of time, say a second.

The central figure will represent an alternating current with a potential of 150 volts, skipping about 50 times a second from positive to negative and back again across the neutral line. The zig-zag line thus produced is a good example of an alternating street-lighting current.

The third figure gives one a faint idea of what a high-frequency current may be represented to look like. In one second here we should have some 200,000 or 300,000 lines, but they would be at such a distance both sides of this neutral line and so close to each other as to look like a haze or a blur. No pencil could portray them and no eye could follow them on the screen.

Now, just in the same way that the human eye is blind to more than a few hundred lines on a screen and blind also to light-waves more rapid than violet rays; just in the same way that the human ear is deaf to more than 32,000 sound-waves a second, so is the human nerve limited in its perception of these immensely rapid electrical vibrations and wholly incapable of feeling them.

Whilst slowly alternating or continuous currents are extremely dangerous, often fatal, these highly strung and rapidly alternating currents pass absolutely unperceived on and around the body, deluging it with ozone and producing on and around the point of application such an electric storm and such a stimulation of all vital energies

Fig. 2.

that they are most precious to us and to medical men in many pathological conditions. You now see upon the screen a photo of the apparatus I am using.

I have also brought you a few photos to show you first what medical science is doing with these currents.

Fig. 3. This man is undergoing treatment in what you surely know as d'Arsonval's Solenoid. A current of some 250,000 volts is going round these coils, with about 300,000 interruptions a second, yet he is totally unaware of any sensation whatever: he is looking at a

small Geissler's tube which becomes flourescent in his hand, such is the power of induction which these currents possess.

Fig. 4. This is another way which d'Arsonval has of applying the currents.

Medical science finds these forms of application especially useful in the treatment of Arterio-Sclerosis, and in combating uricaemia, rheumatism, arthritic troubles, etc. We know therefore that we can rely on them to regulate and depress arterial pressure, in stimulating all emunctory and excretory functions and in helping metabolic processes.

This is why they are so indicated in the treatment of pyorrhea

Fig. 3.

Fig. 4.

alveolaris in which disease so many of these abnormal conditions exist.

I have before had occasion to speak of the excellent medical work done by Dr. Arnone of Florence with high-frequency currents.

He has had some surprising and permanent cures of rheumatic arthritis, which in no other way could have been obtained.

Patients chronically affected, in such pain that they could not bear to move their arms, have been enabled after a very few sittings to reach the back of their head.

With regard to more serious diseases, I may again mention in

passing that Prof. Czerny, of Heidelberg, whose installation I had the privilege of inspecting through the courtesy of his assistant, Dr. M. Abetti, is closely investigating the effects of high frequency fulgurations on cancers, with encouraging results.

And now to our special branch. When I began to experiment with high frequency currents in dentistry I only knew of a single form of terminal; a straight glass tube filled with metallic filings; it conveyed the current to the mouth, but had the disadvantage of discharging in every direction, on teeth, gums, cheeks, etc. I then covered the glass tube with a rubber tube, but found the insulation insufficient as the sparks would fly through two thicknesses of rubber

Fig. 5.

Fig. 6.

tubing. Fortunately I discovered that black vulcanite, about a quarter of an inch thick, sufficiently insulates the terminals, so I was able to make the ones I am presenting, some of which I showed in London. The most useful form is the horse shoe, as I can get it both sides of the gum at once. I use this generally for pyorrhea treatment.

The last terminal I have constructed is a modification of d'Arsonval's coil; the current passes through it without appreciably discharging on the tissues, yet manifesting its influence on the part by a diminution of blood pressure.

Fig. 6. I find this a particularly useful form in reducing congestive condition of the gums, allaying pain, etc.

I spoke before of the soothing effects of these applications in cases of neuralgia connected with dental troubles; I am glad to report that in all cases where I have used these currents for the relief of pain, I have obtained an abatement of suffering; in many cases relief of a very marked and permanent character.

This, gentlemen, is about as far as I can go at present; my experiences confirm me in the belief that there is a great future for dental electro-therapeutics, in which high frequency currents will play a pre-eminent part; but the study is more than two or three men can grapple with. We must have experimenters by the score, men who will honestly and conscienciously investigate and go ahead.

As the apparatus is, unfortunately, very costly and cumbersome, I trust that dental colleges and universities will lead the way in familiarizing students with these appliances, and I feel confident that the great nation which gave us a Franklin, an Edison and a Tesla and which has led dental science to the honorable position it now occupies in the world, will not be slow to recognize the possibilities and the power for good latent in this very promising and elegant adjunct to our profession.

A MODIFICATION OF THE OPEN FACE CROWN.

By Dr. J. H. Moore, Frankfort, Germany.

Mr. President and Gentlemen: There are certain inherent difficulties and defects in bridge work that we would all like to do away with.

The dislike to the showing of gold in the front of the mouth led to the idea of the open face crown. Its fitting to a central incisor or cuspid is a task that often means a merciless use of the grinding wheel with a running accompaniment from the patient of "you're taking away all my enamel, I shall have no tooth left," and when the grinding is done, the central looks like a lateral, and the cuspid like a peg-shaped supernumerary. We all know that without this the crown

*Read before the American Dental Society of Europe, Wiesbaden, April, 1909.

will not fit at the neck of the tooth, and the gum will always bear evidence of irritation.

After roaming up and down a number of years trying to steal

Fig. 1.

other men's ideas as to how they replaced lost laterals and lower incisors I ran across a case that refused to yield to the ordinary

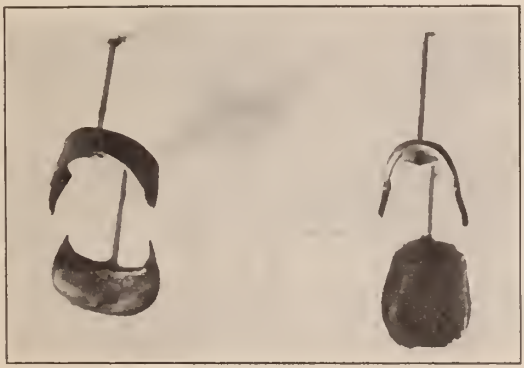

Fig. 2.

methods, and then I tried leaving the small gold band that runs across the front of the tooth unattached on one side and so arranged the loose end that it could be screwed tight to the backing, the artificial

tooth being cemented into place after the appliance was tight in the mouth. The outcome of this was that very little grinding of the tooth was necessary. Also when two crowns were used as supports the absolute parallelism of the two was not essential.

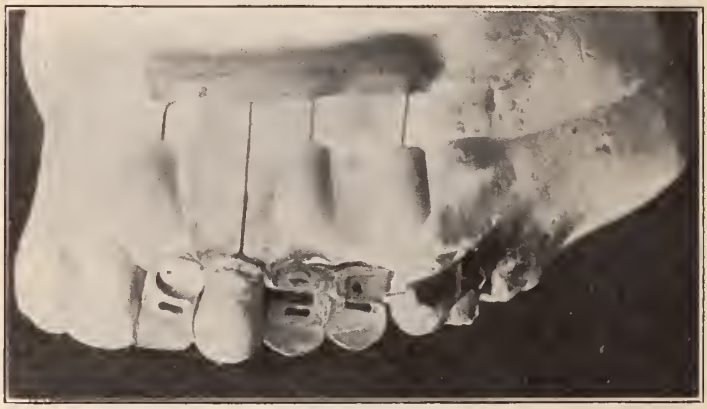

Fig. 3.

In doing this work I trim the teeth sufficiently to allow the thickness of the gold to go between and also relieve the bite so as to give space for the gold. I then take plaster impressions of the teeth to

Fig. 4.

be crowned using little wax cups or half cups that are taken away when the plaster is set. The plaster is then split, removed and sent to the work room. A separate model is taken of each tooth to be crowned.

On these models the crowns are then made in two pieces, back and front, and these are adjusted at a subsequent sitting to the teeth in the mouth. They are then wired tightly on to the teeth and a plaster impression is taken with them in place. This gives their exact position, and the case can be finished in the workroom.

The porcelain teeth are ground and adjusted to place, a small box is made of thin platinum that exactly fits over the two pins of the tooth. Under this box a platinum tube is soldered which is tapped with a screw thread. To the one end of the front half of the crown a flange of gold plate is soldered, which is pierced by a hole to

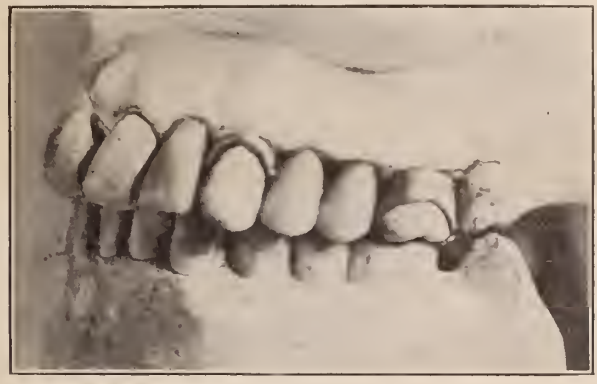

Fig. 5.

accommodate the head of the screw. These separate parts are assembled together and the biting surface is built up with wax and afterwards this is cast in gold. This is soldered to the back half of the crown or crowns and the last step is soldering the two halves of the crown together on the side opposite the screw. The bridge can now be fitted in the mouth with guttapercha, screwed tight and the teeth cemented in and varnished.

It is difficult to explain in words the different steps of the work but a glance at the cases and photographs I have sent round will show any mechanic in a minute how the work is done.

METHOD OF CAVITY PREPARATION FOR ABRAIDED ANTERIOR TEETH.

BY W. B. TYM, D. D. S, CHARLESTON, ILL.

In presenting this method to the profession I wish first to acquaint it with some of the conditions found in the case to be discussed, though the method may be used in many other instances.

The patient in this particular case is a gentleman of perhaps fifty-five years of age, possessing every tooth except the third molars, these having been extracted early in life. There was no caries in the mouth, the teeth simply being abraided until the act of mastication could only be completed with more or less pain to the patient.

This annoyance had been treated for several years by placing small fillings and inlays over the sensitive portions wherever found, but the annoyance continued until it was deemed advisable to resort to a possible permanent repair.

To restore the teeth, as nearly as possible, to their normal shape as well as function, was to be considered. In doing this a material must be used that would not only have a presentable color, but possess the qualities of withstanding the forces of mastication and wear.

Gold clasp metal was used to restore the molars and second bicuspids, twenty-two karat gold for the remaining teeth, clasp metal being of good color and hard enough to resist the wear from the strongest masticatory muscles, which in this case were much in evidence, the twenty-two karat gold being used because of the perfect end to end bite and the absence of any pure gold fillings in the teeth.

As to the cavity preparation used in all the teeth except the incisors, the occlusal portion of the teeth was ground off even and good margins obtained, then simply countersink into the dentin until a flat base and slightly diverging walls were obtained, these being of perhaps one and one-half to two millimeters in depth.

In Fig. No. 1 the cavity preparation used in the incisors is shown. Instead of cutting away the proximal portions of the teeth to secure additional anchorage over what could be obtained by deepening the incisal end, I have grooved the lingual surface extending gingivally to the lingual lobe, the depth being slightly more than the enamel and the width such as to leave a sufficient amount of tooth structure

to retain strength. As seen in this figure at A, a retention pit is made by extending the groove gingivally in the dentin under the lingual lobe to the depth of about one millimeter.

The usual rules are carried out throughout the formation of this cavity having flat bases and the walls at right angles to the bases, or as nearly so as the positions of the cavity bases will allow and still be able to withdraw a wax model.

A pin or post of gold or patinum may be employed for anchorage in the pit at the base of the lingual portion of the cavity or the linguo-gingival pit, though I found no difficulty in forcing the wax into position and cast the entire inlay.

Fig. No. 2 shows the lingual view of a cavity prepared in a lower incisor. The walls of the lingual groove are seen to diverge from the

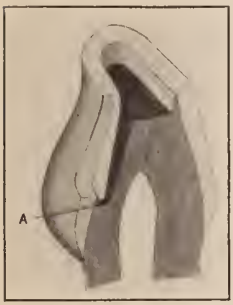

Fig. 1.

Fig. 2.

Fig. 3.

base incisally, which permits the wax model to be easily withdrawn.

Fig. No. 3 shows an inlay in position in the cavity of a lower incisor, lingual view. Labially the same amount of metal will be visible as is shown in the mesial and distal portions of the lingual surface of the inlay.

The advantages claimed for this method are that of strength, less irritation of live pulps, preservation of toothe structure and sightliness.

An inlay anchored in this manner is very hard to displace, it has support in every direction and in my mind will give the best of satisfaction.

The case mentioned is one rarely met with. One usually finds teeth missing or badly broken down so that crown and bridge work is resorted to, but in this case each of the twenty-eight teeth were pres-

ent and each one restored with a cast inlay in the occlusal and incisal portions.

The result of the work is all that could be asked. No trouble is experienced in masticating any class of food material, and no shock from thermal change. The bite is open about three millimeters.

THE HISTORY OF A CASE.*

BY M. E. GROSSMAN, D. D. S., HONOLULU, H. I.

Mr. President and members of the Dental Society of Hawaii: When our president requested me to give you a talk at this meeting, I was at sea as to what the subject might be—but a few days later a gentleman called at my office and his case so appealed to me, that I thought a history of it would be of interest to you all. I am simply stating facts as I found them and make no comment as it baffles me.

Ten years ago a gentleman who is a plantation man and resides on one of the other islands called at my office and stated that some of his teeth were growling and wanted me to see what I could do for him, also informing me that he must return home the next day.

I examined his mouth and found the following conditions: The left upper and lower first and second permanent molars were very badly decayed. The upper had large occlusal cavities and the buccal walls were gone. The lowers had large occlusal cavities but their walls were intact. I saw immediately that the pulps were exposed or would be in properly preparing the cavities.

I informed him that it would be impossible to properly fill them in so short a time, and that he must stop over—explaining to him the conditions, and that the pulps would have to be destroyed, etc. He stated that he must return, and asked if I could not fix them temporarily so they would not ache and that he would be in town in four months to attend the planter's meeting and that I could then fill them properly. I agreed to try, but informed him that in case they annoyed him in the meantime and it was necessary to have them attended to on the other islands before he returned, I wanted him in justice to myself to explain to the Doctor the reason they were filled

*Read before the Dental Society of Hawaii.

in the manner they were, as I did not want any one to think that I was in the habit of doing such slip shod work. This he promised to do, but I made a record of treatment and reasons, for future reference, for we all know how prone some folks are to soon forget and lay at your door what honestly belongs to themselves. I am now more than happy that I did so for the record is of great value and has set me thinking. I applied the dam on the upper teeth and I soon found that my diagnosis was correct. I managed to prepare the margins and walls thoroughly but the base of the cavities was a mass of mushy decay. We have been taught, or rather I was, that where we found a tough leathery mass covering the pulp, that it was proper treatment, and often the best, to allow it to remain and under proper antiseptic precautions cap the pulp. But never have I been taught or read of any one advocating such a line of treatment under conditions here existing except to temporarily bridge over a difficulty or rather an emergency. After preparing the margins and walls I flooded the cavities with a bichloride solution which at that time was my great standby as an antiseptic, and allowed it to remain about fifteen minutes. Then I gently dried them with bibulous paper and heat. I then mixed a stiff paste composed of Aristol and the true oil of cinnamon and covered the base of the cavities with a very generous layer and covered that with a thin mix of phosphate cement and finished it off with amalgam. The same treatment was followed with the lower teeth, but in the preparation I bruised the pulps and they bled very freely, which hemorrhage I controlled with peroxid of hydrogen.

That was a little over ten years ago and since that time I have never seen the gentleman professionally although his family have been and are patients of mine for the last twelve years and he informs me that he has not been to a dentist since. The week before he returned to me he was cracking nuts and broke away the buccal walls of both lower molars and fearing that he might lose the teeth or they might ache, he hurried to town. I found the following conditions: The fillings in the upper molars were in perfect condition, due allowance of course must be made for wear, etc., which is always seen in amalgam fillings after so many years. The lower molars had their buccal walls broken even with the gum margin, but it was a clean break and there was no decay present and the three materials of the

filling, aristol paste, phosphate cement and amalgam were all well defined, and the aristol paste was almost as hard as the phosphate cement. Pulps were alive, the slight drilling that was necessary being very painful. I did not remove the filling to see the condition as I was not hunting trouble. I simply made a few undercuts and added amalgam and I see no reason why they should not last for years. I regret that he would not permit me to show the teeth. Upon my request to do so he seemed very sensitive and said that he was not going to have everyone looking down his mouth, so I dropped the matter. But it has set me thinking.

Are we putting our patients to unnecessary pain and ourselves to unnecessary labor? Is this an isolated case and due to some peculiar systemic condition of this particular person? Or were the bacteria in these teeth aerobic and when their supply of oxygen was cut off they either succumbed or are laying dormant? On the other hand we are informed by such scientists as Miller, Koch and others that the bacteria which attack the dental organs are anaerobic and do not require oxygen for their proliferation. Now gentlemen do not for one moment think that I am advocating this method of treatment. I am simply stating conditions that I found in this case. I am a dyed-in-the-wool advocate of proper devitilization when necessary and thorough removal of the pulp and filling the canal to its apex with some suitable material when we can. I must say that I am not one of those gifted mortals that get to the end of every root canal and remove every particle of the pulp and fill every canal to its apex.

I have found a few teeth during my practice that I could not remove all the pulp and have not filled I know, each root canal to its apex and I think I possess the average amount of skill. In such cases I do the best I can—remove as much pulp as I can, render the canal as aseptic as possible and in addition to gutta percha, force a thin solution or mix of oxid of zinc mixed with equal parts of formalin and creosote (Buckley formula) into the canal and then trust a bit to nature. I dislike all proprietary preparations for mumyfying and condemn same as unscientific for general practice with our present knowledge.

I will admit that I have used in probably a dozen cases some kind of mumifying paste, but they were in cases that should have gone the forceps route, and there is only one that I have record of, and that

behaved itself for a few years and the others probably reached some of you gentlemen and were extracted and I probably was roasted and toasted by the patient for bungling work, they forgetting that it was done at their urgent request and against my warning and judgment. Gentlemen I trust that this will start a line of thought that may be of benefit to us all.

DENTAL ECONOMICS AND ETHICS: COMMISSIONS IN DENTISTRY.*

BY THOMAS L. GILMER, M. D., D. D. S., CHICAGO, ILL.

Twenty years ago I doubt if there ever was received or given by one dentist to another a tip for directing or referring patients. It was not until we got to specializing that this pernicious practice came into vogue. It was the specialist who inaugurated the tip or commission system in dentistry, as it was the specialist who inaugurated the commission system in medicine. The system has prevailed to a much less extent in dental than in medical circles, although it has been, and is yet, I am told, still practiced by some dental specialists. I am pleased to say that no dentist has ever asked me outright to pay him a commission, which I consider a compliment. Very occasionally I have had dentists feel me gently and when I did not respond I did not get the case. I can not say so much for some medical men. I have had letters from all parts of the country from physicians, saying that they had patients whom they would like to refer to me if I would pay a commission. Formerly I answered these letters, stating that I would not under any circumstances pay a commission, latterly I do not answer such correspondence at all.

The plea that is raised by the family dentist or physician is that he cannot get adequate fees for his consultation and referring of patients. That the patients will pay a good fee to a surgeon or other specialist, but will not pay anything like a decent fee to him. He feels justified, therefore, to circumvent his patients and get a good fee by getting the specialist to charge a sufficient amount that he may divide with him.

I have no doubt but that occasionally a good man has offered

*Read before the Chicago-Odontographic Society, May 18, 1909.

commissions, not realizing that he was doing a wrong and unethical act. He was not looking at the subject from a professional standpoint, but from a business view, and really there would be no moral harm done in giving or receiving commissions if it were openly done; that is, if all parties to the deal were freely conversant with the facts; but it would be unprofessional. But this is never done; the unfortunate patient is victimized. He is charged more by the specialist than the service is worth that the family dentist or physician may get a rake-off. It is vicious, immoral and wrong from every standpoint we may view it. What would you think of your trusted family physician did you know that he had sold you out by sending you to a man who would take more than a legitimate fee from you, and turn over the excess to him, he whom you believed was your friend, a man whom you could trust in everything. He has sold you out for a mess of pottage. If this matter of commissions is carried out to its fullest extent, those referring patients will send them, not to the best possible man for the service desired, but to the one who will pay the largest commissions, regardless of qualifications of the one to whom he refers.

No man can claim to be a professional man who either refers or accepts patients from another dentist when commissions are considered. Dentistry is a profession, and the sooner the commission man gets out of it the better. No society can afford to permit such a man to remain in its fold—and when we know a member who so lowers our profession by such practices we should expell him at once.

COMMISSIONS IN DENTISTRY.*

BY F. B. MOOREHEAD, M. D., D. D. S., CHICAGO, ILL.

Mark Twain, standing on the "Bridge of Sighs," once said: "I can never forgive Lord Byron for coming here before me. The splendid things he said about this place I would have said. The emotions that thrilled his soul thrilled mine. It is plagiarism, I cannot, I will not forgive." We sympathize deeply, understandingly with Mark, for the things we would say upon the theme assigned have been

*Read before the Chicago-Odontographic Society, May, 1909.

said by those first on the premises. However, the last word has not been spoken, and we would venture a simple statement, even though it may be considered a word of supererogation.

The greatest teacher and exponent of ethics in the world's history never made a single rule of conduct for men. He did something far better and wiser, he enunciated great principles which cover every phase of human activity. Action based upon principle is better than action based upon rules. There is a law higher than the Constitution and more comprehensive. The necessity for rules by which men shall act is an open acknowledgment of weakness. Moreover, the making of rules puts men on the defensive. The ax will never be laid at the root of the tree until men are constrained to be guided by deep convictions, the product of lasting principles. He rules best who appears not to rule. The spirit of patriotism wins more battles than a court martial. Rules are temporary—subject to change. Principles are basic, and change not.

In this matter of giving and receiving commissions, it would seem that no rule is necessary. A simple knowledge of right and wrong will suffice. The man who gives a commission, regardless of the amount, pays a big price for the patronage. He "sells his birthright for a mess of pottage." Second, he enters into a dishonest agreement with his colleague. Third, in buying a patient, he feeds the commercial spirit and starves the true professional spirit. Commercialism is, and ever has been, the curse of scientific progress. Fourth, he is a partner in offense, for he buys that which no man owns or has the right to sell. Both the buyer and the seller are equally guilty. Fifth, "He sows an act and reaps a habit; he sows a habit and reaps a character; he sows a character and reaps a destiny." He is destined, ultimately, to stand in the presence of his profession, an undesirable member.

The man who sells a patient sows to the wind and after awhile reaps the whirlwind. It does not pay to buy patients, no matter how small the price, or to sell them, no matter how great the price.

In this traffic, the party of the first part is just as guilty as the party of the second part. The party of the first part could not sell if there were no party of the second part to buy. The converse is equally true. The party of the second part could not buy if the party of the first part had gone out of business. It were better, therefore, for both parties to retire at the same time—better for the patients.

One of the worst features of the whole matter is the fact that the patient is bought and sold without his knowledge or consent. This fact alone stamps the practice as evil.

After all, the test of character is service, and the opportunity for rendering a real service to the patient is nowhere greater than in placing him in the hands of one who is qualified to care for his needs.

Patronage should never be considered in the premises. It is not a question of reciprocity. Whatever charge is made by the surgeon or the practitioner referring the case, should be made to the patient direct. There should be no collusion. Both parties should not only shun the commission evil, but the appearance thereof. This will bring the best results, even considered from the selfish standpoint.

COMMISSIONS IN DENTISTRY.*

BY C. S. CASE, M. D., D. D. S., CHICAGO, ILL.

The question of commissions like most questions is one upon which there are two sides. As I have had experience in both methods of practice, a recital of some of the conditions and incidents which arose may be of interest and of possible instruction to those who contemplate the giving or taking of commissions.

Nearly twenty years ago when I came to this city with the determination of limiting my practice to orthodontia, and the mechanical correction of cleft palate, many of my friends prophesied it would prove a failure, and it was through their advice and concurrence that I issued a circular letter to dentists advertising myself as an orthodontia specialist, with the proposition that I would return twenty per cent of my receipts from every case to the dentist referring it.

Through this influence I was soon able to gain a foot-hold, which came just in time to prevent the undertaking from becoming a failure.

I had saved but very little money from my former practice, though a fairly remunerative one, and during those years my family had acquired habits of luxury that were hard to curtail, which with the increased rents and living expenses of Chicago, soon dwindled my

*Read before the Chicago-Odontographic Society, May 18, 1909.

small savings to nothing, and had it not commenced to go the other way in time, I should have felt obliged to go back to the old stand in Jackson, Mich., with its life-long drudgery of days, and even nights, with moderate fees, and with the possible contingency of finding myself and my family in the same sad condition as others whom we have known, who were once prominent and prosperous dentists, but in later years were dependent upon the charity of their friends. Therefore I have never regretted that early experience, though even in those days it was regarded by some as not up to the highest standard of professional ethics. But it should be remembered that this was in the very earliest days of specializing in dentistry, and when the number of orthodontia cases that were referred to others were few compared to the present time, in which there is not the same need to resort to every legitimate means to gain a practice. A number of the better class of dentists who really helped me the most refused to accept a commission. Others did so under protest, and others refused to accept more than the percentage of the first payment. In acknowledging the receipt of my first checks which were returned or not, from these gentlemen, they frequently wrote fine letters, which said in substance that they referred cases to me purely for the benefit which they believed the patients would derive at my hands, and with no thought or wish for a share of the fee.

It affords me great pleasure to know that in this way I was able to give material aid to one whom we have all loved, without having him feel that it was charity, and which his real need of money forced him to accept with protest, but with many heart-felt thanks.

Unfortunately the great majority who accept commissions refer their cases purely on that account alone, and will send them to the man who will pay the most, even though they know that there are others who are far more skilled, from whom there would be less or nothing in it for them.

After about four years of this experience, fraught with many unpleasant and even embarassing situations, I was glad to advertise in the two Chicago dental journals that I would discontinue paying commissions for cases referred to me.

In a number of instances, two and even three dentists claimed they had referred the same patient, and it was often difficult to deter-

mine who I owed the money to, and which frequently resulted in the recept of angry and insulting letters.

At one time a military dentist whose memory we revere, and to whom I was under great obligations, brought in an old army friend with his son and asked me to regulate the boy's teeth at the lowest possible fee; which I was glad to do on his account—telling the father the amount I would charge, which was less than one-half the regular fee. About two months after we had started the case, one of my commission friends rushed into the office under great excitement, and asked if I was regulating the teeth of Captain Doe's son. I told him I was; and how and by whom the case was brought to me, etc. Well, to make a long and very unpleasant story short, he told me how they had been patients of his for years, and for months he had been educating the parents to having the boy's teeth regulated, and particularly to a willingness to pay a large fee, which I have reason to believe was because his percentage would be proportionately increased. He had not mentioned my name to them, but had intended to refer them to me. When I explained to him why I could not under the circumstances pay the percentage he demanded, it is needless to say that I have been obliged to exist all these years since, without his aid.

For the last twelve years, with the exception of one case, I have paid no formal commission to any dentist for referring cases. But I have always endeavored to return the compliment commensurately in other ways, and which in some instances, I am confident, has amounted to more than the stereotyped commission; to say nothing of the far greater satisfaction to be derived from the consciousness that we are true to our patrons, with nothing covered up, of which in our hearts we are ashamed. Out of this has grown many warm fraternal friendships through that interdependence upon each other, in the earnest desire to accomplish the greatest possible good for our patients.

COMMISSIONS IN DENTISTRY.*

BY A. BROM ALLEN, D. D. S., CHICAGO, ILL.

Mr. President, Ladies and Gentlemen of the Chicago-Odontographic Society:

The subject of my paper this evening is: Should the dentist

*Read before the Chicago-Odontographic Society, May, 1909.

in any branch of his profession pay his fellow practitioner a commission, in order that he may increase his practice by so doing? In my opinion, as well as the majority of the members of this society, this should not be done.

There are members of this society to whom I feel this matter of commissions does not appeal. And why should we not try to uplift each other, instead af tearing down the good that can be done without such recourse in practice?

It is well known that, work as hard and honestly as you can, and give the best efforts in you, it is impossible for any one man with his two hands to roll up any great amount of capital. Those of you who have been in the profession for some time can look back and see where so-called successful men, after years of hard work in their practice, have been dependent on their friends in their last days. And such cases as these make one feel that we should be willing to help one another, and not feel we should accept a commission for sending a patient to someone who has made a specialty of oral surgery, orthodontia, pyorrhea or extraction in dentistry. He has devoted his time to perfect himself as far as possible, so that he should be able, with his knowledge and equipment for special work, to do it better than the man who does it only occasionally. In regard to commissions being given: The man who accepts it is worse than the one who gives it. And right down in our hearts, no one feels good about it, and would much prefer to have the patient referred without conditions attached, as per commissions.

Have you ever given the matter thought? If your patient was aware that you were accepting a commission on the work, when you send them to a specialist, do you think they would approve of it and go back to you for work? I should say no, in the majority of cases.

You may argue that giving a commission does not add to the cost of the operation. Yet let the dentist go to a dental depot and buy his supplies. If he finds out the house is giving 25 per cent commission to someone who sent him, he would naturally want it all himself and protest because he was abused. Yet he is only too willing to accept it himself and try it on the other dog.

Were we to base our professional services on the same standing as the Interstate Commerce Law, in which we are all interested, the one who accepts rebates is as guilty as the one who gives them. And

every effort is being made to stop such practices. So, from a matter of common law, the giving of commissions or rebates is illegal.

Our society is supposed to protect all its members and band together to help each other and work for the betterment of our fellow practitioner as well as the society. Yet we hold over some who come to us for membership because they have offered commissions on cases sent to them, when right among our members are those who are doing the same thing and no questions asked.

I feel the best thing some of us can do is to read Charles Reade's "Put Yourself in His Place." I find as I grow older in the profession that if one will look at the thing from the other fellow's standpoint he will have more good feeling for his fellow man. Whenever your feelings are hurt, whether you get the commission or not, just put yourself in the other fellow's place and see how the point of view is from there. And in most every case you will be better satisfied with the situation, and have a more contented mind.

Let the general practitioner who sends his patients to a specialist where he gets a commission have a patient come to him through some one, and they demand 25 per cent on the bill for sending them. And see the moving-picture of his doing it. Yet he is willing to accept that which he would not give himself. Patients should be sent where they can get the best treatment, regardless of any returns to the dentist, and if he has their interest at heart he will do so, and not give the matter of commission a thought.

Do good, honest work, give the patient something in return for his money; put forth your best efforts to uplift your profession, and do not drag it down, and by so doing make it more undesirable than it is at the present day.

COMMISSIONS IN DENTISTRY.

BY F. K. REAM, M. D., D. D. S., CHICAGO, ILL.

The subject of the symposium this evening is a much mooted question in both the medical and dental profession, the solution of which will doubtless be deferred many years hence.

The Physicians' Club of Chicago and other societies have dis-

*Read before the Chicago-Odontographic Society, May, 1909.

cussed the question of rebating, arriving at no positive plan of controlling the practice. One year ago I endeavored to bring about an agreement between the extractionists of this city and after numerous meetings the effort resulted in a failure. Members of the profession are greatly divided in their views; some maintain the division of fees as wholly wrong from many standpoints, while others believe it purely a personal matter to be decided by the specialist and dentist.

Almost every specialist in Chicago, insofar as I am able to learn, in his early practice divided his fee with the dentist, so that men entering the specialty later on have been confronted with the problem.

After carefully observing the system I am led to believe that, in the majority of cases, the men who accept a division of fees really need, or believe they need, the money. The position of the specialist is a peculiar one. He enters the field anxious and willing to work hard to please the profession and finds a large following awaiting him who are willing to extend their patronage providing he will divide his fee. They tell the specialist: "We take our time to induce and bring the patient and we must take a chance at the operation ourselves, if we cannot get some compensation." Not being so radical as some members of the profession, I believe the men who have these views are as conscientious and honest in their convictions as those opposed to them. Personally, I am opposed to the system and believe the specialist earns his fee, but until we approach a higher degree of idealism or the coming of the millenium, we should be tolerant with those who differ with us. If the practice is wrong the profession must disinherit its own child and induce its members by moral suasion, not coercion, to change their views.

The present high status of dentistry is the product of labor and evolution, and by the addition of patience still greater strides may be anticipated.

I desire to quote briefly from a letter that recently came to my notice, dated outside Chicago, which was received in reply to one sent containing a division of fees.

"Dear Doctor:

"Your letter with enclosure found me sick in bed, which I would rather not accept, but I am getting along toward the end of the road, in my 73rd year, and have but a short time to stand at the chair. After being in practice forty years, my health is very poor, and I am

on the sick bed a large portion of my time, so that doctors' bills and lost time make it close work for me to make ends meet, so every dollar helps me out, and I wish to thank you from the bottom of my heart for your enclosure. Yours cordially."

This letter, in my mind, tempers the crime of fee-splitting, and convinces me there are two sides to the question.

I would not have my discussion create the impression that I underestimate the dental society. I believe the dental society is the soul of the dental profession, and every member should be ardent in his devotion, but I equally believe it is possible for a society to err in its rulings as may an individual.

If it is the purpose of this society to correct evil methods of its members, there are others equally momentous, if not greater, than fee-splitting.

THE PAYMENT OF COMMISSIONS.*

BY A. F. JAMES, D. D. S., CHICAGO, ILL.

While I am assigned the discussion of this subject from the standpoint of a Pyorrhea specialist, I wish to say in the beginning that I do not think it possible for any one to devote his efforts exclusively to the treatment of pyorrhea.

There are many other conditions in all pyorrhea mouths which are the predisposing causes, or are the cause, of this disease, and these conditions must be corrected as surely as the diseases should be treated. It is my belief that the things that will make any man a specialist in any particular line would be his long experience in general practice, seeing and coping with conditions which tend toward these different pathological conditions, and the devoting of his time toward some special line, gradually building up a reputation among his patients and by demonstrations in clinics and the reading or publishing of essays, show the profession what he is accomplishing. In this way the time may come when it would be advisable or necessary for him to devote his time exclusively to patients suffering with this special disease.

This, in my mind, is all that would make a true specialist, and

*Read before the Chicago-Odontographic Society, May, 1909.

such a man would not have to depend on the profession at large for patients and would be under obligation to no one, and there would be no question of commissions or the limiting of his work to the correction of just one condition and no other when there were complications making it necessary for a combination of work being done in one mouth.

In reference to the payment of commissions, I do not believe it is right in any case, and do not think there could be any argument brought forth justifying it.

PRESIDENT'S ADDRESS.*

BY N. MELAIK, D. D. S., EUREKA, ILL.

Before starting on my address proper, I want to thank this body for the honor they have conferred in electing me president for the past year. It is, indeed, an honor to preside over one of the best component societies in the state.

This organization has made a growth in the past four years, not of the mushroom variety, but a development that is healthy and sound. Why this advancement? Because it is founded upon principles that are right, principles that are unselfish, and that promote our own interests and those of the public as well. Article II of our Constitution reads:

"The object of this Society shall be to promote public welfare by the advancement of the Dental Profession in education, science, mutual fellowship and good feeling, by union of effort with other local organizations, and by co-operation with the medical profession in all matters of mutual interest and advantage to the people of the State."

The object of this society, then, is to improve and elevate the character of the profession, to imbue its members with a proper conception of its relation to the public, to enlarge the sphere of our knowledge; in a word, our aim is to uplift and relieve suffering humanity.

One other reason why we are in a healthy and progressive condition, aside from having a good "Constitution," is because of the

*Read before the Peoria County Dental Society.

untiring efforts of some of our members, and especially because of the efficient work done by the various committees, all of which have my personal thanks.

I should like to offer a few suggestions to the program committee of the future. This society has but four sessions in the year. First is the January meeting; why not give this up wholly for the promotion of "good feeling" and mutual fellowship? The program that is usually arranged is very good; the election of officers, president's address, a banquet and a good time is all that is necessary. Our March meeting might be given over to an evening of short papers by our members on practical subjects, and a question box. At the September meeting let us have an afternoon session of clinics by our own members and an evening program of a short paper or two and the regular order of business. In November, why not have imported talent, and invite the surrounding component societies as our guests or ask them to adjourn and merge the several societies into one for that particular time? This commitee should have no trouble in getting members to respond to any reasonable request made to them. Most of us have been attending these meetings for the past four or five years, and by this time we are accustomed to hearing our own voices; and with our membership of about forty, it would not be necessary for anyone to be called upon more than once in the twelve months.

The membership committee is to be commended for the excellent work accomplished in the past twelve months. Through its efforts a number of new names have been added to our roll. A very noticeable fact is that none have been dropped for non-payment of dues, and thanks are due our worthy secretary for his efforts along that line. For the future committee there is much to do. There are still fifteen or twenty eligible men in the district who should affiliate themselves with us and we should have some systematic way of getting them in. Much credit should be given the legislative committee for the success they have had and the efforts put forth.

And now for a brief time it may be well for us to discuss the value of organization and association, especially as it pertains to our own profession. The man or woman who shuts himself or herself from association with kindred spirits, suffers both mentally and physically. The dentist who does not associate with his fellow practitioners soon falls into a rut and stays there, and, gentlemen, "The

only difference between a rut and a grave is the depth." Unlike other professions, dentistry is advancing in leaps and bounds, and it is indeed difficult for our most brilliant minds to keep abreast with it. In justice to ourselves and the public in general, we should avail ourselves of every opportunity presented by such organizations as this.

The objects of this society have heretofore been mentioned. Let us not mistake them. While we are banded together here for protection against unscrupulous men of the profession and frauds of various hues, while we meet for mutual fellowship and good times to relieve ourselves from the daily grind of the office, while these may be some of the objects of this society; yet they should be but a tithe of its intrinsic value. Gentlemen, the prosecution of illegal practitioners should pale into insignificance compared with the work this body has before it. This organization is not a labor union, nor is it a dental trust. We do not seek especially to raise the price of our labor, nor do we desire to monopolize knowledge and skill. We should be past all these things. Not ten days ago, in speaking to a fellow practitioner about joining this society, the remark was made by him that he did not see the necessity of joining, that he was getting better fees all the time. At the time we were speaking he was getting $5.00 for gold crowns and as high as $4.00 for large gold fillings in the molars. He must have started from the very first round of the ladder. The subject was soon changed from dentistry to the weather. We do not desire such men in this society who imagine in their warped minds that nothing can be gained by rubbing elbows with their kind, and who think that the main topic for discussion at these sessions is prices. The man who puts on a crown for $3.50 is guilty of malpractice. Or, if he should do his work properly, he is playing the hold-up game with himself. We should be honest with ourselves as well as with our patients. This line of thought could occupy a paper by itself, and perhaps would not be altogether in place to comment on further at this time.

A few words in regard to the study club might not be amiss. While it is not a part of this society, yet you might say it is a side degree of the order. It is composed of some of the best men in our local organization, and it would naturally follow that their aim is a lofty one. The study club is a degree higher in the process of organization. Perhaps we are not all ready to take that degree.

In school the first practical work we had was the treatment of teeth. We all know where the abscess row was. Is it not true that the most of us should be there at the present time? How many of us can successfully treat and fill 75 per cent of all root canals? Pause and think of the myriads of teeth that might be saved if we were more enlightened along this line. Think of the irreparable injury done to hundreds of individuals by extracting when the patient's health depends upon a few sound molars that have been injudiciously removed.

Gentlemen, not a word has been said in a sense of criticism as to this organization, only words of commendation can be offered for its members and for the object of the club. Look into the future and you can see the merging of these two organizations. The state society will not be composed of component dental society, but component study clubs.

In conclusion, we should be ever zealous to promote the interest of this society, yet temper our zeal with prudence. We should lay aside all malice, prejudice, or ill feeling that may exist and do all to promote good fellowship. Let us try to elevate ourselves, not by "pulling on our own boot-straps," but by putting our shoulder to the wheel of progress and pushing. The dental profession should stand second to none in its value to humanity and benefit to mankind.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, FORTY-FIFTH ANNUAL MEETING, AT DANVILLE, MAY 11-14, 1909.

DISCUSSION OF C. B. ROHLAND'S PAPER, "A SERMON ON LACK OF AMBITION ALONG INTELLIGENT LINES IN THE PROFESSION."

DR. C. E. BENTLEY, CHICAGO:

Our essayist has submitted a brief in which is contained an implied indictment against the rank and file of our profession. Tacitly he has told us that there is a lack of ambition and effort along intellectual lines in our profession; that the recognition of our proper social and professional standing is retarded by this and kindred causes. He has pointed one way by which these insidious faults may be overcome. These charges are vital and sound like "a new knock

at an old door." Let this accuser come in and see what of truth he has in him. Are these charges true—and if so, what are the causes, and what the remedy?

First. Let us be honest with ourselves, by frankly admitting the truthfulness of the charge. Why? Because, in the language of the street, "he has caught us with the goods."

Second. What is the cause? As there is a cause for every effect, so might we, were we the attorney upon the other side, produce an argument upon the causes that might justify our present condition to which the essayist alludes. We might speak of the youthfulness of our profession; of its not yet having attained its full stature; of its doors of opportunity but barely opened; but, most important of all, of the commercial spirit of the age to which we all more or less subscribe. The plain fact bluntly told is that we as a people are money mad. In the nation's legislative halls, in the churches, in the great political parties, in social groups, in fact, everywhere, we see principles sacrificed to expediency, especially when that expediency can be translated into dollars and cents. Yesterday it was the coach and four—today it is the costly automobile—tomorrow it will be the airship. The simple life has no longer any attraction, save for a comparatively few crustaceans who survived the paleozoic age. It is a fundamental social law that what the financially competent do, all others, whether financially competent or not, try to imitate. It requires less courage for a Binns to stay upon a sinking ship and send forth aimless telegraphic messages, than for a woman to wear a last year's bonnet. We, as a group, are no different in our desires and degrees of immunity from surrounding influences than are other groups. If we see the rich in automobiles, and their wives wearing fancifully bedecked headgear with plumes and feathers flying, we, too, want automobiles; we, too, want our wives' hats after the latest fashion, even though that style disfigures the beautful face that peeps from under its hideous eaves. Now, these hats and automobiles do not grow on trees. If you want them you must pay for them. So the dentist, like all other men, pursues the line that offers the least resistance, and does the thing in his calling that brings the quickest results. If a dentist can make $20 in sixty minutes by making a gold inlay, while it may take sixty hours or weeks for a bacteriologist to discover the habits of a new bug, we may rest assured that the majority of dentists are going to make the inlay and

let the bacterial browser hustle as he may. This, as we said before, is but a reflection of the days in which we live, and may afford a rebuttal argument against the charges made by our essayist.

Parson Rohland has told us, as a result of his Scripture browsing, that "unto him that hath shall be given, but from him that hath not shall be taken away even that which he hath." The crux of this text lies in the implied admonition to lay hold of those things that are lasting, eternal. Sir William Hamilton says: "There is nothing great in this world but man, and nothing great in man but mind." The plea of our essayist is that more of our investments, as a group, be made in things that develop the mind and less in those things that only gratify our material desires. The former are lasting, the latter are ephemeral—the one develops the character, the social efficiency, the professional competency of the group, the other creates a heterogeneous mass with but slender ambitions save the selfish one to get all and to keep all for me and mine.

The claim that ours is a learned profession will not stand the test simply because of our mouthings and declamations. Neither will it stand because here and there great reaches have been made by members of it, but rather by the average intelligence and culture of the members that compose it. Assuming, then, for sake of argument, that the charge that the essayist prefers is true, what can and should we do to remedy it?

He has said, among other things, by writing of papers, reading the journals and attendance upon societies. Yes, and again yes—and more. Reading, and again reading—90 per cent reading, 10 per cent writing. "Reading maketh a full man." Were I asked to choose, on one hand, a college education and the deprivation of reading ever after—and, on the other hand, the privilege of reading books whenever I so desired, I would choose the latter. Books are the greatest companions of the mind, and you can dismiss them or entertain them without the usual conventions that obtain in polite society. Then again, they create for you your ideals—and what is life without ideals? Dr. Angell, in a recent address, said: "Cherish your noblest ideals. Try to live up to the best thoughts that come to you in your best moods. Even if sometimes you fall below them, return to them again and again. For if you are hospitable to their visitations they will never lose altogether their lifting and inspiring powers."

Another remedy I should suggest is that of contact, which is the greatest civilizing influence in the world. Seek contact with the best and noblest men and women with whom it is possible for you to associate.

Social Status—I believe as to the social status of the dentists more depends upon the man than upon his profession. Social recognition comes to one in proportion to his intellectual and moral and cultural worth, and not because of his degrees.

Here, then, have been mentioned three self-helps, *reading, writing* and *contact.*

The profession, however, has a duty to perform, and there is perhaps no more hopeful sign of progress among us, in the last quarter of a century, than has recently been inaugurated for promoting the ambition along intellectual lines in our profession. I refer to the post-graduate work for which our worthy president is largely responsible. In this movement, the profession of the state attempts, in an organized way, to mitigate the evils to which the essayist refers. In this the profession has assumed its burden of the responsibility. It is an indisputable fact that people are, in great part, what they are, because of where they are. New influences from without may produce new inner powers, which may not only earn better place for self, but may liberate others from conditions unworthy of them. Though a sunken ship may be mainly of iron and might never stir to raise itself, we may go down to it and by driving air in and water out may see it, of its own motion, rise again to noble uses. So with man. The post-graduate work is a force from without exacting certain duties—imposing certain responsibilities and granting positive benefits. It is a new, invigorating element, that constitutes a part of our professional environment.

First. It compels you to read.

Second. It probably will make you write.

Third. It is a new contact point.

It is with considerable trepidation that I have supplemented this sermon with my remarks, for experience has taught me that such advice is rarely heeded and often misunderstood. But such words as the essayist has spoken should ever and anon be sounded from the house-tops to indicate to the new recruits the proper paths and danger spots. But,

"It taketh an age
To make man a sage,
The wise ones no longer doubt it;
The older he grows
The more he knows
And the less he talks about it."

Dr. W. H. G. Logan, of Chicago:

I take it, this paper was written for a single purpose; namely, to give the young men of the profession an opportunity, and how are we to do it? We can tell a man that he ought to do something, but if we do not tell him how to do it, we have wasted some of our time.

After some thirty or forty years spent in observation and in the active practice of dentistry, Dr. Rohland has come before us and presented his views in the form of a sermon on the lack of ambition along intellectual lines in our profession.

When we have an opportunity to consider it closely, I am sure that we will discern that the essayist's view of the future is a hopeful one, although he expresses regret that the young men of our calling are not sufficiently interested in the intellectual side of our profession.

The paper seems to endeavor to differentiate between the intellectual development of a man who spends his mental energy upon the perfection of some practical mechanical principle and the man who writes a lengthy theoretical paper. Mayhap the essayist is in error in trying to differentiate the degree of intelligence that is required to write an essay over that demanded to perfect a good clinic. Personally, I frequently have found it less difficult to write how perfectly easy it was to diagnose a certain lesion or to perform a certain operation than it was to go before the same audience and diagnose the practical case and make the operation. And because of this fact I have grown to feel that we frequently neglect to give due and equal credit to the men who devise and perfect various mechanical principles that are of inestimable value to the profession, and through the profession benefiting the human race.

I cannot see any important gradation of individual intelligence that expresses the workings of the mind through its fingers, by the creation of a beautiful restoration in the human mouth or the placing upon canvas a representation of some great historic event than those men who portray their ideas through voice or pen.

In spite of the remarks just made, I wish to agree with the essayist when he affirms that the young men of the profession are

more often found showing some practical point in the clinic room than they are heard reading papers. And I am not sure that the reason cannot be found in that they have not been invited to prepare or discuss such papers, but have been urged to conduct clinics.

Then, to the program committee and the older men, I believe it is fair to say that if you would develop the latent talent of young men, you must not only give them encouraging words, but the opportunity. And to the young man who cares to take an active part in the profession, is it not fair to say that you must give some proof to the powers that be in your local society that you are interested and desire to become capable. I feel sure that many of our young men have neglected to do this, and I am equally sure that many of us older men have shown a lack of interest in getting young men started in the discussing and reading of papers. This leads me to consider, first of all, how can a young man get this start? The best plan a young man can pursue is to take up writing papers and discussing them. I will tell you of an instance I know to be true. Some years ago a young man entered the profession in this state. He attended many of the meetings. He went to these meetings with the idea that he would say something, but went home with it unsaid. At last he made these rules. He would never discuss a paper that he had not prepared for before he attended the meeting; he would never speak beyond five minutes; in the first five years of his professional life he would never prepare a paper unless the opportunity was given to him. He lived up to it. I would say to the young man, prepare yourself. Go to the meeting. Do not be in a hurry to get rid of what you have prepared. Let the best speakers have their say. Let those who are versed in the subject discuss it. Then, there is one yet to follow before you should speak, and that is the habitual talker, the man who discusses every paper that is ever read. (Laughter.) He discusses papers in a rambling sort of way. He asks many questions, with little or no meaning. He sits down, and everybody hopes he will go home. Now is your opportunity, young man. (Laughter.) Rise to your feet. Get rid of your prepared speech, and if you do not have to use notes so much the better. At all events, make your speech, and then quit. If anyone should compliment you on it, you may feel next time you get up to speak more encouraged to do so, because of your increased knowledge of the subject. In this way you will get along, but do not forget to

confine your remarks to the five-minute limit. The result will be the program committee will be coming to you, wanting you to take a more active interest in the affairs of the society. You will ultimately read papers and take an active part in the work, provided that you have the knowledge to back up any statements you may make. How can this knowledge be gained? There is only one way to gain it, as the essayist has said; namely, by reading, reading, and to keep on reading. Acquire the habit of reading. The best way to read is to set aside so many hours a week for this purpose. Let it be six or seven—spend one hour a day in study. Some days you may not be able to do it, but sometimes you can spend several hours in studying. Make it a practice to read at least one hour a day throughout the year, with the exception of one or two months during which you take your vacation. I would not read in the office, if I were you, because your reading would be disturbed by patients coming to see you. Learn to read methodically. Learn to tabulate what you read. The best way is to select some place, some chair in some quiet corner in some room, by a good light to read by. This should be given up to the reading of dental journals or books pertaining to your profession.

Again I would say to you, young man, do not go home from this meeting feeling sore because you did not get a chance to talk. You probably did not come here prepared to talk, and if you do not, you have no right to take up the time of the society. Go home. Make up your mind that you will read so many hours every day, and tabulate your findings, and give others the results of your reading at the appropriate time.

A word or two more. Do not let the pleasure of reading crowd out the obligations and the joys of your home. Devote so many hours to your wife and children. When a man gets to the point that he locks the door to keep out the children who want to play with him, his life is not what it should be. Study the things which pertain to your profession methodically. Study to make your home as it should be, and life will be worth living.

Dr. Rohland (closing the discussion):

I believe I have but a word to say in closing, and that is in reference to a remark made by one of the speakers to the effect that the older men always did most of the talking in the society, thus conveying the impression, I am afraid, that they intentionally monop-

olized the floor, thereby preventing the younger men from taking an active part. This, I believe, is not correct, at least not in all cases, and most certainly is not the policy of the active participants in this society. I know that very often those who take the lead in the discussions do so not because they want to, but because the duty is thrust upon them, and because others hold back, and they are not willing to let the proceedings drag.

Indeed, I have heard Dr. C. N. Johnson himself, for instance, and others, both here and elsewhere, when called out to speak, deprecate doing so, because they did not want to monopolize the floor, and wanted the others to come to the front, and the younger men especially to feel that this was their meeting, and their opportunity.

And that, I know, is the feeling that is uppermost, especially in this society. It is nothing if not educational. The drawing out of the inactive is its dominant idea—they want every one to have a chance, and the sole object of my paper has been to encourage the younger men to take that chance—to impress upon them that they all, no matter how much or how little education they may have, have it within them to do their part creditably, if they will only study and work, and that they owe it to themselves and their society to do so.

I thank you.

AMERICAN DENTAL SOCIETY OF EUROPE.

MEETING AT WIESBADEN APRIL 9-12, 1909.

DISCUSSION OF THE PAPER BY DR. W. DUNN ON "FURTHER EXPERIENCES WITH HIGH FREQUENCY CURRENTS."

In conjunction with the essayist, Dr. C. H. Abbott demonstrated the use of the rays and showed the beautiful luminous effects obtained in the vacuum tube by the high frequency current.

Dr. C. H. Abbott (of Berlin), in opening the discussion, said Dr. Dunn's paper had interested him immensely and he shared with Dr. Dunn the conviction that there was a great future for high frequency currents in dentistry, and not only a future, but a present, as it could be well said that many had already profited by the treatment. The profession owed to Dr. Dunn the first really concise and scien-

tific description of the high frequency treatment in dentistry. His own experience had been more limited and his apparatus was less effective than the apparatus used by Dr. Dunn; but the few hundred patients to whose gums he had applied the current had expressed themselves greatly relieved and were not to be convinced that there might be any possible doubt of the justification of their belief. The well established fact that oxidation acted most favorably on inflamed conditions of the mucous membrane, as was evinced by the use of peroxid of hydrogen and chlorid of potash, was enough to commend the use of the current, but to that had been added the marked diminution of blood pressure. Therefore, without going into any other virtues the current might possess, he thought those were sufficient reasons to induce dentists to give the method a fair trial in practice. He should like to know whether Dr. Dunn had noticed any hemostatic effect with the high frequency currents and whether he had any experience of high frequency currents in connection with X-rays and high frequency treatment?

Dr. William Dunn said he had not noticed any particular result or any particular hemostatic action from the use of high frequency currents. In the cases he had had he had applied the currents for lulling the part before extraction, but had not noticed any difference in the quantity of the blood after extraction. He had never used it in connection with X-ray work, although he considered the two sources of energy very akin to one another.

Dr. C. H. Abbott thought Dr. Tously in his article in the *Cosmos* recommended two minutes' X-ray treatment followed by five to six minutes high frequency treatment three to four times a week.

Dr. Dunn thought that might be most useful for the treatment of pyorrhea and similar troubles.

Mr. Sturridge (of London) asked whether any antiseptic solution was used in the pockets in pyorrhea cases while the high frequency currents were being used, or whether dependence was placed altogether on the action of the high frequency ray to destroy the bacteria in the tissue?

Dr. Dunn said he had tried the high frequency currents as subsidiary treatment for pyorrhea alveolaris with the use of antiseptics and without, and should give the preference to high frequency currents, because the usual antiseptics did not seem to have any greater result than the currents themselves. He had had a good many cases,

and he got the patient to come five, six or eight times, every two or three days, for the applications, which lasted five or six minutes, and they seemed to get well. He had been watching a case for over two years, and the conditions of the mouth were exceedingly favorable and showed no relapse whatever, and other cases were going on just as well. The currents were greatly antiseptic in their action.

Mr. C. P. Haselden (of Hamburg) asked whether Dr. Dunn had ever tried the effect of the current on cultures of bacteria of the mouth. He thought that would be a very good way of testing the action.

Dr. Dunn said he had not personally tried experiments on bacteria of the mouth, but they had been tried in Florence lately and had certainly had a wonderful effect in reducing the number of spores.

THE CHICAGO-ODONTOGRAPHIC SOCIETY.

The regular meeting of the Chicago-Odontographic Society was held in the Chicago Public Library Building on Tuesday, May 18, 1909, at 7:45 p. m. Dr. Fred W. Gethro, the president, occupied the chair.

The subject for the evening was "Dental Economies and Ethics."

Papers were read by Drs. T. L. Gilmer, F. B. Moorhead, C. S. Case, A. B. Allen, F. K. Ream and A. F. James.

DISCUSSION.

Dr. T. W. Brophy:

If I were to express my sentiments and then sit down, I think it would save you time. I don't suppose that a man ever engaged in special work in any profession who was not occasionally written to or spoken to by some practitioner who wanted him to divide the fees. It has been done in the medical profession from time immemorable, I suppose. Some men who are regarded as of good repute have been weak enough to accede to the requests of their fellow practitioners. The proper thing to do when one suggests a thing like that is to tell him to have the patient pay him for his services. If a practitioner travels a long way to the specialist, it is the duty of the physician or dentist to see to it that the patient pays him for his time and services. A physician might say, "Well, I will operate," or, "I will continue to treat this patient," when down in the depths of his heart he knows that he does not understand the case well enough

to give the patient the kind of treatment he really needs. If he is honest enough he would say, "I would prefer you to go to some man who has been giving this subject special thought for several years, and I believe he can do better than I can, but in doing this, you must pay me for my services in taking you to the proper physician or dentist." That is the proper way, and by so doing, the specialist would not need to ask a larger fee from the patient. It is the only honest way, and the man who takes a patient to another is entitled to compensation. No doubt the best service a physician or dentist can render is to take his patient to a specialist. I think a physician is entitled to that kind of consideration, but I don't think it is right, as Dr. Gilmer so emphatically stated, to expect a man to put himself in the position of exacting a fee from the patient in this way. It is a roundabout way to collect a fee.

I cannot say anything more than that, Mr. President. I do not believe it has been generally done. It may have been done in some instances by men who were unconscious of the seriousness of the offense, but I think when it is held up in the proper light before the members of the profession generally they will see to it that it is stopped.

There was a period in the Chicago Medical Society when that semed to be the first question to be discussed, and sometimes it was unpleasantly discussed. They went so far as to send out decoy letters to surgeons and specialists to see how many would respond, and if they would divide. I received a letter like that, and it went into the waste basket. I have no doubt that almost every specialist in Chicago through the medium of the Chicago Medical Society received letters like that to see how many would drop into the trap. I am glad that the question has come up, because it places the profession on a better plane, and unquestionably makes us feel that we are a more dignified body than to allow this practice to go on generally. This practice, I think, was increasing prior to the stir made by the Chicago Medical Society.

Dr. Gilmer, in his opening remarks, suggested a new idea to me, and I think it is very true. It is nothing more or less than a tip that the man gets for doing something. Perhaps this is a more serious subject than some of us suppose. We are a profession, as has been stated, and we must conduct ourselves like professional men and women. When the time arrives for an investigation of our pro-

fessional conduct, if people see fit to investigate it, I think it will be found that the members of the Chicago-Odontographic maintain a high standard, and are not giving an opportunity for adverse criticism in this respect.

Dr. Lloyd S. Lourie:

Mr. President, knowing that the speakers before me would probably cover the subject thoroughly, I have prepared no paper. I have, however, brought with me a copy of some resolutions passed by the American Society of Orthodontists, of which I am a member, showing the way the Orthodontia specialists these days are considering the question. These resolutions were adopted in December, 1906, and are as follows:

"Resolved: That in the opinion of the members of the American Society of Orthodontists, the practice of paying a commission, honorarium or any sort of fee in consideration for the reference of a patient, is both unwarrantable and unprofessional; and be it further

"Resolved: That the payment of any such commission, honorarium or fee by any member of this Society shall be sufficient cause for the expulsion of said member, by vote of the Society after conviction; and further be it

"Resolved: That in the case of co-operation in the care of a patient between the general practitioner and an orthodontist, there shall be no division of fees, but each man shall render a separate bill for his personal services."

This last provision was to overcome any means of getting around the commission business by saying that it was a division of fees.

I do not know that there is anything further I could say except this, that the very fact that the men who are most anxious for commissions are the ones that are most anxious that the patient should not know about it, is pretty good evidence that the thing is not on the square.

I am not going into my experience on the commission question, because I do not think this is an experience meeting, where every one is to get up and relate his part and take credit for his reformation, but I had a great deal the same experience when I came to Chicago that Dr. Case related, and I know many other specialists who have had the same experience. This resolution was passed by the Society of Orthodontists because the majority of members had come to the same conclusion that Dr. Case has arrived at.

Dr. J. P. Buckley:

Mr. President, I feel a great deal like Dr. James regarding this matter. I have never classed myself as a specialist, although I do receive patients occasionally from other members of the profession.

Dr. Gilmer tonight used the word "tip." I am surprised that so many men could have discussed this subject without using an equally common word, and one that is applicable, and that is "graft." To give or to expect commissions, in my opinion, ladies and gentlemen, is graft in its most flagrant form. I regret that Dr. Case feels, if he really does, that his success as an orthodontist in this city is due to the fact that he began by giving commissions. I would rather be Mr. Case in Jackson, Mich., than Professor Calvin S. Case in the City of Chicago, if I had to attain my reputation by giving commissions. But, ladies and gentlemen, lest I be misunderstood at this point, I want to say, that you could not keep back a man as proficient in his profession as Dr. Case. It was not, and I do not believe that Dr. Case feels that it was the giving of commissions in his early days in Chicago, even although the conditions were different from what they are today, that made him the great orthodontist that he is.

I feel that the whole evening ought not to be taken up in the discussion of such a subject as this, and I came here absolutely unprepared, and I suppose I must discuss this subject from the standpoint of the remarks that have been made here tonight. Dr. Ream seems to think that a man is justified in taking a commission because he has spent some time in talking to that patient in order to get him to go to the specialist. We send our patients to the specialist for one of two reasons: Either because we have not the ability to do the work as we know it should be done, or we feel that our time is too important, or, if you want to acknowledge it, that we can make more money doing something else than we can in doing that particular thing. If you or I have earned anything from a patient because we have spent some of our time trying to get him to go to a specialist, we ought to be man enough and honest enough to present our bill to the patient, and receive the fee from him, and not try to obtain the fee in an underhand way by means of a commission from the specialist. Dr. Lourie has stated that in his experience those who expect or receive commissions are never willing for the patient to know it.

I think that you can tell that I do not feel at home in discussing this subject, and I am not going to take up your time trying to discuss it, considering the difficulties under which I am laboring.

DR. C. N. JOHNSON:

Mr. President, if it had not been for Dr. Ream's paper, I do not believe I would have had very much to say this evening. I am willing to accept the position that every question has two sides, but I have the conviction also that this question of paying commissions has been presented to us tonight in a way that leaves absolutely no argument on the other side. Dr. Case made the statement that if it had not been for commissions in his early days of practice in Chicago that he would probably not have won a place here. I want to say to Dr. Case that he would have won a position here in any event, as Dr. Buckley has stated, and I firmly believe he would have won a position quicker if he had not paid a commission to a dentist in Chicago. He would have drawn around him earlier in his career a different kind of support from what he did, and I venture the assertion that the support Dr. Case has received since he stopped paying commissions is of a better character and on a more substantial basis than the support he received when he did pay a commission, because it is the sense of the honorable men of the profession that the paying of commissions is not only unprofessional but absolutely immoral. I know I have sent fifty thousand dollars' worth of practice to the specialists in this city, and I have never accepted one cent in commissions, and I promise you if I had held out my hand to receive a check or commission on a professional fee, I would have felt that hand besmirched. There is no kind of perfidy that I know of equal to that. If we are professional men, we are something a little different from mere business men, and in the business world today they are frowning on this question of graft as they never have before in the history of the world, and if it is not right in the business world, it is absolutely intolerable in the professional world.

Dr. Ream stated that it is a personal matter. Ladies and gentlemen, it is not a personal matter; it is a matter of principle, one that has to do vitally with right and wrong. When Dr. Ream mentioned this dentist that is now seventy-three years of age and has been practicing his profession for forty years and is now in a position where a commission seems to him a very acceptable thing, I could not help feeling, Mr. President, that if that man all through these years of

his practice had been looking at this from an entirely different point of view, he would not today be in a position where he would be obliged to accept a commission.

This matter is one of fundamental thought. It enters into the very soul and the morals of the individual. I want to be charitable to every man. I have in my heart the greatest charity, even to the man who has accepted commissions. I have nothing to do with the past, and if a man has done that conscientiously, I am the first one to extend the right hand of fellowship to him. I would rather forgive than fight any time, but this matter of commissions has become a serious one. It has become a question that is likely to disgrace our profession in such a way that it can never outlive it, and when the argument is made that these commissions are paid in the medical profession, I feel that we ought to rise a little higher than the medical profession and show them the fundamentals of common honesty.

I am very hopeful for the future of the profession in this regard. I believe the sentiment of the profession is entirely against the paying or receiving of commissions. I believe it has been stated before that the man who reaches out and accepts a commission is just as bad as the man who pays that commission. I also think, Mr. President, that the man who pays the commission and the one who accepts the commission will never be a bit better off financially for having done it, because they are working on an incorrect basis morally which will never make for permanent success.

Dr. H. A. Cross:

Mr. President, as sweeping as has been the denunciation of commission giving and taking this evening, there is one point or feature which has not been mentioned by any of the speakers. One of the first things that I learned after I hung out my dental shingle was that the medical profession seem to think that they hold a kind of first mortgage on all the dentists. That they should never be expected to pay for dental services for themselves or for any member of their families, and sometimes they extend it to include "their cousins, and their sisters, and their aunts." Of course, it is understood that they will refer as many prospective patients to you as they can. I plead guilty to such form of commission giving and taking in the past, but being inexperienced in the outset of my dental practice, thought it was quite the thing, "you know." In fact, I was led to believe that such practice was regarded as professional etiquette by both professions, the medical and the dental, but I have

long since got my eyes open and see how I was misled. I have discontinued that practice. I have "cut it all out." I do not receive nor give commissions of any kind. While I am on good terms with the physicians, at the same time I have given them to understand that my practice is not filtered through the physician's office. Rendering free dental service to the physician and his family in exchange for his referring patients to you is just as much the giving and taking of commissions as if it were done by means of the bank check. If I were to ask every one of you gentlemen who have not practiced this kind of commission giving and taking to hold up your hands, I wonder how many hands would go up?

Since notifying the physicians that I have discontinued rendering free dental service, I think there is one physician in my neighborhood who is wondering how I manage to pay rent. This practice of rendering free dental service to the physician and his family, what do you call it? Value received and given? Let this society come out squarely in its rules of professional ethics, and discard commission giving of all kinds. Let us sweep the house clean while we are about it.

Dr. R. J. Cruise:

Mr. President, I was rather surprised that Dr. Gilmer started out with a reference to tipping, and was followed by Dr. Brophy, who agreed with him in his remarks. I saw Dr. Brophy give a tip tonight, and he gave it to the man as if he thought the fellow was not a specialist in waiting on him. (Laughter.)

I have nothing to say on this subject that has not been stated by Dr. Gilmer and Dr. Johnson. I think Dr. Johnson hit the nail on the head. I don't see why we should expect a commission from a specialist. Some specialists have their own troubles, and have responsibilities, perhaps, that we have not, and if they make any more out of their profession than we do, they earn it, and that they should hand over some of it to us lesser lights is, to my mind, something that should not be expected at all.

Dr. A. Brom Allen:

Mr. President, if I understood Dr. Ream's paper correctly, I think he made the statement that there was no specialist who had not started his professional career by giving commissions.

Dr. Ream:

Most of them.

DR. ALLEN:

I never did that and never will.

DR. GEORGE W. COOK:

I don't know what I am up here for, because I never made any money off of any of these specialists. Once in a while, when I got a patient I couldn't do anything with, I have referred him to a specialist, but they never said anything about paying me for it, and sometimes I have to pay them extra to get them to do it.

There has been a great deal said on this subject, and perhaps all that is necessary. There is one thing that Dr. Johnson emphasized, and that is, that the medical profession are inclined to do this, and it is true. It is, I think, a good thing to say tonight, that the dentists universally are opposed to that kind of practice. I can understand why the medical profession, when they refer cases, have to get a commission, and that is because they haven't anything to live on. The dentists are all prosperous, of course, and they don't have to take commissions.

If there is something we cannot do, and we have men in the profession who are making a special study of that class of work, it is our duty to send patients to the person from whom they can get the best service for the conditions that are to be treated. There are many here that are doing all sorts of practice, and yet they are specialists. There are some who are specialists pure and simple. The extractor cannot do anything but extract. He has not a blow-pipe and nothing to blow with, but he has to pull all the time. One of the things, it seems to me, that prevents a great many men from sending their patients to specialists is that the patient is not always able to get the best service and get back to his own dentist in proper time to get the other work done. (Laughter.)

There is but one side to the question; there is but one way, and the word "graft" has been so emphatically used here tonight that I think no further enlargement is necessary. The man who engages in this commission practice stamps himself at once as unprofessional, and, I might say, worse, if he accepts a fee or gives one.

DR. W. H. G. LOGAN:

Mr. President, Dr. Cook made a very accurate statement when he said that the reason more patients were not referred is because all specialists are not working along strictly special lines, and the patient does not get away and return to his own practitioner for the

rest of the work. That is unfortunate. If a patient is sent to a man who does pyorrhèa work, that man has no right to do anything else for that patient then or at any future time, nor has he any right to take part of that family. So long as men are inclined to do these things, just so long will the profession keep their patients at home, and not allow them the benefit of the best treatment. Do not criticize the dentist, but criticize the habit of the would-be specialist as such.

In reference to Dr. Ream's case, where he felt that he had done humanity some good by sending the old man who was seventy years of age a quarter or half of the fee, would it not have helped humanity more to have reached into his pocket and sent him the rest of the fee, since the dentist in his old age was unable to perform that operation. There is not much more to say on the subject, since a resolution has been adopted by the State Society of Illinois to the effect that it is unethical to give or receive a commission. Its adoption by the State Society makes it operative here with us without any action on the part of this Society, which is a component part of the State Society. Therefore, if a man gives or receives a commission in the future, he is liable to expulsion, or to be brought before the Board of Censors. We have just one choice: To stay in the Society and not do to it, or do it and get out.

Dr. S. A. Wilson:

Mr. President, I have a humble confession to make. I started in dentistry here some years ago associated with a man who had a good practice, and his health failed. I proposed that I go on with his practice and give him part of the proceeds. Now, you have been speaking about principles tonight—and understand, ladies and gentlemen, that I am not in sympathy with the commission giving system—but I want to know where the dividing line is. Here is a specialist that can do a piece of work, and I cannot do it. I send it to him. This old man was sick; he couldn't do his work and I could do it, and he sent it to me. Could I divide with him? Have I a right, ethically and morally, to divide with him on some work he cannot do any more than I have a right to divide with a specialist who can do the work I cannot? There is no difference, and if we are going into the fine points of ethics, let us look after that, because that is a thing our young men are interested in, and I believe some of our old men are interested in it as we begin to totter down on the shady side of life; we feel that we want all we can get out of our practice. If I see fit

to move and I have a good practice and cannot attend to it, for a consideration I will allow you to attend to it. That is all right. There are some fine lines of distinction that I think we ought to consider. If we are going to confine this to the specialists, it is well. If we are going to confine it to the brethren in the profession, then I must do your work for you when you are unoble to do it, and I will keep all the money and you will get nothing. This is a point that has just occurred to me, and I would like to get some expression on it.

Dr. L. H. Arnold:

Mr. President, it seems to me there are two things that have not been mentioned. One of them has been mentioned, but only from one standpoint. That one point is the specialist's particular standpoint. Dr. Case started out by saying it was not his fault. He had to live, and the world owed him a living; therefore he offered the commissions. Then he turns around and larrups us because we take the commission. Not only he, but all the other specialists, say that it is the fault of the other fellow for taking commissions. The one who tempts another with a tip is more to blame than he who accepts it. It seems to me the general practitioner gets it from both sides. I do not believe he deserves it. The specialist blames him for accepting what he himself offers and the patient blames him for sending him to such a man. If, as Dr. Case says, he offered the commission, he started the game, and I think the man who starts the fight first is the one who is generally considered to blame.

The other thing I want to speak of has not been mentioned at all. I refer to the practice of a number of commercial concerns of offering a nasty little bit of stock to a dentist, intended to cause him to use his influence in favor of their preparation (generally a mouth-wash or tooth paste or brush, or some other outfit that is not of any particular use to anybody, except the manufacturer or vender). This is a dirty, low-down trick. It is well known that the dentist is not rich. Now, when some big corporation with lots of money tries to pervert a man's judgment by offering him a little monetary temptation—perhaps five or six per cent on five shares—that is graft of a worse kind, and it not only perverts the dentist's judgment, but his morality. It tempts him to give his recommendation to unnecessary nostrums, which he would not give except for his insignificant holdings in the manufacturing company, and they have tried to bias his judgment for five per cent on five shares.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL.

QUACKS AND QUACKERY.

In our issue for June we referred to the stand being taken by *Forest Echoes,* a monthly paper of Seattle, against professional quacks. Now another paper is in line on the same subject, and this time we are glad to note that it is a Union Labor paper, the *Seattle Union Record.* This publication is the "official paper of the Central Labor Council of Seattle and vicinity," also "an official organ of the Washington State Federation of Labor," and it comes out very strongly against quacks of all kinds. This is most encouraging because of the fact that usually the ones to suffer most from imposition on the part of professional quacks are the laboring people. We doubt not that the manner in which the evils of quackery are being written up in this paper will result in the saving of many dollars and much injury to the labor class in the vicinity in which it circulates, and the editor is to be congratulated on the high moral and ethical stand he is taking in this matter. We also note that there is not in the entire issue of the number we have seen a single advertisement of a quack doctor or dentist, which means that the management of the paper is protecting, to that extent, its constituents against this form of imposition.

As soon as the moral sense and responsibility of the big dailies are raised to this high point so that they will refuse advertisements which are manifestly calculated to mislead the public we may hope for a clearer professional atmosphere and much less heart-break for the public.

A GOLD FILLING CONTEST.

In this day of inlays and little else than inlays it is refreshing to find a State Society inaugurating a series of tests as to the best methods of inserting gold foil fillings. At the recent Wisconsin State Dental Society such a test was held and it proved most instructive. The proceedings of this meeting are to be published in THE DENTAL REVIEW so it is not necessary to enter into the details at this time, but it is worthy of note to say that fillings by different methods were inserted in cavities made in fresh bovine teeth and these were then subjected to tests for leakage, retention and specific gravity. The result was of the greatest interest, and well repaid those who attended the meeting, and while tests made out of the mouth can never be wholly significant of what occurs in the mouth, yet many an instructive lesson was learned, and men were set to thinking. This is the chief object of any dental meeting and we predict great good from this one. The reports of the findings have not been quite completed yet but when the transactions are published they will be well worth studying.

The credit of inaugurating this clinic is due to Dr. Charles C. Southwell of Milwaukee, who conceived the idea and arranged all the technique. In view of this it is to be keenly regretted that illness prevented his attendance at the meeting, but we believe he will feel fully repaid for his trouble when he reads the reports.

BOOK REVIEWS.

DENTAL MEDICINE, a Manual of Dental Materia Medica and Therapeutics. By Ferdinand J. S. Gorgas, A. M., M. D., D. D. S. Eighth Edition. Revised and Enlarged. 627 Pages. Price $4.00. Published by P. Blakiston's Son & Co., Philadelphia. 1909.

This book is so well known to the profession that it is scarcely necessary to more than call attention to it. When a book on a dental subject runs into eight editions it must have something to recommend it, and this work has much of valuable information between its covers. It has required an immense amount of labor to gather the material together and put it in readable form for the profession, and Professor Gorgas is to be congratulated on the success his work has attained.

We would suggest that in future issues a revision in the spelling be made to bring the work into conformity with more recent nomenclature. The final "e" is being dropped quite generally from such words as "oxide," "cocaine," "dentine," etc, and the word "anesthesia" is used instead of "anæsthesia." In fact, in the preface to the eighth edition the author uses "anesthesia," while in the text he spells it "anæsthesia."

We note that no reference is made to Dr. Buckley's treatment of alveolar abscess by the use of tricresol and formalin, a somewhat conspicuous omission in view of the very general use of this remedy on the part of the profession. But a few minor things of this character do not detract materially from the great value of the work as a whole.

The publishers have brought out the book in a manner to accord with their usual high standard of excellence.

History of Dental Surgery: Contributions by Various Authors. Edited by Charles R. E. Koch, D. D. S., Secretary and Lecturer on Dental Economics of Northwestern University Dental School. In two volumes. Illustrated. Published by The National Art Publishing Company, Chicago, 1909.

Any attempt to place in permanent form the records of the early history and subsequent development of the profession should be encouraged in every way possible. The history of dentistry has been too long neglected, but we are pleased to note an awakening along this line, and we welcome the present work most cordially. The first volume is by far the larger, more important and satisfactory of the two. It consists of 1186 pages and deals with such subjects as "History of the Development of Dentistry," "Operative Dentistry," "Prosthetic Dentistry," "Orthodontia," "Oral Surgery," "Dental Literature," "Dental Journalism," "Dental Education and Dental Colleges," "Dental Laws and Legislation," "Dental Societies" and "Dental Jurisprudence."

It will be seen by this that a wide range of subjects has been covered, and in order to do this acceptably Dr. Koch has called to his assistance a large staff of contributors among the best men in the profession. This volume will be found very entertaining and of considerable value as a book of reference on many of the subjects treated.

Volume 2 consists of "Biographies of Pioneer American Dentists

and Their Successors." This volume is by Dr. Burton Lee Thorpe and consists for the most part of biographical sketches taken from dental magazines. These sketches cover 681 pages, and this is followed by "Additional Biographies and Portraits" of some of the present-day practitioners.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Moldable Wax:—A good many of our most moldable waxes used for models in casting inlays, are more or less sticky, so that the instruments used in carving become gummed up and drag. By dipping them in vaseline frequently all trouble of this kind is entirely obviated in any make of wax, and the result is a good, clean-cut, smooth surface..—F. H. Skinner, Chicago.

Duty to Patients:—I can pardon the practitioner who is human and overlooks the obscure cavity of decay, provided the occurrence is infrequent, but I am filled with a deep sense of resentment when I find the early stages of pyorrhea have been neglected for an unsuspecting and trusting patient. Let us always keep before us our duty to our patients.—Kirk A. Davenport, London, England.

Method of Preventing Gum Forming Over End of Prepared Root:—Take a wax impression of the root after it has been prepared for a crown, forcing the wax about one-eighth of an inch into the root canal. Make a cast of acolite, place an aseptic dressing in the root canal and cement the acolite to place. When the patient returns for the crown the acolite cap is easily removed.—Robert Jasmann, Scotland, S. D.

Recession of Gums in Interproximal Spaces:—It has been said that recession of the gums between the teeth and decay of the teeth occur because the contact point is not proper, but I have seen

many of these things occur even when there was a good contact point. I saw a case recently where the patient was tearing her gums to pieces with floss silk, crowding it in between the teeth and sawing it back and forth.—J. N. Crouse, Chicago.

Cusps:— The length of cusps of teeth play quite a part in the strain brought to bear upon the crown and root, forming, as they do, inclined planes against which force is exerted. Where we build prominent interlocking cusps on fillings, crowns or bridges, the lateral stress is greatly increased when small bits of hard substances are caught between the opposing inclined planes of the upper and lower teeth during the excursive movements of the mandible.—J. A. Bullard, Chicago.

The Contact Point:—The normal function of the contact point is to protect the interproximal gum tissue and to contribute to the cleanliness of the denture. The contact points do this service well or poorly, as they are well or poorly formed, whether they be the natural contact points, or whether they be those artificially formed in the building of fillings. And yet, in their operations for patients, many hundreds of dentists are utterly neglecting these contact points. —G. V. Black, Chicago.

Physics:—The average practitioner does not take into consideration certain laws of physics, for the reason he may not know anything about them. However, he is obliged to do so, more or less, in his daily practice, and the man who becomes a successful practitioner, the man who is able to cope with difficult cases, is the one who from experience or from natural intuition decides what is best under certain conditions, although he may know nothing about this general law of physics and the lever and the fulcrum and such like.—L. L. Davis, Chicago.

Operative Treatment of Pyorrhea:—In treatment of pyorrhea alveolaris both normal occlusion and normal interproximal contacts are important points to be considered in every case. I had a patient suffering from pyorrhea. The interproximal contacts were poor. By lays, etc., grinding occlusion at certain points—in short, restoring

the harmony of all the teeth—the pyorrhea, sensitiveness, etc., was removing several fillings, properly separating the teeth, restoring contacts that had been lost in normal teeth, making proper fillings, incured without any further treatment.—Elgin MaWhinney, Chicago.

Wedging of Cusps:—The effect of the cusps of occluding teeth upon the opposing teeth that have been restored is a point that should be carefully looked after to see that none of the wedging stress will be applied later on, and we should look far into the future. It is important that we should trim these cusps on the teeth that we restore, as well as the occluding member, and it is just as important as removing the cusp of the lower bicuspid. The forces in the mouth are obscure many times, but if we give them careful study it is astonishing what can be done where apparently the force would be too much.—J. W. Wassall, Chicago.

The X-Rays:—X-rays are of the greatest use in the detection and location of unerupted or impacted teeth and the position and direction of roots, as an aid in extraction. As an example, I cite a case in practice. A lady came to me with the crown of the right lower third molar broken off and the roots in an inflamed condition. As experience on one or two former occasions where extraction was necessary had taught me that her teeth had unusually long roots, I hesitated at first to extract. A radiograph showed exceptionally short roots compared to those of the second molar, and I easily accomplished their removal where otherwise I should not have cared to attempt it.—C. H. Abbott, Berlin, Germany.

Articulating Artificial Teeth:—Force moves an object in the direction of least resistance. Therefore artificial teeth should be arranged with this fact kept prominently in mind, and not allow the force exerted during mastication to displace the plate by leaving the buccal cusps so long that they receive the stress, thereby tilting the plate down, or up, as the case may be. The direction of the force must in every instance be toward the inside of the arch. The alveolar ridge will represent the fulcrum and the plate will act as a lever. If the stress is brought to bear upon the teeth at the inside border of the alveolar ridge the force will help to keep both sides of the plate

well seated in its proper position; but if the force is exerted on the outside border of the alveolar ridge the plate will be loosened at the opposite side. The remedy should be clear. Grind the occlusal surfaces in a manner that will bring the stress of mastication on the lingual side, and under no condition allow the stress to be at the buccal of the alveolar border.—G. W. J.

Relief of Irritated Membranes:—After the insertion of an artificial denture, too much care cannot be taken in instructing the patient that if there is any soreness, mastication is very difficult, if not impossible, and that they must at once apply for relief. This is especially true when lower plates are inserted.

The patient should be told to return with the plate in the mouth and not in the pocket. It should remain long enough in the mouth to show the irritated spot. While this is clearly seen by the dentist, it is not always easy to locate it on the plate. If the base is rubber, place a little moist whiting on the irritated surface; or if it is made of metal, use rouge. Place the plate in the mouth and upon its removal the exact spot is seen.

Often after a lower plate has been worn a year or more the patient complains of soreness at the extreme end of the plate. Instead of filing or changing the plate, apply the articulating paper, and it will be found the troubles arises from settling of the process across the anterior margin of the jaw where teeth were more recently extracted, leaving too much pressure at the heel. Grind the molars as indicated by the articulating paper. The English thick articulating paper is preferable.—L. P. Haskell, Chicago.

FOREIGN DENTAL COLLEGES

Dental College of Breslau, Germany.

Dental Hospital of Dr. Ivan A. Pachutin, St. Petersburg, Russia.

FOREIGN DENTAL COLLEGES

Dental College of Kiel, Germany.

Dental School E. F. Wongl-Soidepskoj, St. Petersburg, Russia.
Madam Helene Wongl was the first woman who graduated as D. D. S. (1875) at the New York College of Dentistry.

MEMORANDA.

NORTHERN ILLINOIS DENTAL SOCIETY.

The twenty-second annual meeting of the Northern Illinois Dental Society will convene at Elgin October 20-21, 1909. An interesting and instructive program is anticipated. A banquet will be served to all members in full membership, guests extra.—Frederic H. Bowers, Secretary, Freeport, Ill.

THE DENTAL THIEF AGAIN.

Dentists are being victimized in various parts of the country by a thief who enters the office at the noon hour. Dr. P. A. Pyper, of Pontiac, Ill., is one of the latest victims. He sends the following description of the man: Age, about 33 years; height, about 5 feet 6 inches; weight, about 175 pounds; light hair, light mustache, cropped short; upper front teeth bad; wore light panama hat, blue serge suit; stout build; wore watch and chain, well dressed; works at noon hour with skeleton key.

REPORT ON PYORRHEA ALVEOLARIS.

The Louisiana State Dental Society in May, 1908, appointed a committee to investigate the subject of pyorrhea alveolaris and at the 1909 meeting this committee brought in a report showing much work already done and much more to be done. The report is published in pamphlet form, and a copy may be had by writing the chairman, Dr. E. H. Ramelli, 620 Canal street, New Orleans, La. This committee invites the profession to co-operate with it by answering questions formulated by the committee and forwarded to any dentist interested in the subject.

RECENT PATENTS RELATING TO DENTISTRY.

922,824. Dental floss holder, T. A. Tubbs, Treadwell, Alaska.
923,946. Fountain-spittoon, A. C. Clark, Chicago, Ill.
924,543. Dental appliance, B. Dysart, St. Louis, Mo.
925,007. Rotary tooth-brush, A. Meng, New York, N. Y.
925,587. Dentador or sanitary cuspidor, A. R. Mitchell, Lincoln, Neb.
925,648. Powder box top, W. H. Perkins, Cheshire, Conn.
926,037. Apparatus for casting dental plates, T. W. Tracy, Chicago, Ill.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, Solicitor of Patents, Fendall building, Washington, D. C.

DENTAL LIBRARY.

The Odontological Society of Western Pennsylvania, at a regular meeting held at the Monongahela House, Pittsburgh, Pa., June 8, 1909, passed, unanimously, the following resolution:

First. That this society establish a library of dental and medical journals and suitable books.

Second. That a post-graduate reading course be instituted in connection with a circulating library, and that a quarterly bulletin be published, by which the members will receive an outline of the course of study.

Third. That the president appoint a committee of three members (the librarian to be chairman thereof) to devise ways and means for the same.

Fourth. That the secretary be instructed to subscribe to the Dental Index Bureau; and that the index cards be delivered to and cared for by the said committee.

This is a move in the right direction. The Illinois State Dental Society is conducting a post-graduate course and the members of the society are most enthusiastic about it. Why not get busy and start one in your local society? You will not regret it. It will arouse your members to renewed activity, increase your membership, and be instructive to everybody.

By means of the index cards it will become an easy matter to lay out a course of study. It will enable you to assign subjects for papers to your members and lay out a course of reading for them which will facilitate their work. You can prepare your programs for a year ahead. Your members will develop to such an extent that you will not have to lay out large sums for outside talent. The saving in this, together with the increased dues from the larger membership, which is sure to follow the move, will more than pay for the cost.

Many societies have already subscribed to the Dental Index Bureau. Some of these societies expect to institute post-graduate reading course, while others have subscribed because they consider it a duty to the profession to support the movement.

RESOLUTIONS PASSED BY THE CHICAGO-ODONTOGRAPHIC SOCIETY.

Dr. Alison Wright Harlan departed this life on Saturday, March 6, 1909, in the City of New York. Dr. Harlan became a member of the Chicago Dental Society in 1869, when he entered upon the practice of dentistry in Chicago. He attended the Ohio College of Dental Surgery and graduated from that institution in 1880. Subsequently he graduated from the College of Physicians and Surgeons in Chicago. He received the degree of Master of Arts from Dartmouth College. He was deeply interested in all that pertained to the advancement of his profession. He was well known in dental literature as the founder and editor of the DENTAL REVIEW and was always interested in dental educational work. He assisted in founding the Chicago College of Dental Surgery and was its Professor of Materia Medica and Therapeutics from 1883 to 1904. He held a professorship in the College of Physicians and Surgeons in Chicago. He was one of the most enthusiastic workers in the legislature in the passing of a bill which became a law in 1881 and was on the floor of the house at the time it was passed. He was a member of the first Board of Dental Examiners.

It was Dr. Harlan who first proposed the holding of the International Columbian Exposition in an article which he wrote twelve years prior to its realization, and in this article he also proposed the holding of the Second International Dental Congress. Dr. Harlan was the secretary-general of this Congress.

He was one of the organizers and an original member of the International Dental Federation, and he was also a delegate to the Medical Congress held in Madrid in 1903.

Dr. Harlan was a prolific writer, a careful and conscientious teacher, and his interest in the society work of the dental profession was perennially active. His writings related to questions of pathology, materia medica and therapeutics. Dr. Harlan's papers were characterized by careful investigation and a thorough familiarity with the literature of the subjects upon which he wrote. He was always willing to contribute to the work of any society the best of his knowledge. Dr. Harlan attended every meeting of the International Dental Federation from the time it was founded in 1900 up until last year. He was a member of the American Dental Society of Europe and the city and state societies of nearly every state in the Union.

Resolved: That in the death of Dr. Alison Wright Harlan the dental profession has lost one of its most able members.

Resolved: That the Chicago-Odontographic Society will ever remember

with gratitude his devotion to its advancement to a high place among the professional organizations of our country.

Resolved: That a copy of the resolutions be spread upon the minutes of the meeting of this society and sent to the different dental journals for publication.

TRUMAN W. BROPHY,
C. N. JOHNSON,
E. NOYES.

COLLEGE COMMENCEMENTS.

COLORADO COLLEGE OF DENTAL SURGERY.

Graduating class: Bailey, W. C.; Brown, W. R.; Cooner, C. H.; Cox, A. G.; Crary, G. H.; Gates, M. A.; Grace, L.; Hardin, J. M.; Hughes, R. C.; Hunter, J.; McKenzie, R. E.; Martin, A. M.; Martincourt, J. C.; Meehan, J. W.; Meyers, H. C.; Morgan, J. J.; Murray, A. J.; Oudkirk, A. G.; Sater, H. E.; Caville, B. G.; Scroggin, M. J.; Scott, F. L.

COLLEGE OF DENTISTRY, UNIVERSITY OF SOUTHERN CALIFORNIA.

Graduates: Abbott, C. A.; Aschenbrenner, C. F., Jr.; Ballogh, H. A.; Barr, J.; Bolstad, F. P. S.; Chapin, R. H.; Coffield, G. A.; Daniels, E. A.; Felsenthal, L.; Foster, D. E.; Hatches, L.; Howard, J. L.; Inverarity, F.; Johnson, A. E.; Loughan, J. T.; Lynn, T.; Meisenheimer, L. L.; Miyata, Y.; Numbers, A. B. H.; Oka, N.; Petterson, J. P. N.; Ramirez, X. C.; Sheafer, J. G.; Stewart, J. H.; Terao, K.; Wessell, W. W.

COLLEGE OF DENTISTRY, UNIVERSITY OF ILLINOIS.

Graduates: Aron, R.; Brown, W. I.; Breyer, P. M.; Bailey, O. C.; Brumfield, R. M.; Chute, H.; Crawford, A. B.; Cooper, F. L.; Coffey, C. J.; Droberg, W. W.; Feich, R. F.; Garnes, H. W.; Halferty, I. H.; Johnson, H. C.; Kuninaga, M.; Kingsley, A. C.; Lerche, T. I.; Lewis, D. S.; McCarthy, W. J.; Mozee, T. R.; Newman, L.; Orlow, E.; Schnell, T. W.; Seidel, J. H.; Shaver, M. V.; Stuart, H. H.; Teeling, M. A.; Waterhouse, J. E.; Williams, J. C.

PITTSBURG DENTAL COLLEGE.

Graduates: Moran, J. M.; Moore, L. B.; Guffey, J. R.; Acken, R. V.; Barto, W. J.; Campbell, J. F.; Craig, E. M.; Cuden, C. S.; Curtis, H. A.; Delozier, E. J.; Donaldson, E. M.; Ervin, S. J.; Ferren, O. S.; Firestone, S.; Folsom, F. T.; Frazier, J. B.; Gallagher, F. A.; Horner, F. C.; Ivory, F.; Kison, H. S.; LaRosa, G.; Little, L. T.; Lovell, H. C.; Myers, W. E.; McCampbell, J. H. R.; Neal, M.; Neiman, P.; Reed, M. L.; Rial, B. P.; Ries, A.; Roberts, E. R.; Rumbaugh, R.; Sedwick, J. D.; Sleeth, P. N.; Sweeney, W. J.; Thomas, J. O.; Wick, J. G.

OHIO COLLEGE OF DENTAL SURGERY.

Graduates: Banks, J. N.; Chase, C. E.; Cunningham, N. A.; DeHaas I. L.; DeJarnette, J. A.; Dupuy, F. G.; Dustin, P. W.; Galbreath, E. E.; Haass, J. A.; Hale, F. A.; Heck, H. L.; Hefner, H. S.; Hess, F. E.; Hoskinson, J. C.; Jackson, F. C.; Jenkins, C. M.; Kelsey, R. R.; McDowell, C. S.; Marshall, H.; Maxey, C. N.; Meyer, L. F.; Miller, C. A.; Noel, C. W.; Pryor, C. E.; Rule, W. F.; Shelton, R. E.; Shircliff, J. H.; Snowberger,

F. C.; Thompson, A. B.; Van Stronder, M. O.; Van Vleck, S. B.; Walters, L. B.; Withers, H. G.; Wulfman, A. E.

INDIANA DENTAL COLLEGE.

Graduates: Applewhite, J. F.; Bish, H.; Blake, E. H.; Bridges, F. B.; Brown, J. L.; Burton, I.; Cain, H. G.; Carnahan, J. R.; Cawley, H. W.; Coogle, I. M.; Cowan, W.; Doyel, C. W.; Duff, J. K.; Garritson, W. E.; Grossnickle, S. J.; Hardwicke, J. H.; Hilgeman, V.; Hills, F. E.; Hite, O. E.; Hopkins, R. H.; Hubbard, R. M.; Hunter, D.; Hurst, E. M.; Johns, C. T.; Millian, A. R.; Kraning, J. H.; Kreutzre, J.; Luse, R. N.; McMurray, W. L.; Magnuson, C.; Martin, E.; Mayer, H.; Meeks, C. A.; Montgomery, E. W.; Morgan, C. E.; Oberdurf, E. C.; Richardson, R. H.; Riddell, E. F.; Ritchie, P. J.; Rodger, G. W.; Russell, P.; Seidel, F. W.; Smith, G. J.; Stephens, H.; Tolliver, H. C.; Weir, G. E.; Wilson, W. J.; Woodrum, W. W.; Young, E. E.

UNIVERSITY OF MICHIGAN, COLLEGE OF DENTAL SURGERY.

Graduates: Atkinson, R. T.; Bailey, L. G.; Barr, D. W.; Beckwith, J. H.; Brown, J. W.; Clinton, M. R.; Collins, C. H.; Coss, H. M.; Cross, W. S.; DeBats, Jr., M. L.; Deer, G. A.; Dimrock, R. H.; Doxtater, L. W.; Dunning, H. B.; Foreman, J. R.; Foster, S. P. D.; Fowler, C. S.; Freeman, C. D.; Hall, R. C.; Howlett, R. B.; Janczura, S.; Jones, F. C.; Kelly, F. R.; Lenney, J. J.; Lockwood, H. C.; Lowery, E. A.; Macdonald, D. G.; McNamara, G. T.; Masters, E. E.; Meinert, A.; Moss, B. B.; Munro, J. F.; Nash, W. I.; Orser, G. C.; Perry, G. I.; Pilides, A. P.; Reesman, W. L.; Richardson, E. L.; Rowe, G. D.; Seitz, W. J.; Shepard, F. L.; Sigler, R. G.; Smith, G. H.; Strobel, W. D.; Sugnet, C. J.; Treweek, O. N.; Waite, A. W.; Watson, D. H.; Wheeler, H. B.; Zetterstedt, A. The following persons having completed their course of study, were graduated in the period between January and May, inclusive, of this year: Harris, G. B.; Vaughan, R. J., both as of the class of 1908.

NEW YORK COLLEGE OF DENTISTRY.

Graduates: Arkin, D. M.; Asch, J.; Berger, A.; Blum, H.; Both, H.; Boughton, A. H.; Browd, D. K.; *Bruckheimer M. P.; Brush, R. C.; Bugden, F. E.; Cohen, J. M.; Corcoran, J. A.; Feldman, M. H.; Feldman, M. H.; Finkelstein, F.; *Franken, S. W. A.; Fraunhar, J.; Goldin, J. E.; Goldman, A.; Goldstein, J. W.; Greenberg, M.; Greenstein, J.; Grossman, J.; Haight, D. G.; Haimowitz, S. S.; Hermann, J.; Hildebrant, W. L.; Hochberg, P.; Horwitz, S.; *Kaufman, H. M.; Kerr, W. H.; Labin, L.; Levine, R. G.; Levitch, S.; Lifshitz, J. O.; Lindsay, E. A.; London, E.; Lustgarten, B. J.; Miller, F.; Osofs, M. L.; Palmer, R. S.; Pentz, J. B.; Peters, J. L.; Rachlin, J.; Ritter, M.; Rosenblatt, M.; Schneer, J. B.; Schwarz, J.; Schweitzer, H.; Scudder, H. V.; Shapiro, B. D.; Sheff, S.; Singher, A.; Smorack, S. G.; Sobelman, N.; Stavisky, N. M.; Steinberg, M.; Walker, A. C.; Weissman, E.; Wolff, W. H.; Zametkin, J. M.

*Curriculum requirements completed, but degree withheld until legal requirements are fulfilled, when the degree will be conferred at the following meeting of the board of trustees and directors.

CHICAGO COLLEGE OF DENTAL SURGERY.

Graduates: Alexander, C. F.; Anderson, E. A.; Aas, O. N.; Ball, H. G. W.; Bennett, J. E.; Biermann, C.; Biglow, F.; Blake, R. J.; Bramm,

B.; Breaks, E. E.; Browning, E.; Burne, A. D.; Cain, E. O.; Calhoun, J. H.; Cary, M. G.; Cottard, J.; Cox, E. L.; Croxen, E. B.; Currie, C. W.; Day, T. B.; Diratsonyan, M.; Doring, H. F.; Dreher, J. S.; Dumont, J. H.; Eitingon, C.; Erickson, W. A.; Everly, J. M.; Felcher, F. R.; Fukui, T.; Garriott, J. P.; Gawron, B.; Gorman, Jas. P.; Gorden, J. S.; Goldberg, T.; Goldstein, O. A.; Henshaw, W. E.; Helm, C. S.; Hoy, H. H.; Hopkins, L. L.; Hoyt, S. W.; Hubeny, R. M.; Imberg, A. W.; Johanson, B. F.; Kintzer, I. C.; King, E. W.; Key, J. L.; Knoff, R. G.; Lane, C.; Lemieux, A. J.; Lowe, C. H.; Lewis, R. I.; Lorigon, E. J. D.; Ling, F. E.; Lawrence, W. B.; Monson, O. J.; Miner, K.; Mitchell, W. G.; Murray, W. H.; Neymark, J. L.; Newlin, C. N.; Pearce, J. H.; Robb, T. I.; Ruff, C.; Reischaeur, E. F.; Rilling, J. A.; Roslyn, J. P.; Rutterford, P.; Ruddick, W. B.; Rennie, A. L.; Sherman, G. W.; Smith, G. W.; Straubbe, M.; Stewart, E. I.; Stockwell, J. D.; Turner, T. E.; Turman, C. M.; Vance, E. G.; Vance, A. D.; Vansant, C.; Watt, V. W.; Walker, G. P.; Wood, S. C.; Werntz, E.; Zoline, N. J.

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REPORT OF THE POST GRADUATE COMMITTEE UPON GOLD AND PORCELAIN INLAYS.*

BY J. F. F. WALTZ, D. D. S., DECATUR, ILLINOIS.

The program committee and our president, believing a report of the post-graduate committee on inlays could be of value if presented at our state meeting, have thus caused the preparation of this report which is based upon the articles referring to inlays appearing in the *Cosmos*, *Review*, *Digest* and *Items of Interest* for the past six years. In the neighborhood of 225 such articles have had to be reviewed by this committee—a task of such magnitude that the committee was made to embrace practically the entire membership of the Macon-Moultrie County Society. It has been, therefore, impossible for the writer to personally go over these many papers; instead it has been possible to glance through only a small portion of them. Hence some matter may have escaped consideration in the preparation of this report which should have been carefully gone over. Yet a statement of the principles underlying the different procedures involved, so far as they have been developed in inlay work, will constitute whatever of value such a report may possess, rather than the minute review of all literature of the subject.

Inlays have been used longer than is usually supposed, the inlay idea having been employed as long ago as 1820, when Linderer prepared bits of ivory to fit cavities, the inlays being retained through swelling when in contact with the saliva. In 1855 Volk, followed by others with different systems, recommended the grinding of bits of porcelain to fit cavities which were given form with some sort of bur. This has developed into what we know as the porcelain rod

*Read before the Illinois State Dental Society, May, 1909.

method of inlaying. The gold inlay does not date so far back. Apparently Drs. Swasey and Ames of Chicago are among the first to employ this form of inlay to any appreciable extent. In one place Dr. Wassall says: "I saw the other day a gold inlay in the mesio-occlusal surfaces of a bicuspid that was made by Dr. Swasey. It was of large size, was well contoured and the patient told me it was put in 18 years ago. It was brighter and better than fillings I recently saw in a patient's mouth which were made by Drs. Allport and Dwinelle. The margins were perfect with no signs of fissure about them and it had a well adapted occlusal surface." Dr. Wassall also speaks of seeing frequently an inlay he had put in 18 years before the time the statement was made—an inlay giving satisfactory service. Dr. Goslee mentions taking out an inlay inserted 13 years previously by Dr. Ames, which required the use of mallet and chisel in its removal. There was no decay under it and although he could introduce the point of an explorer between the gold and tooth wall, it could not be passed very far into the cement. Dr. W. A. Capon, in an article upon porcelain inlays, cites a large number of instances in which he had inserted porcelain fillings for varying periods up to 18 years. He says: "In looking over hundreds of porcelain operations of all kinds, nothing can give greater pleasure than to note the splendid work of certain large contours, etc.; these facts must establish the permanence of porcelain beyond dispute." Dr. Van Woert says: "I have seen cemented fillings that were ground to shape, last from 10 to 20 years, and had the pleasure recently of examing one of porcelain I myself inserted over 14 years ago."

While a few of the first writers upon porcelain were extreme in their claims as to its applicability to all cavities as a filling, by far the greater number were of the opinion that only conspicuously placed cavities should be porcelain filled. The feeling seems prevalent that porcelain has not fulfilled the prophecies made for it—that it has in a large measure been a disappointment, if not actual failure. In the papers upon porcelain of the past six years in scarcely a single instance has a writer urged its use in cavities subject to severe stress in the anterior teeth or to any extent in the posterior teeth.

A fair statement of the indications for porcelain inlays would include its use in all cavities where the avoidance of the unsightly appearance of other filling materials is desired and durability could be expected of such a friable material. This includes all labial cavi-

ties and conspicuously placed buccal cavities, all simple anterior approximal cavities of such size as to be disfigurements when filled with gold, all proximo-incisal cavities in the six anterior teeth unless an unfavorable occlusion exists, extended labial or buccal abrasions and erosions, mesial and mesio-occlusal cavities in bicuspids and molars without an adjacent tooth and without an antagonist. For those cases where the incisors and cuspids call for extensive restorations through accident or malformations, porcelain seems especially indicated.

From the various papers dealing with gold inlays, perhaps none better or more in accord with the prevailing practice states the indications for their use than that of Dr. Dittmar, in which he says: "Gold inlays are indicated in all large proximo-occlusal cavities, in large occlusal cavities, in medium to large buccal cavities in molars, in linguo-occlusal cavities; in fact, a majority of all cavities found in bicuspids and molars can be best filled with well made cast gold inlays."

"Gold inlays are also indicated in incisors and cuspids when for good reasons porcelain will not stand and large gold foil fillings are contra-indicated, as in certain types of occlusion and malocclusion which will not permit porcelain inlays to give good service because of its friability and where large gold foil fillings would tax a patient's endurance through long strain or because of health or age. In teeth loosened because of pathological pericemental condition, gold inlays are indicated. In cases where cavities extend far under the gum and the moisture tight adjustment of a dam would be painful or difficult, for opening bites or restoring badly abraded teeth, gold inlays are indicated and in many cases they form the most sanitary and strongest possible anchorage for bridge work. Again gold inlays are indicated in thousands of cases where teeth are now being crowned or filled with unsightly amalgam or temporary cements."

The use of gold inlays instead of the gold shell crown, is several times strongly advocated in view of the evident wrong mechanical principle involved in fitting a band to a root under the edge of the gum, resulting in the almost universally observed area of chronic gingival inflammation around all such crowns in the mouth. Again the overcoming of the fearfully disgusting condition existing under most shell crowns observed upon their removal, makes an indication

for the gold inlay which will strongly appeal to the thoughtful and conscientious practictioner.

The use of gold inlays for bridge abutments is variously urged and their use will evidently rapidly become good practice in many cases and especially in bridges restoring one or two teeth, if not in much more extensive restorations.

The preparation of cavities for inlays is dealt with more or less according to the various writers' individual views; in other words, there seems to be no such definite method or system of cavity preparation as there is for foil fillings, owing to the comparatively recent adoption of the inlay method. In a general way, whatever will form a good cavity for the retention of a foil filling will, when modified to the inlay plan, be good inlay cavity preparation. The need is plain for a mechanical locking of the inlay into its cavity against dislodgement from any direction but the one used to introduce it, and the more such dislodgement is securely provided against the better will the cavity preparation be. Thus the truth has long been established that successful inlays are those placing least amount of dependence for their retention upon the cement. In many places is it pointed out that the inlay method in its earlier porcelain days and yet in its more general use at the present time, will suffer its severest condemnation because of too much dependence being put upon the cement for retention and too little upon the cavity form. As the wreckage resulting from this misapplication of the inlay accumulates, let us not forget the inlay papers of this time and earlier are plain in their caution against the shifting of retention responsibilities from the cavity form to the, in this respect, unreliable cement.

Pins used with porcelain as a retaining agent are generally discountenanced except in case of extensive incisor or cuspid restoration, when the use of a staple formed pin seems to have been particularly satisfactory. Especially is this practice recommended by Dr. W. A. Capon as a result of his long experience in its use. In gold inlays pins of small platino-iridium or clasp metal wire, No. 20 or 22, seem to have a definite place. Apparently their use will be increasingly considered good practice.

The newness of the cast inlay method with the ensuing widespread adoption of inlay work for the first time by so many practictioners has plainly given birth to a first stage in the standardization, if that term will apply, of gold inlay cavity preparation. One use

of the pin in gold inlay work seems strongly established as good practice in the construction of inlay bridge abutments. Drs. Alexander of N. C., Hinman, of Georgia, and Wassall have done much in their writings to indicate the wide application of the pin in this feature of the work. An inlay abutment made with several small pins entering the tooth substance in such manner as to escape too close proximity to the pulp, is without doubt the firmest attachment possible at this time to be made and far more secure than any form of crown as usually attached to a root. The hood inlay form of abutment appears as one of the most decided advances in the application of sanitary and æsthetic bridgework yet observed, and especially so when applied to the anterior teeth, particularly the cuspids. Yet the profession still awaits the classifier or standardizer of inlay cavity preparation in the sense in which we think of Dr. Black in foil and amalgam cavity preparation.

The preparation of the matrix for porcelain inlays is accomplished equally well in several widely practiced ways. Gold and platinum both have their advocates as the better matrix material. To form the matrix two methods are used, each being followed by its advocates as the only proper method. Direct burnishing of the matrix into the cavity is practiced perhaps as much as the burnishing into a model secured from an impression of the cavity. Considerable space in many of the papers is given to the technique of these processes, especially the securing of a modelling compound impression of the cavity from which a cement or amalgam model is made, into which the matrix metal is swaged or burnished by various means more or less well known to every practitioner.

The difficulty of making invisible porcelain fillings has given rise to various theories as to the cause and correction of this trouble, called the color problem. There is not any uniform practice of overcoming this difficulty, several plans being used. Drs. Thompson, Nyman, Reeves and Byram and Mr. Robert Brewster have all written upon this feature and the practice most widely followed is to use a foundation body of a color to simulate the normal dentine, this in turn is covered with such layers as will imitate the colors seen in the tooth to be matched, these bodies being fused in layers and finally covered with a transparent enamel body. Various efforts have been made to add to or deviate from this scheme and with much success, although the claim is less often made by the porcelain advo-

cate that his work will be invisible to an observer than that it will be inconspicuous. The lower fusing porcelain users probably use this plan of color formation less elaborately, depending upon the combination of the same porcelain body but of different shades, for the correct color. High and low fusing porcelains seem about equally divided as to their exclusive use, and many dentists use them in combination. While considerable discouragement over the lack of perfection in color matching is felt by the profession generally in regard to porcelain inlays, the admission is everywhere made it is the most permanent esthetic filling agent we yet possess.

It may be well here to refer to the accumulation of stain within the crevice formed by the washing out of the cement. Dr. Land expresses himself upon this matter thus: "One serious objection or weak point in the porcelain inlay system is the superficial washing out of the cement. No matter how perfect the work, in many instances stains will gradually collect between the inlay and cavity wall and before many months the patient will return to request the removal of the dirt from the joint. To overcome this trouble it has been my practice first to line the cavity with gold and then fit the inlay, whereby the gold exposed is reduced to a mere threadlike line, which is far less objectionable than the stained joint. Do not infer from this I decry inlays altogether. Far from it, for there are many instances where the secretions of the mouth are favorable and such objections are not apparent even after 12 or 14 years of use." These observations coincide with those of all porcelain workers. The cementing of the inlay together with its matrix into the cavity, does away with the stain damaging the appearanee less than when stain has gathered.

The fusing of porcelain has been much written upon, the general trend being toward an exaet method of obtaining definite temperatures to obviate overfusing and to eliminate uncertainty as fully as possible. To this end pyrometer attachments have been devised for electric furnaces and other forms of heat control brought out, such as Dr. Roach's pyrometer furnace. For the low fusing porcelain dependence is put largely upon the gas furnace and the experienced eye used as a pyrometer. The avoidance of overfusing is everywhere cautioned against and the gradual increase of temperature advised, that the porcelain may not become brittle or bubble forma-

tion be favored and that the color be not changed or modified, as is the case with all overfused porcelain.

In the setting of a gold or porcelain inlay we are confronted with a consideration of what is called the cement problem. Much work of a scientific nature has been done upon the questions arising over the use of cements. Dr. Poundstone reported experiments made with various oxyphosphate cements and his results are discouraging, shaking one's confidence in the reliability of cements. He found in most cement powders granules so large as to preclude the possibility of securing close apposition of the inlay to the cavity wall, also that these cements expand for 24 hours and longer after mixing and further that eosin penetrated between the cement mass and the cover glasses adherent thereto. Apparently moisture can enter a cavity with an inlay set in it, passing along between the cavity wall and the cement film, although the cement used be called an impervious one or one which, when rolled into a ball and immersed in an eosin solution, will remain months therein without appreciable penetration of the stain within it. Dr. Poundstone says this penetration of moisture is borne out by "the fact that nearly all old cement fillings that are removed from cavities in teeth are discolored completely over the surface that was in contact with the tooth while in the center they are as bright and clear as when first inserted." Dr. Land says in this connection "that the cement does gradually dissolve out of the joint in a very large percentage of inlays, is a proved fact. However, it is merely superficial, for in 18 years of careful observation I have not been able to discover a single instance where the cement has completely washed out under the most careless manipulation; that at best the disintegration was slight. In any event we can be assured that all inlays, no matter how carefully adjusted, are certainly a better protection than the cement alone, and I will suggest that we must not be too extravagant in our expectations, but be satisfied with the slightest advantages gained and always hope for more as the art is better comprehended."

Dr. Head has conducted a line of experiments upon cements in connection with porcelain inlays from which he draws the following conclusions: "First, that a thin film of cement is not so strong a bond as a thick mass; second, that the edges of the filling and the cavity should be in as close apposition as possible, but that wherever feasible the cement that holds the filling in the cavity should have

body; third, that etching porcelain with hydrofluoric acid is a valuable means of obtaining adhesion of porcelain with cement on flat shallow fillings, yet undercuts are to be preferred when they can be obtained and there is good reason to believe that the best results can be gained by both undercutting and etching the filling; fourth, that the fusion of zinc oxide to the porcelain inlay, as has been advocated for adhesion purposes, is unreliable and not so trustworthy as etching; fifth, that fineness of grit in a cement is more responsible than pressure applied in setting for a fine cement line and fineness of grit, if it can be obtained without unduly hastening setting of the cement, adds to strength of adhesion; and, sixth, that the maintenance of pressure for one minute after setting the inlay is ample for securing apposition of the inlay to the cavity walls, any pressure beyond usual hand pressure or its equivalent being unnecessary, since the force exerted by the expansion of the cement is probably in excess of any force feasible to apply from without upon the inlay." Again, Dr. Head performed a line of experiments to determine the effect of shear and percussion forces under conditions as nearly like those in the mouth as possible. His conclusions are that "any of the standard porcelains in the market are strong enough if they do not receive the full force of mastication and none of them are strong enough if they do." Still another series of experiments by Dr. Head bring him these conclusions: "First, that in acid saliva cement ordinarily dissolves more readily than enamel; second, that some salivas are able to protect cement from acid solution and some salivas are not. Also a fine line of cement will dissolve more rapidly than a coarse line of cement, but where friction and packing of carbohydrates into a coarse line by mastication occurs, undoubtedly cement in a coarse line will disappear more rapidly than in a fine line. But the extreme edges of an inlay should be adapted as closely as possible, while deeper down from the margin a thicker film of cement should be made which will control for years any solvent action that may chance to get past the close fitting edges, or in other words, the inlay should fit perfectly and then both the cavity and inlay should be carefully undercut so that the cement may act as a dowel and as a neutralizer of penetrating acid. When a gold inlay is on a grinding surface, mastication will, no doubt, often swage the edges of the metal into apposition to the enamel as dissolution of the cement line takes place."

Before the great gift of Dr. Taggart of the cast method to the profession—a gift, by the way, for which I cannot help stating my conviction he has been compensated in a most miserable and shamefully inadequate manner, which course of action many good and professedly religious dentists really seem to condone—before this gift to our profession, gold inlay articles indicate a widespread and increasing use of the matrix method of making them. Now there are relatively few places where a matrix formed gold inlay is used, hence any consideration of them will be passed to take up the cast inlay, which some one has said has "set the dental world on fire." The securing of a wax model of the purposed inlay is more readily and accurately done than the fitting of a matrix form. When the wax model is once secured the remainder of the operation is largely a mechanical one, wherein lies the great value of this method. The technique of the fitting and the removal of the wax model has been little written upon, but experience proves the perfection of the entire Taggart process is gauged by the accuracy of the wax model secured, the remainder of the process being a machine process with a high percentage of efficiency. The higher the temperature at which the wax is workable the more reliable it becomes, until the ideal qualities are secured, and although ease of adaptation of the wax may be a matter requiring patience and some experience, yet its management is soon acquired and greater enthusiasm for the cast method results. To some extent it has been urged that a model from an impression of the cavity be secured and the wax model made upon this. This course seems more generally applicable to the conditions surrounding full large city practices and will apparently have little vogue in the majority of practices unless it be in occasional cases. Various means have been urged of reducing the volume of the wax, thereby lessening the volume of the cast gold and providing for a greater mass of cement in the finished case, a procedure which Dr. Head's experiments upon the cement film would stamp as exceedingly good practice.

The preparation of cavities in the wax model, embracing those portions of the inlay exposed to view when in the mouth, cavities into which porcelain is to be fused has been advocated. Some difficulty is experienced in checking of the porcelain in cooling, to obviate which the porcelain has been made as an inlay and then set in

the gold. An improvement in this technique is surely desirable and, let us hope, may be soon presented.

A number of papers dealing with the phenomena of expansion and contraction in the setting of the investment materials, their heating and subsequent cooling, have appeared and while they possess scientific value, the need for an improvement of the mold forming process does not seem as necessary from practical experience as the theories regarding it would lead us to infer. Dr. Price has developed a process to overcome these theoretically apparent defects, described in two excellent papers, which may be called the artificial stone model process. It embodies a series of procedures thus: an impression of the cavity is taken in some modelling compound. Into this is built a silicate cement, which hardens rapidly. After separation from the impression, the cement model is baked or subjected to high heat in an electric furnace. Upon cooling the wax model is built into it and without removal from the model an investment of the model with its contained wax model is made and the inlay cast in due course. Then the inlay is finished and polished upon the cement model, which has gone through the entire process without change of form or disintegration, according to Dr. Price. Apparently there are some advantages in this process as well as some decided drawbacks, and a demonstration of it would furnish an interesting clinic.

For the actual casting of the inlay many contrivances have sprung up and some writing upon the relative merits of each type of contrivance has appeared in the recent journals. Pneumatic or gas pressure, steam pressure, vacuum suction and centrifugal forms of force have all been adapted to these contrivances. The requirements of a perfect casting seem to be that the gold must be exceedingly hot—as thinly liquid as water—a condition which must rapidly be brought about when pressure must be instantly applied and sustained without variation until the casting has cooled considerably. The profession generally seem convinced no apparatus yet devised approaches the Taggart machine in the nearest fulfillment of these requirements and apparently the best work is most uniformly done by that machine.

The setting of the gold inlay brings up a consideration of the cement problem which is practically identical in case of either porcelain or gold inlays. Some writers urge the greatest value of the inlay

in either form lies in the sealing film of cement and increasingly is it becoming the practice to line all cavities with cement, whatever filling may be inserted. The more nearly the cement is perfectly protected from contact with the saliva the greater appears to be its value.

Polishing of inlays differs little from the polishing of other fillings—a perfect polish being the universally recognized standard of finish. Some writers urge as careful a polish of porcelain fillings as of any metal filling, while others, and I believe the majority of practitioners, do not attempt any polish or finish of the porcelain inlay after it is set, though this is the case more because of the effect upon the color matching property of the inlay than because it is believed unnecessary in the case of many inlays whose margins are not of exact evenness with those of the cavity.

In conclusion may be mentioned a number of papers written upon the subject, "Gold Fillings versus Gold Inlays," or of similar titles. In these papers some inlay enthusiasts give rein to their enthusiasm and suggest the relegation of gold foil pluggers to the scrap heap, but I think always with less earnestness than other essayists choose to believe these statements are made. The combatants of the gold inlay idea are often the greatest enthusiasts upon foil fillings, thus much fiery rhetoric and gnashing of teeth over how those teeth should be filled, results. These frays are entertaining and furnish subject matter for dental meetings, but are merely a reenactment of the clash between the advocates of the old and the new. As we recall at one time amalgam users were so bitterly opposed they were ineligible to membership in some dental societies. In view of the record already made by inlays and because of our ability to foretell to some extent, because of a mechanical sense inherent in us, severe condemnations of the inlay in either form seem preposterous and appear ridiculous except insomuch as they are intended as the expression of a conservative attitude. From what has been written and is common experience, we are bound to conclude porcelain and gold inlays have a wide field of application and form valuable additions to our forms of filling agents.

Expression of appreciation of such scientific experiments as have been done upon the cement problem, and color question in porcelain inlays and inlay work in general, is certainly fitting and we most earnestly hope it may be done in increasing volume by those of our

profession who are qualified to carry it on. The lack of verbosity and striven-for literary effects in the papers upon inlays is noticeable and surely commendable in these days, for it is an affront to needlessly take up the time and attention of our society meetings with papers containing a wee bit of truth elaborately clothed in verbiage and long winded phrases.

Finally a word in reference to the post-graduate work our society has taken up. The value of the lists of indexed questions already prepared; and especially during the work upon inlays has this impressed our committee; is immense and promises to become one of the best means of improvement to our membership with consequent strengthening of our society. In the one feature of forming a continued basis for the preparation of component society programs, the plan is of great benefit, e. g. the subject of inlays can be gone over by any component society with an ease and thoroughness in a series of meetings which will put its members in fuller comprehension of the problems and principles connected with the subject than appears possible by any other means. Moreover, the programs will have an interest which should draw a fuller attendance and make corresponding greater development. The future of the virility of the component society seems assured by this plan and let us pursue it as a policy in which from its present promise we must have great confidence.

THE POSSIBILITIES OF CLOSER CO-OPERATION BETWEEN THE DENTAL AND MEDICAL PROFESSIONS.*

BY J. W. PETTIT, M. D., OTTAWA,

PRESIDENT OF THE ILLINOIS STATE MEDICAL SOCIETY.

In introducing Dr. Pettit, the president of the society, Dr. A. D. Black spoke as follows:

This Society has for many years devoted much thought to the possibilities of cöoperation, not only among its own members but with other professional organizations. The advantages of cöopera-

*An address delivered before the Illinois State Dental Society, May, 1909.

tion have been frequently expressed in the meetings of many other societies in this State, and for a number of years we have had a committee to promote closer relations between this Society and the Illinois State Medical Society. As a result of the great work of reorganization which the Illinois State Medical Society has carried out and the similar work of this Society, it is believed that the time has come when these relations should be much closer than they have been heretofore. This Society is very fortunate to have at this time as its guest of honor, the President of the Illinois State Medical Society, a man who has been one of the war horses in that organization for many, many years. It is with very great pleasure that I present to the members of this Society, Dr. J. W. Pettit, of Ottawa, President of the Illinois State Medical Society. (Applause.)

Mr. President, and members of the Illinois State Dental Society:

I esteem it a great honor as well as a privilege to appear before you to discuss the subject suggested by your President.

Thirty-four years ago, when I was a sprig of a doctor, I had the honor of welcoming this Association to my own city. I felt very much puffed up on that occasion as the representative of the medical profession of my city. If I felt honored then, I feel thrice honored now in appearing before you as an invited guest and especially to promote the objects which we have in view.

I cannot discuss this subject of organization from your standpoint, hence I will present it from the standpoint of my branch of the profession. I want to call your attention to a few things which I think we enjoy in common, and also to indicate to you some things we have failed to do when we were not organized which we have succeeded in doing now that we are organized.

I present these matters more by way of illustration of what can be done by organization rather than because of any possible interest they may have for you.

Professional men sustain three relations to society. One is professional, one is civic, and another is our relation to each other. As individual members of our respective professions we are certainly the peers of those representing any other profession or occupation in the community. The members of our respective professions individually as a rule stand high. We usually stand for high ideals and are found first and foremost in all those things tending to the uplift of community life, and as individuals there is no question

but that we exert a large influence, but as a rule our influence stops there, for the reason that we do not realize that as individual units we cannot make our influence felt beyond our community unless we are organized. As professional men we have been slow to recognize this fact, and are among the last to recognize that there are certain duties and responsibilities we owe to Society and to each other that can only be performed through organization, but during the last few years both branches of our profession have been more active in perfecting an organization. We are beginning to realize that this is a day of big things. We have before us many object lessons of what has been done by organization in the commercial world. We now realize that we cannot expect to exert our greatest influence except through organization. By way of illustration, let me call your attention to some things which my branch of the profession has already accomplished through an organized effort, the same things which we have failed to do in the past because we were unorganized.

Let us see what we have done in national affairs. The medical profession has been first and foremost for seventeen years in trying to secure the passage of a Pure Food Law. Until two years ago we failed utterly. We did not make an impression upon Congress until the American Medical Association became a power, and then within two years the Pure Food Law was enacted and that largely through the influence of the medical profession. It is true other interests assisted, but my profession led and directed the fight. We have also contended for many years that human life was as precious as hogs, cattle, horses, fish, forests, and other things which receive consideration from the general government. We contended for the establishment of the Department of Public Health, but could only get a perfunctory hearing. Now, while we have not exactly accomplished our purpose, as a result of organization we have received recognition from both great political parties during the last presidential campaign, and are on the eve of what we have been demanding for so many years to so little purpose.

In our own State we have likewise exerted very little influence as a profession. There is not a charitable institution in this State which has not been suggested by physicians, and notwithstanding the fact that the medical profession is more largely responsible than any other class of men for the existence of these institutions, we have received no recognition as a profession. We have not had enough in-

fluence to secure the appointment of a single physician on the staff of any of these institutions. Medical men have invariably been appointed as a result of political and not professional influences. These appointments have not, as a rule, been representative of the profession and where they have been, it was more by accident than design, because appointments were exclusively in the hands of politicians.

Take our own State Board of Health for example. This department of our state government presides in a peculiar manner over the destinies of the medical profession and notwithstanding the fact that the Board is made up entirely of physicians, the medical profession has never had sufficient influence to secure the appointment of a single member of that Board. The Board has never been representative of our profession and not infrequently the members of that body have been exceedingly distasteful to the physicians of the State.

In the matter of medical legislation, we have been almost powerless. A number of years ago I was chairman of the Committee on Medical Legislation for my State Society. I found we could make very little headway because we were not organized. We now have an organization and are making our influence felt in a most decisive manner.

Referring to those things of more material interest to us as individuals, I wish to call attention to the fact that the fees in my profession are ridiculously low, notwithstanding the fact that the cost of living is 30 per cent. higher to everybody and that of maintaining a practice about 20 per cent. more than it was fifteen to twenty-five years ago. Medical fees have not as a rule advanced until recently and this has been the result of organization. Many medical men throughout this State have been and still are struggling for existence. Good men are being crowded out of the profession because it is not profitable and the younger men find it difficult to make a living. This is not only discouraging to the individual membership but has a tendency to lower the standard of the profession because a poorly paid profession means necessarily that sooner or later the better class of men will leave it and their places be taken by those who are incompetent. As a result of organization we have raised and are still raising our fees, a thing which could not be done by the individual. Perhaps the dentists do not need this hint.

My branch of the profession has always been the legitimate prey

of the blackmailer. Blackmailing suits were increasing every year. We were much in the same position in this respect as the large corporations. As a result of organization we have practically put the blackmailer out of existence.

We have also raised the standard of journalism in our profession. Medical journalism had degenerated to such an extent that the advertising pages of the average medical journal was but little better than the same class of advertising in the daily papers. The organized profession has taken up this matter and by establishing official journals we have been enabled to eliminate all offensive advertising and also raise the standard of journalism. This could only be done by an organization.

Our relations to the pharmacists have been strained for many years, so much so that this relation was practically one of hostility between us and them. This has been due to causes that are unnecessary to mention. They are perfecting their organization and we now recognize that this attitude of hostility is all wrong and we are seeking to establish pleasant relations.

The exigencies of our professional life do not offer the opportunities for friction between dentists and physicians there has been between us and the pharmacists, but there has never been that close relation between us that should be between co-ordinate branches of the same profession. It has been my privilege to travel in foreign countries both in Europe and in the Orient, and it has been with great pleasure and pride that I have noted that American dentistry leads the world. The American dentists can go into any European and Oriental country and take precedence over the native dentists because of the superiority of their work. Formerly your profession was looked upon as an art. It is now no longer an art but a science as well, and it would be difficult to draw the line as to where the division comes as between your profession and my own in many respects. Viewed from every standpoint our relations should be closer, but there are some reasons, perhaps of a very practical nature, why this should be true. You have the same professional ideals as we do. The code of ethics which has just been presented by your committee is practically a reproduction of our own. It is briefer and in this respect is much better. I can see no reason why physicians, dentists, pharmacists and nurses should not be regarded as branches of one and the same profession. I think we should each have our

own separate organizations, but that these separate organizations should act as a unit in exerting our influence for the common good. There are between eight and nine thousand doctors in this State, three thousand dentists, three thousand pharmacists and about five thousand trained nurses. What an immense influence we could exert, especially politically, if we should all center our efforts on the accomplishment of any given purpose. It is organization that counts, especially in the legislature. We must bear in mind that this is a democratic government and we have no right to expect that things will be done for us. We must make our influence felt in governmental affairs just as other people do, and the only way we can do this in any large sense is through a compact organization. Organization is the only thing politicians are afraid of. I know from personal experience as well as observation, that you can go to Springfield as an individual and be treated nicely and courteously, but you count for nothing. If you go there representing an organization, and especially a powerful one, the politicians will bow and scrape to you, ask you what you want, and give it to you whether you ought to have it or not. I am glad to say that we are approaching the time when men are recognizing their duty to each other by getting together and standing together as brothers. This process is going on everywhere, especially in the churches, and it now looks as if it will only be a few years when we will have only one large church. Sectarianism is being broken down in the churches as it has been in medicine and all we have to do today is to get together, and if we make our influence felt in a systematic, comprehensive and practical way, there is almost nothing that we cannot accomplish for our mutual good and that of the public whom we serve.

A SIMPLE METHOD OF CHANGING THE COLORS AND MODIFYING THE SHADES OF ARTIFICIAL TEETH.*

BY DR. F. E. ROACH, CHICAGO.

In our efforts to secure the highest degree of mechanical perfection in our prosthetic work, are we losing sight of the artistic?

*Read before the Illinois State Dental Society, May, 1909.

While perfection of fit and adequate strength are prerequisites to the greatest efficiency of all prosthetic work, a failure in the observance of the cosmetic requirements is a reflection upon our esthetic sense. Granting that any artificial substitute for the natural dental organs should first of all be useful, it should at the same time be beautiful, and to be beautiful it must look natural, and in order that it may look natural it must be in harmony with that which nature has endowed its wearer.

In the selection of a set of teeth for the edentulous mouth, the two most important factors governing the proper selection are the form and color, and of the two the color in my opinion is of the greater importance. A study of Thompson's Table of Temperaments will be of great value in determining both the form and the color. Each of the four temperaments demands a distinct type of tooth, though the color may be variable. Dr. E. J. Perry, in his paper on the "Law of Harmony and Correspondence," classified his patients into two general types, viz., blondes and brunettes, and under this classification determines the colors—those for the blondes running to the yellows and for brunettes to the grays.

In a general way this rule is of much value, and if followed will yield very satisfactory results. But in neither Thompson's "Table of Temperaments" nor "Perry's Law of Harmony and Correspondence" do we get it all. The variation of the shades of the different teeth is of equal if not greater importance.

There is probably no greater breach of the law of harmony and correspondence than the placement of improperly colored teeth in the mouths of our patients.

There is surely no more frequent evidence of our lack of appreciation as a profession of the true sense of art than the glaring incongruities of color that are so frequently seen in porcelain teeth of various kinds in the mouths of people we meet in the various walks of life.

The manufacturers have done wonderfully well in their efforts to supply us with teeth true to nature in both color and form, but in neither form nor color can they supply all that is required to meet the great variety of conditions, and it is an admission of our deficiency in manipulative skill if we cannot meet the requirements with the materials that are at our disposal.

While I am not disposed to grant that the manufacturers have

done all they could for us in the way of forms, and especially is this true of the molars and bicuspids in plate teeth, I do not see how it would be possible for them to supply us with a greater variety of shades and colors. And yet with all this great selection, it is often impossible to get the tooth with that touch of individuality and character so necessary to harmonize with the case in hand. This is especially true in crowns, bridges and partial cases.

Every practitioner of dentistry with any experience at all, and who has any pride in the artistic results he obtains, will, I am sure, admit the inadequacy of even the stocks of teeth carried by our largest dealers when it comes to the exact matching of a great many of the natural teeth adjacent to which we are so often called upon to place crowns, bridges and partial plates. How often have you said to your patient that you had looked over several big stocks of teeth and had been unable to find a better match than the one you are trying to apologize for? How often have you sent back, either by mail or by carrier, in your vain attempts to satisfy yourself and your patient with the color of some tooth being placed in the mouth? How often, in fact, have you actually gone in person and spent perhaps hours of your valuable time in search of this much desired tooth and after all be compelled to apologize for it if your patient was at all particular, and if not, you no doubt suffered the sting of dissatisfaction yourself and wished you might have done better?

When supplying full sets there is not the necessity for the exactness in matching up colors with the natural teeth that we have in crowns and partial dentures, but in order to secure the best results from a cosmetic viewpoint, there should be a difference of shade in teeth used.

According to the idea advanced by Dr. E. A. Royce, the normal shading of the full denture is as follows: The upper central incisors are the lightest in color and are taken as the standard by which the degree of shading is measured. Dr. Royce found, upon a close examination of several hundred mouths, that on an average there were five or six different shades in the full denture, either upper or lower. It should also be noted that the colors vary in intensity from one to eight shades.

Since the publication of this most valuable article of Dr. Royce's, I have made a study of his color scheme, or rather shade scheme, and I am thoroughly convinced that he is absolutely right, and I am

of the opinion that it is one of the most valuable contributions to prosthetic dentistry in the past decade, and its teachings should be understood and practiced by every one of us.

The argument so often advanced that the majority of our patients do not appreciate our efforts in this direction, should not deter us from raising the standards of our services from an artistic point of view.

First of all let us edueate ourselves and then educate our patients to an appreciation of the art side of our work. In my eighteen years of practice and ten or twelve years contact with infirmary patients, I have not yet seen one person who could not be made to appreciate the difference between harmony and correspondence, and monumental incongruities. In other words, most people will accept a set of teeth or a crown that looks natural in prefcrence to that which stands as a monument to the lost members.

Though cognizant of the indifference of a great many of the profession to anything that pertains to prosthetic dentistry, I am nevertheless sufficiently optimistic to believe that the majority of the profession are still doing some prosthetie work and are interested in its betterment. Even though a portion of the work be assigned to a laboratory or an assistant, the most important part of the operation is that performed in the mouth. The success or failure of the case depends absolutely upon the execution and direction of each step in the operation that emanates from the chair. And surely the one who does the work in the mouth is held responsible for whatever it is, be it good, bad or indifferent; so that regardless of the boasts made by many that their time is confined exclusively to the chair, a large part of it is nevertheless prosthetie work.

It is the purpose of this paper to call your attention to the use of mineral stains and oil colors. While these materials have been on the market for a number of years, their employment has been directed more to the reproduction of freakish conditions than to the changing of colors and the modifieations of shades. The impression prevails that these materials are only useful for produeing the tobacco stained dentin of abraded teeth, Hutchinson teeth and the like, when as a matter of fact, these are insignifieant uses as compared with their employment in shading the teeth in full dentures, and in producing the mottled or clouded effects so often necessary in crowns, bridges and partial eases. And while the Royce shading may be

carried out quite satisfactorily by selection from stock, the matching of the natural teeth with crowns and partial cases in this way is often impossible and for these cases the mineral stains and oil colors are absolutely indispensable to the man who is striving for the highest degree of art in his work. And the mastery of their use gives one a feeling of independence that is indeed satisfying. There are no cases of unusual coloring or shading that cannot be matched almost perfectly, and my experience justifies the belief that almost all of the porcelain teeth placed in the mouth will look more natural if a film of these stains be spread over their labial or buccal surfaces.

Now a word about the technique. The handling of these materials is so simple that it seems unnecessary to go into this phase of the question, and yet knowing how little they are used, I must conclude that they have either been misused and abandoned or have not been tried at all. In either event some instruction would seem necessary. The material must be reduced to an impalpable powder and when mixed with the water should be thoroughly spatulated, so that all lumps will be obliterated. The surface of tooth to be stained should be clean. The glaze need not be ground off, as has been recommended.

With a small camel's hair brush moisten surface of tooth and then dip brush into the previously mixed stain and with a stroke of the brush across the surface of the tooth the stain will be evenly spread where desired. The entire surface of the tooth should be gone over to obtain the best results, and care must be taken to avoid blotches by allowing the stain to accumulate in patches.

In the application of the colors to a tooth it is well to remember that it is easier to darken than it is to make the shade lighter, though the latter may be done very effectually in many cases.

It is not necessary that one become expert in the mixing of all the prime colors to produce the myriads of tints used in china painting, though a knowledge of the basic principles in combining some of these colors will be very helpful at times. When we consider that the predominant colors in the natural teeth are not distinctly prime colors, but combinations and blendings of colors that produce the grays, creamy yellows, browns and greenish tints, and that our mineral stains are furnished in similar combinations, it is at once apparent that we have to deal more with the modification of the shades

of the colors as we find them rather than to the changing of the color altogether. For instance, if it is desirable to intensify or darken a creamy yellow tooth, a thin film of brown on the surface will do it—a film of white over the surface will, of course, produce a lighter shade.

In the selection of teeth for full dentures it is best to get them a shade too light with the view of shading them as desired. As a matter of fact, it is possible with a medium light creamy yellow tooth to produce any of the darker shades and colors with a greater degree of accuracy than by selection from stock and at a great saving of time and bother.

The colors that will be most used are brown and gray, and as a matter of fact these two colors will meet the requirements in about 95 per cent of the cases. As an illustration we will, for convenience, refer to the colors on the S. S. W. shade guide and show how they may be changed at will with these two colors—for instance, shade 34 may be readily changed to 35, 36, 37, 39, 41, 42 or 43 with the brown—shade 34 may also be easily changed to 30, 31 or 33 with the gray. To change shade 34 to 32, 38, 40, 47, 48, 49 or 50, will require both brown and gray. A trace of gray over 27 will produce shades 28 and 29—shades 44, 45 and 46 have a greenish cast and will require a green stain. Shades 26 and 34, being very light colors, are easily stained to any desired darker shade. With equal facility any of the intermediate shades may be changed to the darker shades with one or the other or with the combination of both brown and gray to the extent that they will serve all practical purposes in the great majority of cases if the rule suggested above of selecting teeth lighter than wanted, is followed.

Supplementing the brown and gray, I would suggest in their order of usefulness, yellow, black, blue, green and pink. Yellow serves best to lighten the brown, and black is preferred for darkening it, though blue or green may be used for this purpose. White is employed as an enamel to lighten the shade of a tooth of any color. It may also be employed to mix with other colors to make them lighter, though as stated above, the mixing of these colors is rarely necessary, as the intensity of the shades are governed by the thickness of the layer, and as has been shown, nearly all the shades on the guide can be produced with brown and gray.

In addition to S. S. White's Mineral Stains and Brewster's Oil

Colors, I would recommend Lenox China Colors in the following colors: Ochre yellow, neutral gray, blue black, deep sea green and white enamel. The ochre yellow with a very slight amount of blue black added to it will make a greenish yellow brown that will meet the requirements in most cases for producing the various tints of yellow and brown—the intensity being easily determined by the thickness of the coat and by the addition of a larger proportion of the blue black. The neutral gray may be intensified, when necessary, by the addition also of the blue black. The clove oil preparation furnished by the art stores is best to use with these colors.

In conclusion I want to emphasize the importance of this subject to all of us, and especially do I want to emphasize its value to the man who is located where he has not access to large stocks of teeth. As a matter of fact, the mastery of the use of some one or all of these stains will yield a larger return for the time and money expended for its accomplishment than anything that I can call to mind.

AN ENQUIRY INTO VARIOUS METHODS OF TREATMENT OF SOME ABNORMAL CONDITIONS OF THE JAWS AND TEETH OF CHILDREN.*

BY DR. G. NORTHCROFT, LONDON.

The choice of the title for a paper often presents difficulties, and our energetic Secretary desired this information so early that the writer finds after due consideration, that the subject as selected covers too much ground to be fully dealt with in twenty minutes, and therefore the following remarks must be looked upon, rather, as an analysis of some twenty-five cases, which have recently come under observation, than an attempt to do adequate justice to so big a subject.

Looking back over the last seventy years, since the foundation of the first Dental College at Baltimore, one is struck by the fact that Dentistry first began to concern itself with formulating methods for the immediate relief of the adult population, and consequently conservative surgery was taught and practised to the ex-

*Read before the American Dental Society of Europe at Wiesbaden, April, 1909.

clusion of what may be termed the preventive side of our work. Our ancestors were not so much troubled to seek the causes of dental disease, as to enunciate means of allaying the immediate symptoms to which such disease gave rise.

A parallel will be found by contrasting the present condition of preventive medicine, with its insistence on general hygiene and special department for the conservation of public health, with the time when local symptoms were relieved, regardless of the primary precautions of sanitation, ventilation, and the like.

As our profession is endeavoring to become more truly scientific in its methods, so the causes of the diseases of the teeth are being more fully investigated, and we find questions of environment and development demanding more and more attention, as is their due, with insistence on the fact that for the relief of any condition, other than by empirical means, a careful study must be made of the causes producing that condition.

It was in an endeavor to make some slight advance in our knowledge in one department of this complicated subject, that this enquiry was undertaken. If we are to be worthy the name, it behooves us as practitioners of dental surgery, to have a working knowledge of the present-day possibilities of all different methods of treatment; of the various periods at which such treatment should be carried out, and above all, to study the causes that are at work in producing the abnormal conditions which we see daily, familiarizing ourselves with the various aspects of abnormalities, so that while possibly unwilling to undertake treatment personally, warning may be given to parents and the case handed over to a specialist in time.

To put the point in another way, it is just as important for the general dental practitioner to diagnose mal-development in its early stages, and suggest a remedy, as for the general medical practitioner to diagnose appendicitis and advise surgical interference when indicated. Both C. R. Turner and H. A. Pullen have foreshadowed the great possibilities of what may be termed "Preventive Orthodontia" or, in its truest sense, the science of "Odonto Prosopic Orthopædics."

At the outset it should be understood that this enquiry does not refer to abnormalities of the jaw due to traumatism, neoplasms or congenital deformities of the soft parts, such as hare-lip and its sequelæ, or individual abnormally shaped teeth, except so far as such

malformations may affect the development of the jaws; but particular attention is drawn to the abnormal position of the temporary teeth in relation to one another, directly traceable to mal-development of the jaws of children, before the age of 6½; the various means at our disposal for correcting such conditions; and the best time at which the correction should be undertaken.

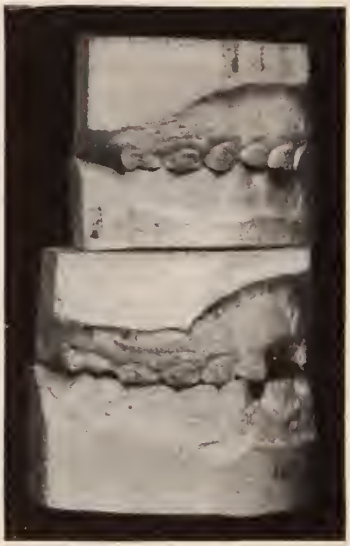
In November, 1907, it was pointed out that the classification of mal-occlusions introduced by Angle, admirable as it was at the time, is faulty and incomplete, being based on treatment rather than etiology, and leaving out of consideration the possibilities of deformities occurring in the mouths of children under the age of six.

In all the text books that have been consulted, it is invariably claimed that if deformities of the temporary teeth do exist, that condition is so rare that it may be neglected. In April, 1907, C. R. Turner said "exceptions to regular alignment and occlusion are distinctly to be rated among the unusual occurrences." Even as late as October, 1908, W. H. Dolamore at a post-graduate lecture at the Royal Dental Hospital, London, said, "Indeed, misplaced temporary teeth are so rare that I am able to show you only one model of such." But within the last ten years the fact has been becoming evident that it could have only been the want of material which made such statements possible, *and that on the contrary, all the salient features of mal-occlusions of the permanent teeth are foreshadowed in their temporary predecessors.* This statement should be qualified by the fact that the writer has never seen a true prenormal occlusion of the temporary molars, although there can surely be no reason why the converse of post-normal occlusion of the lower temporary molars should not occur; indeed, models such as are shown on the screen may be an indication of how Angle's Class III cases occur if left untreated at this age.

(Slide I. The upper models show a mouth at 5 years 2 months. Note 1 1 already erupting, but c c instanding. The lower models, the same mouth 18 months later. Note the change in molar occlusion, and c c now outside.)

Nomenclature is always a thorny subject, but as would-be scientific men let us guard against hurriedly introducing words before weighing their full significance. Thus the words "mesial" and "distal" have been introduced coupled with the word occlusion; now "mesial" pertains to the median line of the body, dividing it into

right and left halves, therefore if the teeth of the upper jaw are in "mesial" occlusion, we should mean what is now often termed "lingual" occlusion. "Distal" and "proximal" are the two words in opposition in anatomy, biology and zoölogy; one speaks of a "distal" phalanx or the "proximal" head of the humerus. It has therefore been thought wise in this paper to substitute the words "pre-normal" and "post-normal," as exactly explaining what is meant. It is hoped that these words will meet with the approval of the profession at large.



Slide 1.

It is also suggested for your consideration that the word orthodontia, being a hybrid, is as such offensive to the trained ear, conveying no exact meaning to the literary scholar, and not only that, for Pullen says in a paper read at Boston July, 1908: "Occlusion, normal or abnormal, depending upon earlier developmental conditions, is not of primary import in the study of orthodontia, since it is governed entirely by certain developmental factors which precede the perfection of occlusion by several years." Therefore "straight teeth," as implied by the term orthodontia, even to those who accept it, cannot possibly convey all that is undertaken by those who practice the art of correcting mal-developments of the jaws. The term "Dento Facial Ortho-

pædia" has also been introduced; this again has the objection of coupling Latin and Greek derivatives. To overcome this difficulty, the term "Odonto Prosopic Orthopædies" is suggested, or, more shortly, "Odontic Orthopædies," as better expressing in correct terms what is meant to be conveyed. In passing it might be noted that the word orthopaedic, relating to the art of curing deformities in children, whenever used in dentistry should be spelled with a diphthong to distinguish it from orthopedic, formerly connected with the straightening of the feet.

The first recorded treated case under six years of age, as far as the writer knows, is Dr. Mendell's, treated in 1905, reported at the meeting of the American Society of Orthodontia, and appearing in the seventh edition of Angle's work. The result of this treatment is not known, but the condition of post-normal occlusion of the lower temporary molars before the eruption of the first permanent molars was noted. While not wishing to give undue emphasis to the percentage, seven out of twenty-five cases taken haphazard in the author's practice, or 28 per cent, show this condition fully or unilaterally. The ages of the patients range from four and one-half to five and one-half.

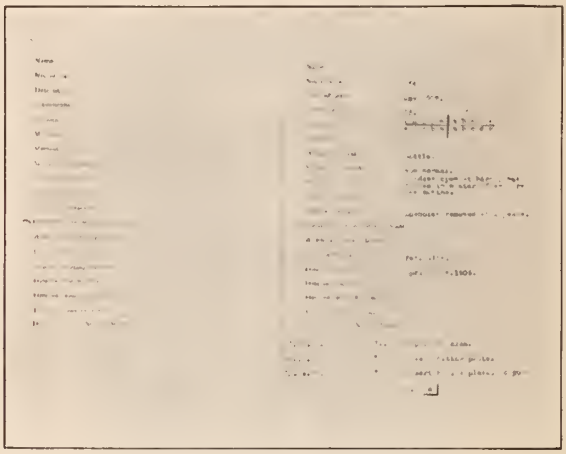
In bringing to your notice an analysis of twenty-five cases from two and one-fourth up to the age of six and one-half years, it must be clearly understood that too much stress must not be laid on any figures quoted in the way of averages, as the number of cases dealt with is far too small to warrant any definite conclusions, but should serve as a guide for future investigations.

Slide II. shows the "Case Cards" adopted in the writer's practice. These have been found very helpful in recording, not only the conditions before treatment, but in systematically working out such treatment, showing the time occupied over each stage and supplying definite data, from which it is hoped many important points will be brought out and treatment in future cases simplified, modified and improved. These cards are filed and written up after each visit during the progress of the case. By such means it becomes a simple matter to work out statistics of any particular condition for any particular age. If other practitioners would adopt similar methods, a mass of material would soon be at hand to prove or disprove any special theory, and so our knowledge would be materially increased.

It had been my hope to place before you some figures in reference to the mal-development of the jaws of children and their method of

infant feeding, together with the prevalence of nasal stenosis accompanying mal-occlusions at this age, but at present the amount of material for examination is too small to be of much value. At the same time it must be acknowledged that by going back to the very earliest ages, we are more likely to eliminate sources of error, and to be led at last to a correct solution of the problems confronting us when studying the causes producing mal-occlusions.

In the Medical Report of the Central London Throat and Ear



Slide 2.

Hospital for 1908, Dr. Dan Mackenzie gives an analysis of 222 cases of adenoids, deformities of the palate and artificial infant feeding. His sympathies were with Dr. T. F. Pedley's views on "The rubber teat and deformities of the jaws," published in the *British Medical Journal* October 20, 1906, in which Pedley endeavored to prove a direct influence of the "comforter" on the production of deformities of the palate. Mackenzie, however, found that—

1. The use of the rubber teat is not proved to be a cause of adenoids.

2. The extreme "Gothic" palate and "Rodent" face may be found in individuals who have never had adenoids, and who have been reared exclusively on the breast.

3. The "Gothic" palate and "Rodent" face are but slightly more frequent in individuals who have used the rubber teat.

4. Breast fed children show a larger proportion of healthy teeth than bottle fed children, but the difference is not proved to be due to the rubber teat.

It should be noted that these 222 cases contained one common factor, the presence of adenoids, and that normal palates occur in 45.3 per cent of breast fed children with adenoids, and in 41.6 per cent bottle fed and comforter using children with adenoids. It is a thousand pities that while this investigation was being carried out dental expert aid was not called in to define the occlusion, which would then have made the communication invaluable from a dental point of view.

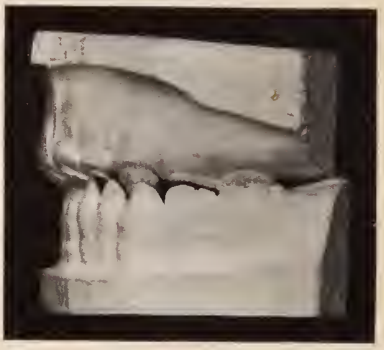
It is understood that "Gothic" arch and "Rodent" face imply post-normal occlusion, which occurred in 41.3 per cent of the total number of adenoid cases. Translating these conclusions into dental language, one would say that cases falling under the Angle Class II, Div. I, cannot be attributed to the presence of adenoids as a primary factor, or to artificial feeding; also that the comforter, thumbs or fingers are only of secondary importance.

J. F. Colyer, while still more enthusiastically supporting Pedley's views, was bound to admit after an examination of 300 cases that the figures in support of this theory were disappointingly small. Incidentally in an analysis of thirty-six cases of double and unilateral post-normal occlusion he finds roughly 20 per cent with no adenoids (inferentially free from nasal stenosis), which again seems to emphasize the fact that the cause of this trouble lies beyond mouth breathing.

In my own twenty-five cases, where the age limit was purposely placed low, we find seven out of twenty-five with post-normal occlusion; of these only two or 28.5 per cent had nasal obstruction. It is only fair to point out that in this group only one of these was breast fed and aged five; she was unilateral post-normal on the left side and also had c d e in lingual occlusion; but though the breathing was normal, she was paralyzed for a time on the left side at three years of age, which probably arrested development and entirely accounted for her condition. (Slide III.) Even if we eliminate this case, we have six out of twenty-four or 25 per cent of children under the age of five and one-half, taken haphazard from a London practice, suffering from post-normal occlusion, 66 per cent of whom were normal breathers.

From these three sets of figures from three different sources it

seems fair to argue that although often accompanying and perhaps aggravating mal-occlusion, mouth breathing is not a primary cause of this condition, and gives point to the fact that the establishment of



Slide 3.

nasal breathing by surgical interference even at an early age is only removing an accompanying aggravating symptom and not removing the cause of the deformity.

Slide IV shows a case aged four years and six months from which adenoids were removed at three months, resulting in the establishment of nasal breathing; also in a beautifully formed arch, but the unilat-

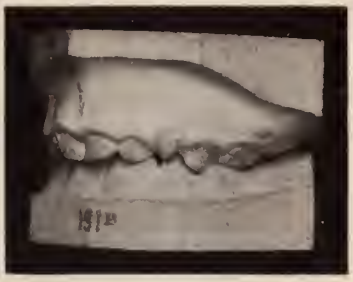
Slide 4.

eral post-normal occlusion remains. Therefore rhinologists should not maintain, as is often done, that their work will entirely suffice, for it seems the condition is quite hopeless unless remedied by the dental surgeon.

To continue with our twenty-five cases we find, as might be expected of the class from which the patients were drawn, that only

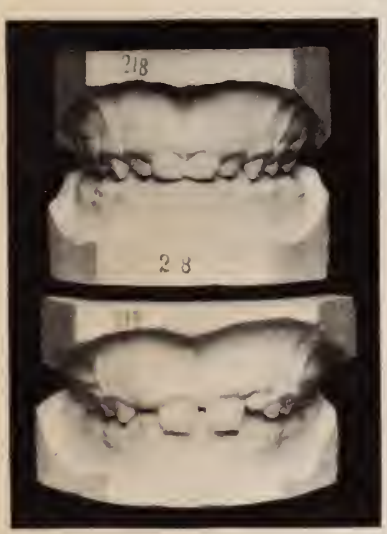
six out of the twenty-five cases were breast fed; of these six only one had post-normal occlusion, the case already shown on the screen. (Slide III.) Another aged four years and eight months (Slide V)

Slide 5.

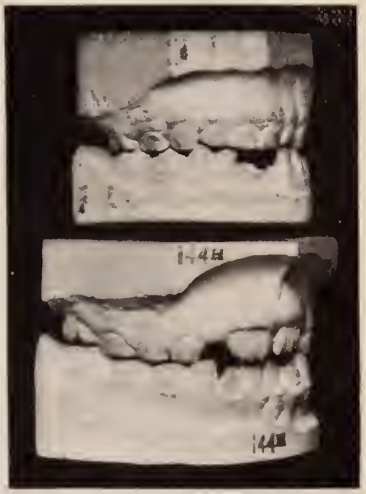


Slide 6.

had lingual occlusion on the right side. Another (Slide VI) shows a supernumerary lateral (age two years six months). Only one is nor-



Slide 7.



Slide 8.

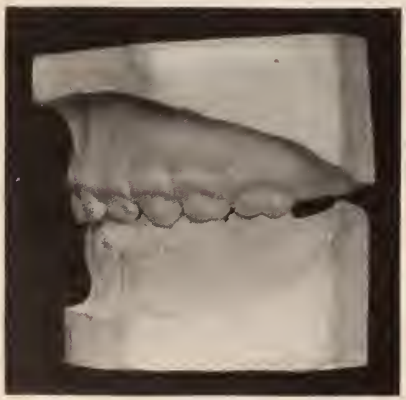
mal (age three years six months, Slide VII). Even this occlusion is marked by excessive overbite and may develop into the type shown in the lower models. In one other case there was general lack of devel-

opment and growth had to be stimulated by the expansion of both arches; in this and another case (Slide VIII) there was premature eruption of 1 1, which under favoring conditions might develop into Angle's Class III. (Ages five years two months and seven years four months.) Compare Slide I.

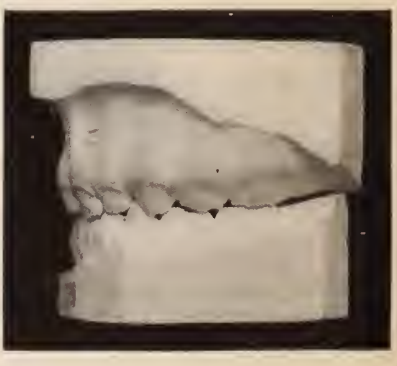
Of the remainder seven might be called normal, as far as our present knowledge goes; that is to say, the antero-posterior relation is

Slide 9.

correct, although in three of these there is a marked overbite. (Slide IX, age three years six months, shows normal occlusion and incidentally the falseness of the assumption that the wedging action of the teeth is a necessity for the development of the jaw.)



Slide 10.

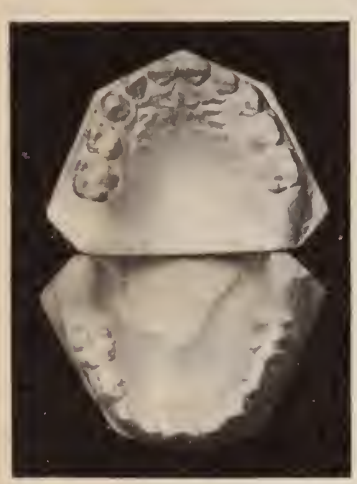


Slide 11.

(Slide X shows normal occlusion with overbite. Age three years eight months.)

(Slide XI shows normal occlusion with overbite. Age three years six months.)

This leaves six of the twenty-five to account for. Of these one (Slide XII) probably had the best developed palate, as at the age of six and one-half the $\frac{6\ 6}{6\ 6}$ had not yet erupted, thus giving the jaw time to develop and so prevent crowding. This condition has also been met at the age of eight and one-half. In another the overbite is



Slide 12.

Slide 13.

so great as to be quite abnormal, and evidently calls for early correction (Slide XIII, age six years).

In others there is premature eruption of the lower incisors, necessarily producing a crowded condition of the arch. Indeed in studying models of mal-occlusions one is particularly struck by the large proportion of cases of disorderly eruption that occur, and although the age limit in the present instance is six and one-half, already there are six cases of premature eruption of 1 1, the youngest being five years two months. This seems to be an active source in producing mal-occlusions, for the teeth are forcing themselves into an undeveloped jaw. These teeth also have an opportunity of continuing their upward

growth unchecked till they often impigne on the gum above. This condition also seems to require early treatment.

Attention should here be drawn to the extraordinary similarity in the type of arch, with instanding laterals and crowded centrals in many of the bottle-fed cases, which must be due to this cause rather than, as some writers maintain, being diagnostic of mouth breathing; the type has been found in both normal and abnormal breathers.

(Types of bottle-fed arches. Slide XIV. Ages four years four months, and five years.

Slide 14.

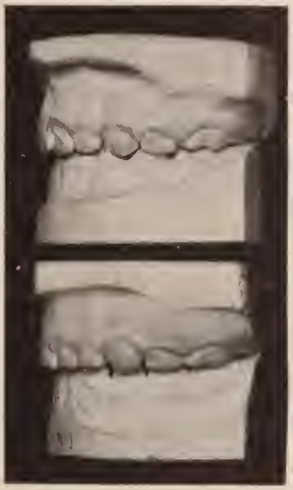
The same models in occlusion on the left, showing normal and unilateral post-normal occlusions. (Slide XV.)

(Compare the curve of the arch in a breast-fed and bottle-fed child. The latter with normal occlusions but adenoids. Slide XVI.)

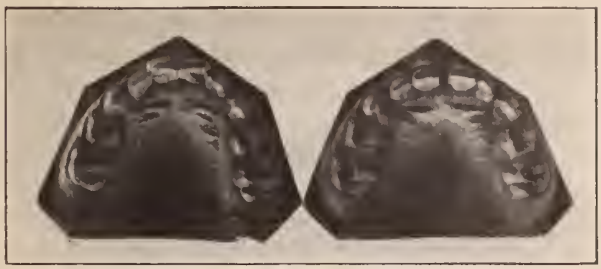
These twenty-five cases have all been measured as to width, depth and antero-posterior dimension. The width is taken at the gum line between the two second deciduous molars, at a point immediately in line with the fissure on the palatine aspect of the tooth. The depth is taken from a point dropped from the middle of a horizontal line between these two points, and the antero-posterior diameter measured forward from the same point.

For this purpose a combined caliper has been designed with which all these measurements can be speedily made. It is hoped later on to co-relate these with measurements of the face, and so watch the sim-

ultaneous growth of connected parts. To go into figures might prove wearisome, so only a few will be given. The variation in width was from 25.8 mm. to 33.6 mm. Depth from 8 mm. to 14 mm. Antero-



Slide 15.



Slide 16.

posteriorly 23 mm. to 28 mm. This gives an average of 29.3 mm. in width, 10.82 mm. in depth and 25.7 mm. antero-posteriorly.

One of the widest palates 31.3 mm. was that of a child whose adenoids were removed at the early age of three months, but who has post-normal occlusion; the narrowest 25.8 mm. was a breast-fed child with normal breathing, and whose upper arch has been expanded to 32 mm. it has developed 2.5 mm. in depth, and 1 mm. antero-posteriorly.

It may be of interest to point out that the shallowest palate, 8 mm., was that of a mouth breather. Of the two deepest 14 mm. one was normal, the other a mouth breather. This would seem to imply that there is no "pushing up" of the palate in mouth breathers. When models of these and similar patients have been remeasured in five years' time, it is hoped that more definite data will be obtained.

We conclude then that so far we can only describe these malformations as vaguely due to mal-development, which in its turn is due to mal-nutrition, and that therefore the logical treatment is to exercise the greatest care in the rearing of infants and see to the proper nourishment of their growing bodies, and after the infantile stage is past to see that the right food is properly masticated and assimilated.

In this connection one cannot do better than draw attention to Dr. J. Sim Wallace's valuable contribution on this subject. He is a great believer in stimulating development along normal lines, and both as a preventive of caries and a natural spur to growth, points out the immense importance of diet and the order and manner of taking various foodstuffs. By teaching children to chew their food, by giving them things that need mastication, we stimulate the normal growth of the tongue and also increase the blood supply to all the tissues of the mouth, and thereby obtain a race free from dental deformity and caries.

Having recognized that such marked abnormalities exist before the age of six, and the time has gone by when the theory of the feeding of infants can be put into practice, what methods of treatment can we adopt, and at what time should they be adopted? One very startling condition should not be overlooked, while most of us are treating the offspring of the well-to-do, for whom we can formulate an ideal treatment which must be faithfully carried out for many years, we must not leave out of consideration those not so fortunately endowed with this world's goods. Children seen in hospital practice whose mouths are already wrecked by caries, with many abscesses causing all sorts of systemic trouble through septic intoxication. The theory of treatment for these mouths that has been carried out so successfully as far as improvement in general health is concerned is to make the remaining teeth functional and the mouth surgically clean, isolating the incoming first permanent molars when necessary. Statistics are not at hand to show the result on the development of the mouth, but it is argued that even if modification of the arches does take place so as

to necessitate the subsequent removal of four pre-molars the child has been kept in a healthy state during the most vulnerable years of its life. Physical degeneration has been arrested, and the individual better prepared for the battle of life with its reflex on the life of the nation. This is another side of life which only those who are connected with hospital work can fully appreciate.

In private practice, while applying the same treatment as far as septic deciduous teeth are concerned, it has been my custom to supply the little patient with a vulcanite splint on which to bite, restoring the loss of function, at the same time keeping the space for the permanent successor, and thereby keeping the mouth at its highest pitch of efficiency. This method has, however, never had to be used for a child under the age of seven.

Time will only permit of roughly detailing further methods of treatment adopted in my own practice. All detailed reference to Dr. Bogue's work with the Ainsworth appliance must be omitted. The use of the Hawley charts is of course impossible at the age with which we are dealing, but it must be said that some very puzzling observations have been made when working with them on older mouths.

It seems then that many cases of mal-occlusion commence with the deciduous teeth, and can only become worse if treatment is delayed. Expansion should be commenced as early as possible in order to stimulate growth, at the natural time, but it must be remembered that movement of the temporary teeth should take place at an age when that movement will most effectively react on the underlying permanent crowns, and not at an age when the power of the temporary teeth to affect the growth of the arch is getting feeble.

Different countries have different methods. In dealing with children's mouths I have preferred to use the Babcock split plate for expansion rather than fixed appliances, as this plate can perform the function of a biting plate as well, often a matter of vital importance, as must be seen from the large percentage of cases with marked overbite. The method of education in England makes the wisdom of any other course open to question. Also I believe that one gets a certain amount of transmitted pressure on the sides of the palate and the lower alveolar plates, that cannot be obtained by the use of the wire arch and the movement of the teeth only. The diseases of children are very serious while they last, and the risks of having fixed appliances in the mouth during the exanthematous fevers must not be forgotten.

Where I have considered it necessary to use intermaxillary force, I have waited till after seven years of age. This I do not consider essential, but I have not happened to treat a case of post-normal occlusion before the age of six by this method. I am firmly convinced that the overbite, that is, the shortness of the ascending ramus or lack of depth in the molar region, plays a more important part in mal-occlusion than it has been credited with, for one is constantly obtaining marked improvement by curing this one deformity.

As far as the teeth themselves are concerned, where they are saveable, it seems unnecessary before this society to say that all deciduous teeth should be filled with a quick setting alloy where possible, and proximal fillings fully contoured; otherwise they should be wedged with base-plate gutta-percha frequently renewed. Nothing has been said of the use of X-rays in this work. One or two results are shown of pictures taken in an apparatus specially designed for dental purposes.

The main idea is that all plates or films should be outside the mouth, the position of the rays and that of the plate known and recorded, the head "angled" to the correct inclination. The apparatus then fixes and records the position of the patient in relation to the rays and plate, so that this position can be re-found. The apparatus affords a rapid way of fixing the patient's head at known angles, and in many ways facilitates the correctness and ease with which skiagrams can be procured. This is, of course, what is needed in any research work, such as the change in the angle of the mandible that may result from the use of inter-maxillary force. It is also essential in tracing the development of any particular tooth or teeth in the same patient at different ages.

In conclusion I hope this inquiry has made clear the great possibilities of "Odonto Prosopic Orthopædics." That its study should not be left to specialists. That cases should be treated on etiological lines as far as our present knowledge permits. That such treatment should commence at the earliest possible age, so that complications that would otherwise arise in after years can be prevented. That keeping models from infancy for studying the developing tendencies of the individual is of the utmost importance, and that by preserving perfect teeth in a perfectly arranged arch, we do our little best to hand on to succeeding generations an ideal of unimpaired health and beauty.

ENAMEL MORPHOLOGY.*

C. FRANCIS BÖDECKER, D. D. S., BERLIN.

The histology of the enamel is a larger field than one would at first thought imagine. I will, therefore, limit myself to the consideration of some of the organic structures found in this tissue. The exact amount of organic matter has long been a mooted question; different authors give the percentage as ranging between 3 to 6 per cent. For the chemical analysis only the central portion of the enamel is taken, the other parts being ground off in order to be certain that nothing but enamel is used. Only the central part, poorest in organic structures, is therefore analyzed to determine the percentage of organic matter in the whole of the enamel. It is evident that the result of such an analysis by no means represents the amount of organic matter actually present in normal enamel.

The photographs illustrating this paper have almost all been made by the use of ultra-violet light. The advantage of this light over ordinary white light in microphotography is that the specimens need not be stained. The finished photograph, however, has the appearance as if a staining agent had been used. This is due to the fact that different tissues absorb the ultra-violet light to a different degree. Fig. 1† represents a number of live Gregarinæ feeding upon an amœba. Owing to their extreme transparency, it is impossible to study or photograph such organisms by white light, unless they have been stained. These were photographed alive and clearly demonstrate the optical differentiation made by ultra-violet light. Near the center of the amœba a black spot is seen—the nucleus. Here the ultra-violet light is completely absorbed, causing the nucleus to appear as a dark spot. The rest of the cell contents allowing more light to pass through shows a well marked contrast in comparison with the nucleus.

The enamel of the human teeth is made up of a great number of hexagonal prisms, held together by an interprismatic substance. The prisms themselves are almost entirely inorganic, while the interprismatic substance is, in part, organic. This interprismatic substance, or as I prefer to call it, the prism sheath, is a delicate organic

*Read before the American Dental Society of Europe, April, 1909.

†No cuts accompanied this article.—THE EDITOR.

envelope which encloses each prism throughout its entire length. These sheaths contain small quantities of inorganic salts, making the normal enamel appear almost homogeneous. A weak solution of acid, however, immediately dissolves this deposit of inorganic matter, causing the difference between enamel prisms and sheaths to become quite marked, as shown in the next figure. (Fig. 2.)

The organic structures of the enamel are so delicate that whenever an attempt is made to remove the lime salts by acid, they are immediately torn apart and become lost. For this reason many authors claim that enamel contains no organic matter, as apparently no evidence of its presence is ever found after decalcification. By the use of my celloidin decalcifying method, however, excellent specimens of the organic structures present in the enamel may be obtained. The principle underlying this method is that the specific gravity of the decalcifying medium is nearly the same as that of the organic matrix of the enamel. Therefore as soon as the acid dissolves the lime salts, the celloidin fills up the space occupied by these, thus sustaining the fine organic structures of the enamel in situ. For a comple description I refer you to the *Zeitschrift für wissenschaftliche Microscopie,* Vol. XXV, page 21. The following four figures are reproductions of specimens made by means of this method.

Fig. 3. This figure depicts a cross section of decalcified enamel, showing the prism sheaths under an enlargement of 250 diameters. My claim that these and other structures of the enamel are organic is proven by the most common test for organic matter, the Xanthoproteic reaction.

Fig. 4. This figure is a photograph of the same specimen under an enlargement of about 500 diameters.

Fig. 5. This figure represents enamel prism sheaths magnified 2,500 diameters. Here one plainly sees that each prism possesses a separate sheath.

Fig. 6. This figure shows the longitudinally cut prism sheaths, appearing like delicate fibres running between the prisms. Enlargement 1,000 diameters.

Fig. 7. This figure is a photograph of a ground section of temporary enamel, showing two organic structures, one of which has not as yet been described. These structures I have named enamel lamellæ and tuft-like processes. The latter originate at the dentinal margin and penetrate the enamel a sixth to a quarter of its thickness. In

longitudinal sections, as seen in the figure, these processes appear like tufts of grass, hence the name. The enamel lamellæ are thin sheets of organic matter, also having their origin at the dentinal margin and passing through the enamel to the outer surface. These latter structures have been mentioned by Caush. He believes them to be tubes, but as his investigations were confined to undecalcified longitudinal sections, his interpretation of their form was based upon insufficient data. Only by the use of ultra-violet light and by decalcification with subsequent mechanical and chemical tests can the form and exact nature of these structures be indisputably determined.

Fig. 8. This figure is also a photograph of a ground section of temporary enamel under higher magnification, showing a great amount of organic matter.

Fig. 9. This figure shows several lamellæ in a ground section of adult enamel and dentine.

Fig. 10. This figure is a higher enlargement of the same specimen, showing that these structures follow the general direction of the enamel prisms.

The reason that the enamel lamellæ and tuft-like processes have not been recognized as normal structures before is that they were always believed to be checks in the enamel. The first intimation that this theory was not correct I received from the next figure, which is a photograph of a ground section of enamel made by ultra-violet light. (Fig. 11.) A crack and a lamella, seen side by side, are easily distinguished. The ultra-violet light passes through the crack, causing a bright area to appear in the photo, while the lamella, absorbing the light, appears dark. This discovery caused me to decalcify a section of enamel under the microscope, closely observing it throughout the entire procedure. But here I was disappointed, for the enamel seemed to disappear entirely under the action of the acid. It was not until I photographed specimens with ultra-violet light, in different stages of decalcification, that I discovered these apparent cracks to be organic matter. These organic structures are so thin and so transparent that it is almost impossible to see them unless they have been stained. But to stain them is equally impossible in the presence of the acid, and any attempt to wash out to neutralize the decalcifying agent creates such a disturbance as to tear these delicate structures from their hold on the dentin, thereby causing them to be lost. For these reasons their

existence has never been noticed. Only by photographing them with ultra-violet light can their presence be proven.

The following illustrations are reproductions of sections photographed with ultra-violet light in different stages of decalcification under the cover glass.

Fig. 12. This figure is a photo of a completely decalcified specimen of enamel and dentin. All the inorganic salts have been dissolved and the organic structures, with the exception of a lamella, have been destroyed by the evolution of the gas, resulting from the action of the acid.

There is only one other argument for the non-existence of the lamella. It might be claimed that they are cracks filled with particles of dirt during the process of grinding the section. That this is not the case, however, is proven by the fact that particles of dirt do not possess sufficient cohesion to withstand the pressure caused by the evolution of gases during decalcification. Anyone observing the process of decalcification going on under the cover glass soon realizes the intensity of the pressure produced by the gases. Even the prism sheaths have not sufficient resistance to prevent their being torn apart, therefore but little can be seen of them in this photograph. An absolute proof, however, that lamellae are compact sheets of organic matter and not particles of dirt forced into a crack during grinding is shown in the next figure. (Fig. 13.) This represents a section of a specimen decalcified en bloc, by the celloidin method, and then cut into thin slices on the microtome. As this specimen was not ground, there was no possibility of dirt being forced into a check in the enamel. Another photograph showing how a check of the enamel appears in a decalcified section is seen in the next photograph. (Fig. 14.) It depicts a cross section of prism sheaths.

Fig. 15. This figure shows a section of enamel in the first stages of decalcification. The outer extremity of an enamel lamella is seen projecting beyond the partially decalcified enamel.

Fig. 16. This figure is also a photograph of a partially decalcified section, showing a lamella in connection with Nasmyth's membrane. Here true checks are seen in the undecalcified portions of the enamel. There are no fibres projecting from these dark lines as in th preceding photograph. (Fig. 17.) This figure shows a section in the first stages of decalcification. The prisms have been dissolved at the dentinal border, leaving the longitudinally cut sheaths and a

small lamella. In the body of the undecalcified enamel a true cheek is again seen. Here the ultra-violet light passes through without hindrance.

Fig. 18. This figure is a photograph of a completely decalcified section of enamel and dentin, showing a broad lamella in connection with Nasmyth's membrane.

Fig. 19. A longer and more delicate lamella is seen in this figure, which is also a photograph of a specimen completely decalcified under the cover glass. The prism sheaths are deranged beyond recognition.

Fig. 20. This figure shows another lamella under higher magnification, in which its fibrous character can be plainly seen.

Fig. 21. This figure, a photograph of a ground section of enamel and dentin, shows that the organic structures of the enamel are in connection with the dentinal fibres. Here one clearly sees how in several places the fibres of the dentin pass into enamel lamella.

Fig. 22. This, the last figure, is a higher enlargement of part of the foregoing specimen.

In conclusion, gentlemen, I wish to emphasize the fact that the enamel of the human teeth contains more organic matter than has heretofore been supposed, and that it communicates with the fibres of the dentin. We all know that the dentinal fibres are prolongations of the odontoblasts of the pulp, and that they are factors in the nutrition of the tissue through which they pass. Therefore some change must take place in the enamel after the death of the pulp. I would like to have your opinion, gentlemen, as to whether the enamel of a pulpless tooth is more brittle and liable to decay than that of a sound tooth. The brittleness of a pulpless tooth can easily be explained, for when the organic structures loose their vitality, the prisms are not held together so firmly. I would also like to know whether you have not frequently noticed that enamel may be sensitive. This is sometimes the case in grinding down a sound tooth for a shell crown. We rarely notice any sensation in the enamel during the preparation of a cavity for filling, for decay usually so undermines the enamel edges that the prisms are entirely cut off from their connection with the dentin. This question of sensitive enamel has been argued back and forth, and can only be settled by practical observation at the operating chair. It is always necessary that theory and practice go hand in hand; neither is complete without the other.

A MISSING FACTOR IN THE TREATMENT OF INFECTED ROOT CANALS.*

BY DR. H. J. HARWOOD, LYONS.

Since the treatment of infected canals was first practiced so many articles have been written on the subject, the question has been so often discussed, that it would seem there can be no longer room for anything original to be said thereon.

The very exhaustive paper read before this society at its last meeting by Dr. Hirschfeld seemed to cover the whole ground, so complete was his essay.

In reviewing, however, the technicalities of the ordinary methods of treatment and following on a few annoying non-successes when all seemed to have been effectually accomplished, I came to ask myself these questions, "How do we know, when are we certain, that formerly putrescent canals are thoroughly disinfected and are ready for filling without a doubt?"

By the ordinary methods after having mechanically eliminated from the canals all debris of pulp and enlarged these canals, if needs be, for greater prudence, thus cleansing the walls of the canal, we seal in the root or roots a disinfecting medicament. When later on we withdraw our shred of cotton we examine it carefully as regards odor and appearance. We may, while being satisfied that we have reached our end, for safety's sake repeat our treatment, going even beyond the mark for greater certainty.

But this odor and this appearance are relative; we have no real basis; it is all a matter of conjecture or appreciation. The smell of the medicament employed may mask the odor of infection if this be slight. Color also may modify appearance. These considerations led me about a year back to test these cotton shreds as I withdrew them from the canal.

The method employed is of the greatest simplicity. The cotton on being withdrawn is carefully protected from contact with the saliva, placed on a clean sterilized slab such as is used for water colors and a quantity of hydrogen dioxide, 12 volume, poured pon it. The reaction will be immediate on slow according to the degree of infection remain-

*Read before the American Dental Society of Europe, April, 1909.

ing in the roots. It is to be remarked that infection can be detected even when strong medicaments are used, showing the necessity of their repetition.

In case of multi-rooted teeth one root alone may remain infected. its detection is easy by the method described.

We may even employ this method at the outset of our treatment to control our first cleansing of the canal. When we are satisfied that the operation is complete, a small shred of cotton is taken on a broach and the canal carefully wiped round. The cotton is then tested in a bath of $H_2 O_2$ and we may even then find traces of infection. A hand microscope is used for the examination. The indication then is to continue the treatment until such time as the shred gives no reaction whatever.

One might at this stage fill the root, but this is not prudent in bad cases. There may be a fistulous opening and it is necessary to wait until this has disappeared, or an infection of the apex in the case of a necrosed or partially absorbed root. In teeth of loose structure the dental tubuli may even contain sufficient infected matter to thwart success. Hence the treatment is repeated in these bad cases. When there is no reaction after a medicated shred has remained in the canal for a few days, the roots may be safely filled without fear of after trouble.

There is one point to bear in mind. $H_2 O_2$ will give a reaction in presence of all organic matter, hence the presence of blood in the root may give confusing results.

I decided to wait to let time prove the definite results of this experiment and after a year's delay in my experience the method has invariably yielded good results. It enlightens me when the canals only seem in good condition because of the infection being so slight as to be indiscernable by ordinary methods.

There is a saving of time to the patient and myself in that having a certainty before my eyes there is no necessity for a prolongation of the treatment.

THE DENTIST.*

BY DR. HOWARD R. RAPER, INDIANAPOLIS, IND.

Suppose we talk about dentistry for a while. There are some things relating to the subject that I really want to say to you boys, not, I admit, so much because they will do you good, but for the same reason a hen lays an egg, that is, for personal relief.

You have been warned against becoming a mere dollar chaser. I trust you will heed the warning, for a man who works for money, and for money only, is neither a happy nor a useful citizen. But, and let me impress you with what I say, do not underestimate the importance of money.

Dr. Jackson said a man's intellect is measured very largely by his money earning capacity, and what he says is true. Not only are man's brains measured by his pocketbook, but, as near as I am able to observe, everything in the world has a cash value. Why, just think, the next time you stand on the corner waiting for a car: The cement you stand on has a cash value. The car you wait for has a cash value. The rails the car runs on have a cash value, just as the Indianapolis Street Railway Company can be represented by so much money. Perhaps a rag-man passes as you wait. A poor, worn-out, old man, driving a worn-out old horse hitched to a worn-out wagon. The outfit has a cash value, and so has the automobile that flips past. You get on the car and find that the privilege of riding has a cash value. Why, don't you know that even your girl's smile has a cash value? And her wit and her sweetness have their money values in the matrimonial market. (And her complexion—fifty cents a box at any drug store.) Honor and self-respect have their cash values. It is necessary often to mix a great deal of tact with a lot of money to purchase them, but they are bought and sold. And just let me say this in passing: The dentist who sells his honor and self-respect and professional standing is especially disgusting, because he sells out at such a disgracefully low figure.

I have not said, understand me, that the cash value the world places on a thing is a true measure of its worth. Not at all. If such were the case my girl would not be worth any more than a lot of other

*Response to a toast at the annual dinner of the Indiana Dental College, May 24, 1909.

fellows' girls, when, as a matter of fact, she is worth more than any other girl that ever happened. On the other hand, though, my ability to talk has a cash value and I get all that is coming to me.

Let me give a concrete example of how the people measure worth by money. Suppose as a layman you should go to a dentist and receive a prophylactic treatment, and you should then patronize a manicurist and have your finger nails manicured and you should pay the same per hour for the one operation as for the other. Would you think it required any more intelligence or skill, judgment or preliminary training to do the one operation than the other? I tell you you would not, nor would you think you derived any more benefit from having a clean mouth than from having clean finger nails.

Once upon a time—I believe that is the correct date—I performed what I have afterwards learned was an apicoectomy. I operated under aseptic conditions as nearly as possible considering the field of operation, and under a local anesthesia profound enough so the patient experienced no severe pain, but failed to impress my patient with my great knowledge and skill, until finding it necessary I took a couple of stitches closing the incision. Whereupon she (the patient) looked up at me, her eyes brimful of admiration and surprise, and said: "Why, Doc, can you sew up a cut?"

Why did this lady fail to appreciate what I did for her, and at the same time have so much respect for the man with intelligence and skill enough to "sew up a cut"? I can tell you. She had always paid a physician for sewing up wounds, and therefore thought it worth something to perform the operation. She had never paid a dentist for what he knew or what he could do, and therefore considered his work worthless, patronizing him just as she would a merchant, buying a crown or a filling now and then. Just think, boys, of the time consumed, and the knowledge, skill and labor necessary to scientifically treat and prepare a tooth for a shell crown, then of the comparative ease with which the crown itself can be made, and you will not tell your patient you are charging for the crown only. Why, suppose a surgeon should remove an eye and substitute a glass one and charge only for the insertion of the glass eye! He would be as crazy as a dentist.

You will hear a great deal of fault found with dentistry. You will hear it said that dentists are not professional men, just merchants; not students, just tooth carpenters. There is really but one

thing the matter with the profession. It is poverty-stricken. "It is no crime to be poor." If it were, most dentists would be in jail. It's no crime to be poor, but it isn't nice. You will hear it said that dentists are not clean or careful enough in their operations. Why? Because the fees gotten by the average dentist are so low that he can not be clean and careful and still perform a sufficient number of operations to get money enough to live on. The best boys in this and every other graduating class in the country are worried, not about their ability so much as their speed. They are wondering whether or not they can work fast enough to do a sufficient number of passably good operations to make a living. Until fees are raised to the point where we think more of scientific and artistic proficiency and less of speed, the problem remains the most important one in dentistry.

I read an article some time ago, written by a New York man, making a plea for higher fees. He said, in part: "He (the dentist) never becomes wealthy. He is never fashionable. His auto extravagances never go beyond one in the hundreds—one in the thousands would bankrupt him. (He might have added that there are actually some dentists who have no automobiles or airships at all.) His yacht never goes above a half-rater. He frequents places where ten cents is the tip limit. He goes all through life second-class."

You may presume from these pessimistic remarks that I am sore on dentistry, but I am not.

Did you ever stop and wonder what you would be if you were not a dentist? What else would you want to be? Would you want to be a lawyer, and, in the criminal court, ask for the life or liberty of another man and perhaps get it? Would you want to be a banker and by foreclosing a much overdue mortgage, send some poor old man from his home to the poorhouse? Would you want to be a manufacturer? You might find it necessary to employ child-labor to be successful, and of course you want to be successful in whatever you undertake. Would you want to be a druggist and work eighteen hours out of the twenty-four, and sell patent medicines to poor people already preyed upon by ignorance, superstition and sickness? Would you want to be an editor? My father was an editor of a country weekly. He published, in his advertising columns, fraudulent lies that he knew were lies. Had to do it, you know, to make a living. It is a part of the editor business. It was knowl-

edge of this fact, together with the observation that no circus ever produces in the tent what it did on the bill boards, that led me, as a child, to conclude that there was an element of dishonesty entering into all business. Would you want to be a minister and preach what your congregation wanted and not what you would like to preach to it? And go all through life trying to get something for nothing—or not paying more than half anyhow? Would you want to be a physician? You are specialists in medicine, and remember this—I do not care who you are, dentistry is bigger than you. You will never be able to practice dentistry as it should be practiced, though you spend a lifetime trying.

Since graduating I have been waited upon at different times and places by three physicians, all gentlemen and students, and each in his turn said to me: "Well, doctor, you being a sort of professional brother, I can be perfectly frank with you." Then none of them were perfectly frank with their clientele at large, were they? Of course not. Not because they did not want to be, for they did. All honest men want to be perfectly free and frank. But the practitioner of medicine often finds it quite impossible. Now, just one more man, and let him be, say, a judge of the Supreme Court of the United States. Would you want to be a judge? And inflict punishment on poor wretches who are as helplessly what they are as every judge is helplessly himself? And remember this—a judge is but the judge part of a justice machine, and bad judgment and bad government do not arise through an inclination to be bad, but an inability to be good.

Many of you boys will be—all of you could be—a type of man I admire—just a lonely dentist in a little country town, living and making the world a bit more livable place by working for the people in it. Personally, I thank Fate I am a dentist. I would rather live and die second-class than do some of the things some first-class men are forced to do.

In conclusion: Treat dentistry as you would your best girl, or, which expresses it better, as you would like to have your best girl treat you. Stick to it, believe in it, stand by it, and dentistry will be better off for your having been a dentist, just as you will be made better by the faith of a good girl.

PIN-HOLE PHOTOGRAPHY FOR DENTAL APPLIANCES OR CASES.

BY W. A. HECKARD, D. D. S., NEW YORK.

In these few remarks I wish to make two points:—

One, Pin Hole Photography—the other to show how one can make the orthodontia appliances, pictured here, easily and simply.

Fig. 1 was my first photograph of this series of experiments. All but Fig. 10 were made with a pin hole in a Brownie $2.00 camera. Number 10 is a cut I have had on my desk some time and I cannot just now recall to whom to give credit; however, as the same thing is shown in Angle's book as well as in other places, we will let it pass.

The "Pin Hole Camera." I was thinking of my boyhood days

when the idea struck me to try it. I pushed a thin disk of German silver behind the shutter, having poked out the lens to get at it. Any substance that will shut out light will do instead of the German silver—I happened to have that. I made the hole, and the tiniest one, with a very sharp pointed round excavator, rotating it between my fingers until it barely penetrated. The hole should be round and the smallest it is possible to make. It takes a longer exposure, but you get sharper pictures. Expose for from six minutes in the sun at ten, eleven o'clock or mid-day, to half an hour to an hour and a half along about three-thirty or four o'clock. It is in focus at all distances. An object that will go on the film, will be reproduced at its exact size if just as far away from the pin hole as the film is from the pin hole. Closer to the pin hole than the film, and your photograph will be larger than the actual size, and farther from the pin hole than from the film, the photograph will show the object

photographed as smaller than actual size. Fig. 1 was placed 5 inches from the pin hole, but I saw that a Morocco cover of a book was not a good background, and also that I had shadows. I placed Fig. 2 on a match box, used a gray box cover for background, and had

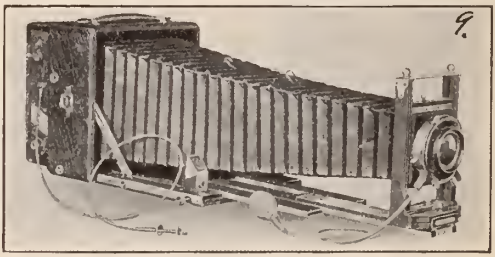
the background far enough away to preclude shadows. I had Fig. 2 too far from the pin hole, Fig. 3 too close, Fig. 4 not quite so close, until I found that at four inches and a half I could get an object on the film actual size that was no larger than the film. Small things I can enlarge, and large ones cut down, just as with a lens.

Figs. 5, 6 and 7 are better as to distance from pin hole, and Fig. 8 is all one could wish. Look at Fig. 8 through a tube of some kind like you would look through a microscope and you will see a

good picture. Fig. 9 is of the camera usually used in "close work," and it is a costly outfit, to say nothing of the bother.

This little discovery of a thing that is "older than the hills," applied to this work, will be of value to any dentist anywhere who runs on to some little thing that he would like to give to the profession, but might hesitate on account of the bother and expense of

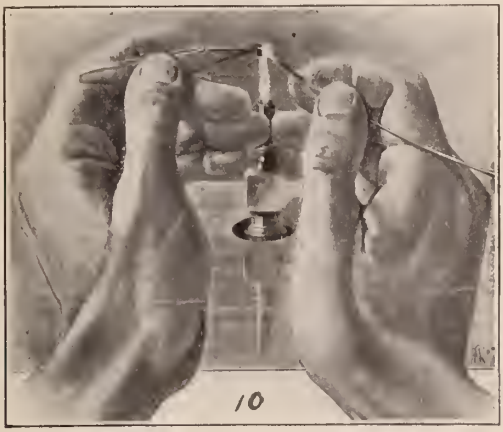
procuring a photograph. All he needs is a $2.00 camera, and he can write it up as I have here, and help the cause along. If he cares to, he may get a larger camera. The principle is the same. A camera that uses a 4x5 film will give a 4x5 picture of an object 4x5 if placed with the object the same distance in front of the pin hole as the film is behind it, and the pin hole must be just as small



in all cases. An 8x10 or any size, will be on the same principle. I have made a lot of pictures since I started in a few days ago, bought a developing box, developer, hypo and several packs of films,

and I am only out $6.00 so far. Set your camera on an object and go away and let it alone for fifteen minutes and then change the film and start another and you can operate the thing right at the chair and take no more time than it takes to open a drawer and take out some instrument.

Fig. 10 is the way we have been taught to solder bands and tubes. Let us go back to Fig. 1 for a moment. You see here some 18 gauge piano wire wrapped around two separate larger wires that have been filed to a bevel to form a miter. The wire has been bent past and then pulled back on the other side to use the spring thus



caused to hold the points of the two other wires together. I don't know of any place to recommend such an experiment, but it is just to show what may be done in this way, to hold for soldering.

Fig. 2 is a band and an expansion arch tube with a small tube at right angle to tube. Fig. 3, same enlarged (closer to the pin hole). Fig. 4, band and tube. Fig. 5, two tubes at right angles. Fig. 6, same as Fig. 4.*

Any number of combinations may be made with the piano wire, the cusp and band in a two-piece crown held accurately to place without risking balancing and the borax raising it, or wrapping iron

*Note.—Since this article was sent in for publication in April, Dr. Heckard writes that while attending the New York State Dental Society in May he saw Dr. H. A. Pullen demonstrating a combination of these very clamps for orthodontia, and although Dr. Heckard conceived the idea during the past winter and quite independently of any one, he wishes to give Dr. Pullen full credit for priority.—The Editor.

wire around it and having it slip. It is so simple I am afraid some will not understand it, because I sent a few made up wire clasps to a friend that I felt would cry "Eureka," and he came in and asked me—"what are these things for, anyway?" I hope that I have made this so plain that no one else will fail to understand.

MARK THE MUSIC.*

BY DR. HARVEY N. JACKSON, MILWAUKEE, WIS.

Though not a preacher, I bring to you a preachment.

In one respect, at least, I am not unlike a minister of the gospel. I do not always practice what I preach.

My hearers are not to think the speaker considers himself qualified by Nature or attainments to give them, poor benighted sinners, any admonitions.

As a matter of fact (and let it be spoken softly) from his knowledge of this Society and the reputations the dentists in this community have for good fellowship, some of the thoughts expressed in this address are less needed here than elsewhere in our state.

However, it has always seemed to him, since attending his first dental convention, that at least one paper could be profitably devoted to a theme apart from the purely dental, some sentiment that will appeal to our emotional natures and that will tend to lift us for a time above our daily grind. We see so much of dentistry at home in our offices that we might welcome a little restful variation at our meetings. We talk much of good fellowship and professional brotherhood, then let us try it on the social intercourse, the comradeship phase of our Society work.

The longer I live and the better I become acquainted with the men in my profession, the more convinced I am that we average up fairly well with other professional men. I know many big-minded and big-hearted dentists. And this knowledge does not come from knowing a large number, but rather from knowing them better.

True, the work which engages us necessarily narrows our mental activities somewhat, but the dentist of today is broadening. Our researches and ideas are no longer confined to the oral cavity. So

*Read before the Fox River Valley Dental Society, March 9, 1909.

on occasions of this sort let us philosophize a bit. Our philosophy, owing to our training along certain lines only, is not big enough to bring us into touch with the full life of the universe about us. It is our right and privilege to broaden it. Happily, we are not denied this favor because we are dentists.

Then let us reason together. Why must we stick so closely to the labor of our hands; in the great work required of us as dentists our hands must be trained and our minds ever ready for the suggestions and help we here receive from our professional brothers along dental lines, but we will do our work still better if we turn for a moment from the circumscribed horizon of the strictly manual and technical and allow our minds to reach up for a time among the mental and spiritual ideals of life.

The spiritual part of our nature, the soul's attributes, can not be fashioned and polished by physical agencies—the labor of our hands. The higher qualities of the mind have to do with the soul's cultivation. Primarily, it is true, the soul is developed through the senses, but gradually if we use our intellects aright, we come to see and feel the higher and more subtle forces of life about us. A portion of our time let us devote to the nobler sentiments, to an uplifting of the mind toward true companionship, charity and friendship. In this old workaday world of ours the society and sympathy of good friends furnishes the bloom and fragrance of human lives. Let us then give more attention to the cultivation of friendship's rose garden. We are to a large extent both architects and builders of life's structure and we must not lose sight of the fact that the well balanced, the most abundant life, is mental and spiritual as well as physical. The great question for us to solve is, how can we get the most out of this short span of life?

Hamilton Wright Mabie says, "He who is to win the noblest successes in the world of affairs must continually educate himself for larger grasp of principles and broader grasp of conditions." Labor is the first principle in gaining the abundant life; it adds to our structure dignity and strength. The foundations must be laid deep and broad and this requires rigorous work of hand and mind, but, my brothers, must we always live in the basement? The man who has blended in his nature the wise, sympathetic and vigorous qualities that combine to make the complete, well rounded character, is best equipped to face the problems of life.

Is the lark less a father that he can rise heavenward on lightsome wing and pour forth his gladsome song? He comes to earth again to comfort his mate and watch over his young brood, and all are better for the music.

"Higher still and higher
From the earth thou springest
Like a cloud of fire
The deep blue thou wingest
And singing still dost soar, and soaring ever
Singest."

"Teach us sprite or bird
What sweet thoughts are thine:
I have never heard
Praise of love or wine
That panted forth a flood of rapture so divine."

"Teach me half the gladness
That thy brain must know,
Such harmonious madness
From my lips would flow,
The world would listen then as I am listening
now."

—Shelley.

May we not at times be lifted above the commonplace to the betterment of ourselves and our fellow men?

As many of my hearers know, my office windows look out upon Lake Michigan. We are high above the din and dust of the city streets. And oftentimes when weary in body and harrassed in mind, I gaze out upon the water's broad expanse and the very bigness, the immensity of the scene, the ever, ever changing colors, the lights and shadows from clouds and sun, make me forget for the moment the little annoyances incident to a dental practice. Listening for a time to the soundless music, the petty world-cares seem to vanish and I am able to turn to my work again with fresh zest, and from the higher visual angle, everything about the case in hand takes on a more promising aspect.

Day dreams? Yes, but these dreams that give to ordinary mortals a glimpse of the ideal, that inspire and stimulate us to try again and to do it better, to try for another matrix and this time with more patience and care, to try still another color combination for the inlay until at last a perfect one results. Yes, day dreams I grant you, but, friends, can you call them idle dreams?

Verily, we must lay the foundation well and when finished, let us climb up and out of the cellar and build upon our walls life's

superstructure. The sills of honesty and conscientious endeavor, the beams of industry, the rafters of thrift and over all the outer adornments of courtliness and gentleness of speech.

The foregoing considerations, important though they be, are still of less importance than the inner furnishing and appointments of this our earthly habitation, our innermost selves. As many of our stately mansions are but charnel houses and their inmates live dull lives, without courage to face life's problems, or hope for the future, so may our lives be barren and dead, if we neglect the finer qualities of the heart and soul that combine to make the well balanced, the abundant life. Have we the large sanity, the sympathetic sense of proportion, the wide humor, to see in the common things of life, in the great flowing tide of humanity, the essentials that make life really worth the living? Are our souls responsive, our hearts attuned to catch the music all about us? The man who is color blind can get through the world very well, but owing to this defect of vision he can not distinguish color, he does not sense the impingement of certain color rays, and the beautiful world of varying hues is forever shut out of his life.

The Marconi sending-instruments would be of no value had the sister ship no delicate receiver to catch the vibrations of the other. We must then try to tune the harps of our inner selves to vibrate at the sound waves of the finer and more subtle influences that touch our lives. The air is all aquiver with the vibrations and may our sympathetic nature, the receiver, be ever ready. Burns could say to his soul, sing! and the chords of the harp would tremble, and sweet and wonderful music came from them as if touched by fairy fingers, music that will go singing down the ages. He could hear the music in the common things about him; his eyes could see the "Hearts of gold in suits of hodden gray."

Listen to his words of pity, on turning up with the plow the little field mouse in her nest:

"Wee, sleeket, cow'rin, tim'rous beasty
O what a panic's in thy breastie!
Thou need na start awa sae hasty,
Wi' bickering brattle!
I wad be laith to rin an' chase thee,
Wi' murd'rin prattle."

And again the compassion he shows on turning a daisy under the furrow:

"Wee, modest, crimson-tipped flower,
Thou's met me in an evil hour,
For I maun crush amang the stoure
Thy slender stem.
To spare thee now is past my power,
Thou bonnie gem."

But say you, where may we busy dentists get the visions and hear the music? Brothers, we all have the harp. God in his infinite goodness gave it to us. It is in our power to keep it tuned and susceptible to the influence of the true and beautiful. When we begin to grow narrow minded, uncharitable and cynical, our harp gets out of tune, the strings grow rusty and at last we stow it away forever, in the attic room of our lives, there to lie unused, forgotten. Music in the world? O yes, but not for us.

We, of the dental profession, can not say that our daily work gives us no opportunity to exercise the sentimental side of our natures.

Indeed sympathy and kindliness should be a part of the dentist's stock in trade.

Do not the humble thanks of the poverty stricken neglected little child make more music to you after saving that first molar than the gold of the well-to-do?

Do not the kind words of appreciation for the relief of a maddening pulp congestion, or the beautiful porcelain restoration, find a responsive chord in your heart?

Some good word spoken for you by a brother dentist, a hearty hand grasp and the godspeed of a friend, are they not music in your ears? Does the gay laughter of the little children irritate you? or does it remind you of those dear old days of long ago, when life was little else than song and "of the old swimmin' hole?"

"There's a sound that rings in my ears today,
That echoes in vague refrain,
The ripple of water o'er smooth washed clay,
Where the wall-eyed pike and the black bass play,
That makes me yearn in a quiet way,
For my old fly rod again.

Back to the old home haunts again,
Back where the clear lake lies,
Back through the woods
Where the blackbird broods.
Back to my rod and flies.

I'm longing to paddle the boat today
Through water-logged grass and reeds;

Where the muskrat swims, and the cat tails sway;
Where the air is cool, and the mist is gray;
Where ripples dance in the same old way,
Under the tangled weeds.

Back on the old oak again,
Back by the crystal brook,
Back to the bait,
And the silent wait,
Back to my line and hook.

I wish I could wade by the water's edge,
Where the fallen leaves drift by;
Just to see, in the shadow of the ledge,
How dark forms glide, like a woodman's wedge,
Through the driftwood piles and the coarse marsh sedge,
And to hear the bittern cry.

Back where the tadpoles shift and sink,
Back where the bullfrogs sob;
Back just to float
In the leaky boat,
Back to my dripping bob.

Oh it's just like this on each misty day,
It's always the same old pain
That struggles and pulls in the same old way
To carry me off for a little stay
By the water's edge, in sticky clay,
To fish in the falling rain.

Back to my long black rubber boots,
Back to my old patched coat;
Back to my rod
And the breath of God
Home—and my leaky boat."

—F. Colburn Clark.

Are you stifling your emotional nature and making life's horizon more circumscribed by your daily habits? Working nights and sundays at the office, thus narrowing your mental and spiritual vision, by devoting all the waking hours to the getting of money?

Are the walls becoming dull, are the shades always drawn over the soul's windows shutting out the light and the music? After the necessaries, money is all very well to help to get life's refinements and cadences for ourselves and families, but further than that, of what use is it?

Turn again to the Scottish bard and know the truth!

"To make a happy fireside clime
For weans and wife,
Is the true pathos and sublime
Of human life."

True we can not all be poets nor yet bards, else there would be no dentists. But we can by reading their written fancies, get a glimpse of their visions and catch a few strains of the wondrous music their sensitive, high strung souls are tuned to hear and pass down to us of the coarser clay. By striving ever to see the best in the other fellow, we shall awaken the deep and soft music of cheering friendship. As the poet says,

"If I knew you and you knew me
If both of us could clearly see,
And with an inner sight divine,
The meaning of your heart and mine,
I'm sure that we would differ less
And clasp our hands in friendliness;
Our thoughts would pleasantly agree
If I knew you and you knew me."

—Nixon Waterman.

we shall keep the sweeter tones of life's music echoing in our souls by not allowing ourselves to become embittered, for sometimes,

"What seems a fault may prove a scar won on some hard fought field where we might faint and yield."

"Then gently scan your brother man
Still gentler sister woman,
Though they may gang a kennin wrang
To step aside is human:
One point must still be greatly dark,
The moving why they do it;
And just as lamely can ye mark,
How far perhaps they rue it."

"Who made the heart 'tis He alone
Decidedly can try us,
He knows each chord its various tone,
Each spring its various bias:
Then at the balance let's be mute,
We never can adjust it;
What's done we partly may compute,
But know not what's resisted."

By looking upward ever for our ideals, upward to better books, upward to better people, upward to better things, upward, still upward toward the light and the music, so we shall keep the breath of a higher and nobler life strong and active within our minds and hearts.

"The man that hath no music in himself, nor is not moved with

concord of sweet sounds, is fit for treasons, stratagems and spoils, let no such man be trusted."

"How sweet the moonlight sleeps upon this bank.
Here will we sit and let the sounds of music
Creep in our ears; soft stillness and the night
Become the touches of sweet harmony.
Sit Jessica. Look how the floor of heaven
Is thick inlaid with patines of bright gold:
There is not the smallest orb which thou beholdest
But in his motion like an angel sings,
Still quiring to the young-eyed cherubims;
Such harmony is in immortal souls;
But whilst this muddy vesture of decay
Doth grossly close it in we can not hear it."

Mark the Music!

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, FORTY-FIFTH MEETING, AT DANVILLE, MAY 11-14, 1909.

DISCUSSION OF THE REPORT OF THE COMMITTEE ON INLAYS FOR THE POST-GRADUATE COURSE.

DR. EDWARD H. HICKMAN, of Arcola:

According to the paper, history shows that as far back as eighteen years inlays have been placed and are still doing good service. It is a matter of judgment on the part of the operator, first, as to where he should place an inlay, and then as to his ability to put in a good one.

The indications given by the essayist for an inlay coincide with my ideas exactly. With porcelain I have not had very much experience, but the greatest drawbacks I have found have been the color proposition, and the durability of the inlay. Just where we would like to place one the most is where we cannot put it. I believe the cast gold inlay has taught us more than anything else the proper preparation of cavities for gold fillings. It has broadened our minds. It has brought us to a better preparation of all cavities. Some have thought that the inlay would be overdone, but I hardly believe that it will, from the fact that I do not think it is an easy method. To make a good inlay is as difficult, I find, as to make a good gold filling. There is one thing that has been said about the inlay, namely, that it

is an honest filling; that it will come out if you do not get it right. Sometimes you can anchor a poor gold filling which will stay for quite a while, decay taking place around the margins while the filling will remain there. We do not like to have mistakes come back to us so soon after the work is done. Therefore, I do not believe the problem of inlays will be carried too far.

The making of a wax model is a tedious and difficult operation, and I believe that is about half of the inlay proposition, in that if you do not get a good wax model you do not get a good fitting inlay, and your ability to put in a foil filling will show in your ability to get your wax model.

Another proposition that has worried me is the polishing of the interproximate spaces of large gold inlays without doing considerable injury to the gum tissue. I find they cut a great deal harder than gold fillings, and that gold fillings can be polished a great deal easier than gold inlays, and especially where they come up to the cervical margin. We can there burnish gold fillings and polish them smooth, but if we do not get the gingival margin of our wax model properly trimmed it is difficult to polish the inlay after it is once set. One of the greatest helps we have had from the cast inlay we find in crown work in casting copes, and also full gold crowns. I believe we will get more good out of it in that manner than we will by the inlay filling proposition.

Dr. Robert Goebel, of Lincoln:

I have been much pleased with gold inlays, but I cannot say so much for porcelain inlays. As has been mentioned by the preceding speaker, the color problem does not in my hands come up to my expectations, and I have rather treated it with caution. I am very enthusiastic over gold inlays, but I can say I think we have here a method of operating which can be abused. As has been said, a poor gold filling may stick there and yet in a short time decay takes place around it. We may also be deceived in our gold inlays. We may imagine we have made a perfect filling, but the deficiency of our work is very often concealed by the cement, and consequently will last perhaps not much longer than a cement filling. It takes care and good work to make a good gold inlay. The one who fancies he can make one more easily than a gold filling, I think, when he puts a magnifying glass on it, will find that he has been deceived.

Dr. E. K. Blair, of Waverly:

Just a word or two, but not in the way of discussing the paper itself. The trend of thought of the members of this Society this afernoon has been, I take it, the hope that our young men may come to the front. After having heard papers at this session by young men, I want to ask the members of the Illinois State Dental Society if they are not proud of what the young men have done in connection with the work they have undertaken, and particularly in connection with this paper on inlay work. (Applause.) It seems to me, we have taken a long step in the direction of proving that our young men are not only efficient, but wonderfully capable, and I wish to congratulate the author of the paper upon the splendid report he has made here, and this Society will help him and any other young men in any work they may see fit to undertake.

Dr. F. E. Roach, of Chicago:

I appreciate the paper very much, and this is a class of work in which I am interested.

The cast method is a new work which we are quite unfamiliar with, particularly the majority of us, and there yet remains a great deal of experimental work to be done. Our investment material is unreliable, there is expansion and contraction of the wax, the degree of heat at which the material should be cast is uncertain as well as the temperature of the investment material when we make our casting, etc. There is much to be learned yet for the perfection of our casting methods. I should like very much to see some one in this Society, or a committee appointed, to take up work along this line, a post-graduate work, in order that further experiments may be conducted with reference to casting, as I believe much good would be derived from it.

Dr. F. H. McIntosh, of Bloomington:

Sometimes knowledge amazes us wonderfully. I have learned since coming here that there are practitioners who have not as yet attempted a cast gold inlay. What do you think of that? It is a surprise to me to know that there are members of the Illinois State Dental Society who have not yet put in an inlay. I think that is conservatism personified.

Dr. J. N. Crouse, of Chicago:

I mentioned to our President a fact in regard to cement which I never heard stated before, and it is of great importance, namely, cement should never be used for any purpose on a mucky or damp

day, or in any damp climate. If it is used on a damp day, you will get different results. I have made many tests and have found that it is hard to pull anything apart after it has been cemented on a dry day, whereas if it is cemented on a damp day it will easily come apart, even when you have mixed the cement scientifically. My experiments have extended over four or five years, and while they have been extensive, the results have not been sufficiently uniform for me to publish them to the profession. I hope to do so some time. The cement problem in all its phases is a difficult one. There are no two men who will mix cement alike. I have had four different men mix cements, put them in experimental tubes, and no two got the same results with any cement on the market. If you have an inlay you cannot stick well on a dry day, do not think of putting it in during damp weather, because it will surely fail. I believe that a great many failures in inlays are due to that fact.

DR. WALTZ (closing the discussion):

The members of the Society must bear in mind that this paper was merely a condensation of articles that were carefully read, and that it was largely a series of quotations.

The idea expressed by Dr. Roach is very pertinent. We are possibly in the empirical stage of inlays, and anything that is new we are a little afraid of for the same reason that an Indian might be afraid of a locomotive upon seeing one for the first time. He would not understand it, and so we have been as a profession perhaps frightened at the possibility of failures from this method. At this time, however, we are pretty well satisfied that there is nothing to be afraid of. If we will get down to work, and investigate e. g. expansion and contraction of the waxes, and the proper relations and the different stages of the procedures, etc., we will unquestionably achieve practical scientific results.

DISCUSSION ON THE ADDRESS OF DR. PETTIT.

DR. C. N. JOHNSON, of Chicago:

Mr. President, I am sure I speak the sentiments of the entire Society when I say we feel under deep obligation to Dr. Pettit for coming here and giving us this excellent address. Co-operation of the professions, particularly the medical and dental professions, is something that has a vital effect upon the welfare of the people of the community, and after all every movement, every sentiment of pro-

fessional life is unworthy of propagation unless it has in view the betterment of the people.

Dr. Pettit has shown us conclusively the benefits of organization as they relate to legitimate legislation. We have had an illustration of that in our own Society very recently, and we made an impression, I believe, upon the legislators of our State that will not soon be forgotten. I think I may take this time and occasion as one of the members of the Legislative Committee to thank the members of this Society for their co-operation in addressing letters to the legislators as Springfield regarding recent enactments. I believe that at one time, within the space of a few days, about six thousand letters from dentists of this State went to the members of the Legislature. That made an impression that could have been made in no other way. Dr. Pettit has said that an individual may go down to Springfield and he will be treated nicely and that is all. But when an organization expresses itself in a particular way, it receives some recognition. Dr. Pettit has exemplified this so perfectly that it is unnecessary for me to comment further on it.

I did not know what Dr. Pettit was going to present to us today, and when I read the title which related to co-operation of the two professions, it occurred to me possibly he might speak in some measure of the benefits of consultation between physicians and dentists. I am frank to acknowledge, Dr. Pettit, that we as dentists need association with medical men, because they are broader in their scope, and in their methods of thinking, than are dentists. The practice of dentistry is more confined to minutiæ and to a consideration of the small things, and that of itself has a narrowing influence. The practice of medicine is broader than the practice of dentistry; that is not acknowledging that it is more important, because it would not be in the nature of a dentist to acknowledge that, but it has a broader field and wider scope of vision, and dentists may receive very much indeed by consultation and by association with members of the medical profession. Then, I believe, sir, that medical men may very advisedly and advantageously consult with dentists in many of the relations of their work, particularly in the possibilities of oral hygiene, something which, I believe, is now creating interest in the medical profession more than it has in the past, something that touches at the keynote of the best medical practice. Then, the medical profession may possibly learn from us something of the possibilities of surgery of the

mouth. I will take this occasion to say that in the past the general surgeon has not lived up to the highest possibilities of his art and science in the practice of oral surgery. Very frequently the general surgeon has made external incisions which have left scars upon the human countenance that in the modern practice of oral surgery by dentists would never have occurred, because the operations would have been done in the mouth without making these external incisions, and, it seems to me, the general surgeon can in that way learn something from dentistry.

The object of all organization is and should be for the benefit of the community. That is one thing we must remember in our organizations, whether medical or dental, that we are not living solely for the benefit of the profession itself, but primarily and fundamentally for the benefit of the people of the State in which we live. If we have that idea in view, I am certain that in any organized movement we may foster in these professions, we will, as Dr. Pettit has emphasized, not ask for anything in legislation that will be detrimental or will be disadvantageous in any way to the people of the State. I am very glad Dr. Pettit emphasized that matter. It is being emphasized more and more in our Councils in dental societies, that in advocating any legislation or any movement the prime effect and the object of that movement should be for the betterment of the people of the State.

I want to express my appreciation personally to Dr. Pettit for the time and trouble he has taken to come here and address us today. We feel honored in having with us the President of the Illinois State Medical Society. It is a recognition of dentistry which I, as one of the members of this Society and of the profession, prize highly, and I want to express in behalf of the Society my appreciation to Dr. Pettit for coming here. (Applause.)

Dr. Thomas L. Gilmer, of Chicago:

I shall detain the Society only a few moments, as Dr. Pettit and Dr. Johnson have covered the field so thoroughly, but little is left for me to discuss.

The political aspect of the case is one worthy of consideration. As Dr. Pettit and Dr. Johnson have told us, we can gain but little by simply going to the legislature single handed, but when we go in a body representing thousands, not necessarily personally, but by letters to our Senators and Representatives, we are often able to ac-

eomplish mueh. Sueh a formidable array eannot be resisted. If the medical profession is ready to aeeept our co-operation, I ean assure Dr. Pettit that the dentists are ready and willing, yea, more than willing, to join with them in any sort of work whieh may be thought benefieial for both the medieal and dental professions and for the people of Illinois. It seems to me that there is, in addition to the politieal aspeet of the subjeet, a higher one whieh may be aeeomplished through closer relations whieh should exist between the two professions. We can benefit each other mueh by eonsultation. The dentist needs the help of the general praetitioner, and the physieian needs the dentist's assistanee in some eases.

The physieian is just beginning to realize that in the mouth there are etiological factors which at times may eause grave nervous. gastrie, and other forms of disease, with which he is unable to eope without the assistance of the dentist. In keeping the mouth in a wholesome eondition and the mastieatory apparatus up to its greatest effieiency, the dentist does mueh toward the prolongation of life and adds much to the eomfort of mankind. The dentist's familiarity with the pathology of the mouth affords him opportunity, at times, to help the physieian to arrive at a diagnosis, and the physieian ean oftentimes help us, if he is willing to aid us, to arrive at proper eonclusion as to the eause of disease and the treatment of it. Take, for instanee, the treatment of fraetures of the jaw. We can be of immense benefit to the general praetitioner of medieine in sueh eases, and he has reeognized our helpfulness in this direetion more than in any other. When we know these things and realize how we may benefit eaeh other, it seems to me the time has eome when we should take advantage of the benefits. We are willing and more than willing to help the medical profession politieally and otherwise and we want their help.

Dr. C. P. Pruyn, of Chieago:

The field has been eovered so thoroughly there is very little left to be said; nevertheless it is a pleasure to represent the dental profession in speaking on this subjeet. I will say, to Dr. Pettit, we are greatly pleased to have him with us, and extend to us the right hand of fellowship. We appreciate it, and in return we extend to him both hands. We will meet him more than halfway. Let us get together and hug eaeh other, and the good work will go on.

In the eity of Chieago during the last year there were several meetings held by what is known as the get-together elub, that is,

three great organizations, medical men, pharmacists and dentists. We are getting together closer and closer. We understand each other more and more, and we have a great many things to learn from each other. Physicians and pharmacists complain of our lack of knowledge with reference to prescription writing, and that there is too much prescribing of proprietary medicines. It is contended that we are the recipients of the benefits of the advertising proprietary medicine men, who send us all sorts of stuff which we receive in our offices, and which we prescribe without knowing their formulæ, and in this particular we are greatly at fault. It seems to me the time has come when as educated dentists, who have been taught materia medica and therapeutics, we should cease prescribing proprietary medicines, and when we do prescribe medicines, we should prescribe those agents about which we know something. Even then it is bad enough when we prescribe medicines we do know something about; but to prescribe indiscriminately so many of these materials, mouth washes, etc., that come to us, is injurious to us as a profession, and in many instances greatly injurious to our patients. I would say to Dr. Pettit that in our dental colleges we have the subjects of materia medica and therapeutics taught thoroughly. We have grown immensely during the last decade in this particular, and we can teach materia medica and therapeutics as successfully as they are taught in medical colleges. This means bringing us nearer to oneness with the medical profession.

A large number of our dentists are also M. D.s, as well as D. D. S.s. This brings us closer and closer together, so that we are understanding each other more and more. I am proud of the fact that I am a dentist, and I am also proud of this organization, and I assure Dr. Pettit that we will be with him in all things that pertain to higher and better education.

Dr. E. K. Blair, of Waverly:

I did not expect to be called upon to say anything on this subject. I wish to thank Dr. Pettit for coming here and delivering this splendid address. There is only one thought that I will present to you, it having been suggested by the remarks made by Dr. Pettit.

He spoke of how effective an organization could be when backed up by large numbers and that if only one or two men went to Springfield they would accomplish very little. If you will go to Springfield and observe, you will find that all of the large corporations, like rail-

roads and other business interests of that sort, are represented by capable men who remain there on the ground during the entire session of the legislature. You will discover that the farmers trust their business to the men they have elected, and at the end of the session, with all due respect to the members of the legislature and to the farmers, I think you will observe that the business best looked after and best attended to is that of the large corporations who have kept on the ground capable, efficient representatives, all the time. Frequently these men are good lawyers. I have had personal acquaintance with many of them, and they are about as strong men as you will meet anywhere in business.

If we are brought together as we should be, physicians, dentists, pharmacists, and nurses, and if the public understands that that which we ask for is always that which is best for the community first and our professions afterwards, when we reach that point in our careers, I believe it will be possible for us to keep on the ground at Springfield a few men who can stay there and by their daily presence have the members of the legislature know that the organizations they represent want this or that legislation brought about, and when our legislators realize that our representatives are backed by strong organizations, I am sure we will accomplish in subsequent sessions of that body what we desire. It is very important to have an active representative or representatives on the ground, and I believe this is not only legitimate, but in time, when we are properly organized, it will be the right thing to do. An organization of that sort will be effective and produce results that will help the whole State of Illinois. (Applause.)

Dr. Truman W. Brophy, of Chicago:

I came in a little late to hear the beginning of Dr. Pettit's remarks, but when I heard he was coming here to speak to us, I knew he would bring something that would deeply interest our members.

The physicians and surgeons, dentists, pharamacists, and nurses have one mission, and that is to serve suffering mankind, and so we come together on a common ground, and I trust what he has proposed will be carried out, so that the members of the various professions, when joined together in an effort, will be able to accomplish something more than individuals would be able to at Springfield. Just what the status today is of the bill for the licensing of trained nurses, I do not know, but I sincerely hope that if this bill has not yet passed,

it will pass, and that no man or woman will be able to get the position to take care of a person who is ill without having the qualifications to do that work properly. There is much to be considered in connection with the well-trained nurse, just as in the well-trained physician, and no man knows better than Dr. Pettit how feeble we would be in caring for our patients, and how unsatisfactory the results would be, were it not for the skilled trained nurse constantly by our patient's side. I want to beg of everyone here to assist in carrying through this important measure to show what legislation can be accomplished by combined effort. Only a little while ago, when a bill was before the legislature for the establishment of a hospital for tuberculous patients, it failed, but when the people of Illinois arose in their strength, and the medical profession demanded the passage of such a bill, and large appropriations of money to carry on the work as it should be done, the bill passed and has become a law, and a liberal appropriation has been made to care for this class of sufferers.

I want to thank Dr. Pettit personally, and I think I express the feelings of every member of the dental profession when I say that we all thank him for his presence here, and I am sure he will find a responsive echo when he appeals to the members of our profession for assistance in the procuring of all kinds of legislation for the betterment of the people of the state. (Applause.)

Dr. G. V. Black, of Chicago:

The main features of the address that we have been so glad to hear have been touched on, and yet I feel that there is one phase that has not been sufficiently considered, and to my mind one that is very important.

It so happened that I went over the field where our troops were quartered in Florida, and examined the ground upon which their camps were situated and compared it with other situations in the neighborhood. Some of you will remember that there was a good deal of feeling expressed because some of our troops were placed in unfortunate positions as to sanitary conditions, and that this was controlled by the commanding officer, instead of by the medical men, as it should have been; hence the error and the loss of many lives. The commanding officers should have control of men in strategic positions and when nearing the enemy, and they must be placed necessarily in unsanitary conditions sometimes for the benefit of the mere position while held strategetically. That is always true. But in all sani-

tary arrangements the medical man should be the one consulted, and not only when soldiers are handled, but when sanitary encampments are made, when sanitary rules are made, and in the carrying-out of sanitary laws medical men should be at the helm, because they are the men who are skilled in this particular subject. It is wrong to trust these regulations to business men. The business men of a community, or the business organizations in a community, are often placed in such a position relative to sanitary regulations that their business interests may be injured and influence them wrongly in the carrying out of sanitary rules. They will naturally look to their business rather than to the greater interests of the community as a whole. The medical man would further the interests of the community as a whole, together with the fact that he is the man who, by his education, is best able to see that which will be for the greatest good to the greatest number. I hold that this should be a recognized condition in all sanitary arrangements and enactments of this country. It was practically this that gave victory so continually to the Japanese in the Russo-Japanese war. No armies of the world before had been controlled in sanitary matters as the army of Japan was controlled, and it was because of the recognition of medical men in the control of the sanitary matters. This thought, I think, should be kept constantly before us, namely, that this one thing should be controlled throughout our land by medical men. (Applause.)

Dr. Pettit (closing the discussion):

I have nothing further than this to say, that I have been highly pleased with the reception I have received at your hands in extending the right hand of fellowship, and I hope the good work that has been going on quietly between our two professions for several years, that seems to have been brought to a climax today is only the beginning of great things that the several branches of our profession can accomplish when working together for the public good. I thank you. (Applause.)

DISCUSSION ON THE PAPER OF DR. F. E. ROACH.

Dr. E. A. Royce, of Chicago:

Mr. President, first, I would call your attention to the promience of the teeth as a feature of the face. Even small children, but particularly persons who are educated, recognize a monstrosity in the shape of a porcelain tooth that is off color. People can tell whether

it is off shade or not, and it is this that Dr. Roach has been trying for months and even years to remedy. I frequently hear girls of fifteen remark upon discolored teeth in the mouths of certain persons, or crowns that have been put in that look "so artificial," and if young people are educated in that manner, at the present time, it behooves us to be so educated that we can match these teeth, so that they will not be as conspicuous as if we had a gold shell crown in the front of the mouth.

The manufacturers have done a great deal for us in the way of teeth, but in the color of them they are not doing as much for us as they did five or ten years ago. I have had occasion, since working with Dr. Roach, to attempt to match up closely some of the shades by the shade guides I have had for say ten years, and I found the translucent effect at the points and the density at the necks of the teeth have been done away with to such an extent that we have china teeth to look at when we return from the supply house. I may have sent along a shade guide and requested a match, but the tooth that was returned to me was entirely different in effect when placed in the mouth. We have no remedy with the manufacturers. We must devise a remedy ourselves, and this, we think, has done so.

Sometime ago I had occasion to talk with the manager of one of our large supply houses in regard to the shading of teeth, and he listened attentively to what I had to say. When I got through, he said, "Doctor, we do not care anything about your trade in teeth. We do not care to cater to people who are as particular as you are. We are making teeth for the men who are putting in 'bread and butter' teeth." I told him I wanted a dessert tooth, and I have been hunting for it ever since. I think we have found them. We can get nothing further from the manufacturers as long as the establishments that put in cheap dentures purchase them in five or ten thousand dollar lots, as I am informed some of them do. Our purchases are exceedingly small as compared with theirs.

I see but one thing to criticize in Dr. Roach's paper, and that is when he speaks about exactly matching teeth in the mouth. I know of no tooth in the mouth but the central incisor that I would exactly match, and the central incisor, if it is one shade off, will hardly be noticeable if the artificial central is darker. Aside from the central incisor, in putting a tooth in the mouth to stand by the side of another, they must harmonize with each other but not match.

As to the effect of light in selecting teeth, it is an important feature. Almost without exception, if you send to a supply house for a tooth, and send simply a shade guide along, you will have returned to you a tooth that is a shade lighter than the one you sent. Their lights are the glary lights; they are equal to the strongest lights we get in our operating windows, with the light shining exactly upon the teeth. We know, when the teeth are in place in the mouth, that the direction in which the light strikes the teeth and its intensity have a great deal to do with the shade, on account of the difference in reflection and refraction of light by the different density of bodies, as well as the difference between reflection and refraction of light by the porcelain and the natural teeth.

There is another thing in this same line which seems to have been altogether overlooked, and that is the shadow problem. This is important in prosthetic dentistry but perhaps not so difficult to overcome as the shadow problem in porcelain inlays. This shadow problem I cannot very well illustrate here, but I will try to demonstrate it to some of you at the clinic. We must consider the shadow of the lips when the teeth are in place. There is no other position you can get an artificial denture or crown into that will reveal a shade the same that it will in the mouth. This was illustrated very nicely the other day by an assistant of mine who has been with me but a few weeks. The patient met with an accident some years ago, breaking off the central incisor and chipping the corner of the other. The second central was built down with gold, and the fractured portion of the other had hung on loose for some time and came out the other day. The tooth that was filled with gold had discolored, and being a central, I started out to find a tooth to match. The conditions were such that I wanted to put in a partial plate. After looking over what teeth I had and sending to several supply houses, I selected one which was light as compared with the dark central. I went to work with the mineral stains and fixed it up in good shape. It looked pretty well. I sent it over to the laboratory to put on to a plate, and the laboratory man said, "What are you going to do with that? That's a nice-looking thing!" My girl said, "You ought to see it in the mouth." You want to see your tooth in the mouth in the position it will occupy, with the light thrown on it, as it will be seen when the person is in an upright position, when the lips are casting shadows upon them. Then you can determine something about

the shade you want, and if you can get shades at the supply houses that will stand these tests, you can do better than I have been able to do for a number of years.

Dr. Roach spoke of the variation of shades of teeth in the mouth. Perhaps you can appreciate what I think of that when I tell you how I started to study the shades of teeth. A good many years ago one of my fellow practitioners in a small town in the east came in and asked me to look at a denture he had put in for himself. My first question was where I could buy teeth similar to those he had in his mouth, and he said he could not buy them. He picked them from the odd teeth in his laboratory, and it was as natural a looking denture as I had ever seen. I concluded if that was the way we could get natural-looking dentures, there must be some way by which we could match teeth by imitating nature more closely thean we have been able to do, and I commenced to study. I do not know how many mouths I studied in the next seventeen years. Then I began with a tabulation of shades in the mouth, examining every patient that came to me, making up the dentures of every mouth I could get shades of that were not affected by carries or fillings. I examined carefully some three hundred mouths, in patients from eight to seventy years of age, and rarely saw a mouth with two teeth of the same shade standing side by side except the very light, pearly, blue-white teeth, and in some of these I could not tell the difference of shade between the central and lateral, but the cuspids were darker. By shade I mean a perceptible difference. The thing we are after is to replace natural organs with artificial ones, which will match so closely that the difference will not be seen, and this can only be done by variations of shades in the selection of teeth. If you are going to insert a lateral make it a little darker than the central, but have a greater difference between the lateral and cuspid. The cuspid is the darkest tooth. The lower cuspids are of lighter shade than the superior. The lower centrals are of darker shade than the upper centrals; the lower centrals and upper laterals are nearly of the same shade; the lower laterals are darker than the upper laterals, and the first bicpspids are lighter than the cuspids. The cuspids are darkest, and you shade both ways to the centrals and second molars. Cuspids usually run brown. Even in blue teeth you will find a brownish-yellow or grayish-brown shade in the cuspids. No one ought to think of putting in teeth of one shade as substitutes for teeth that vary like

that. I presume the reason this phase of the subject has not been more generally accepted is because of the impossibility of matching teeth from the different sets. I have done it myself in many cases with satisfactory results, but never with as much satisfaction as it can be done with the use of the mineral stains.

I had an assistant who was as expert in the selection of teeth as anybody I had ever seen, and I have given her services for a week in order that she might select a set of teeth for a plate. She went from one supply house to another in order to get the appropriate shades. Now, we have it all simplified. A man can take a set that may be a shade lighter than he wants, sit down, and with one or two colors he can shade up a set of teeth in thirty or forty minutes. When he becomes more expert he can possibly do it in twenty minutes. He fuses his color, and with the use of his little electric furnace he can soon have a set of teeth that are more appropriate for the mouth than anything he can get in any other way.

The question of appreciation of patients was spoken of by the essayist, and that is one of the principal questions in the practice of any profession, medical, dental, the law, or the ministry—the appreciation of people to whom you minister. I find that people appreciate these things according to their refinement, and not according to their pocketbooks. If they are educated, they notice these little things. Take a lady who is dressed not to attract attention, and she will appreciate the shading and selection of teeth, and compliment one on the appropriateness of the teeth that you put in her mouth. On the other hand, a woman who is exceedingly dressy, and who wants a diamond set in one of her front teeth, or something of that kind, is not so appreciative. At any rate, it is not appreciation, according to my notion. Appreciative people are the ones we want for steady patients, and these we generally meet in everyday life.

I want to say a word or two in commendation of Dr. Roach's work. I have been associated with him a little in the last few weeks, and while I do not claim to be an artist, and do not claim to change the color of teeth as he does, I am using brown and gray for tinting. One can learn to soften a gray or brown, or increase the brown the least bit, say a little pink in one, or blue-black in another, but you can take brown and gray, and do 90 per cent of the work you want to do in a way that will make it more acceptable to yourself and to

your patients than if you put in the best selected teeth you can get from any supply house.

Dr. Roach, as you know, does some beautiful prosthetic work, and a few days ago I was in his office and he showed me a full upper and lower continuous gum. The upper teeth he had shaded before. He had a variation of shades almost to perfection, and it was as natural looking artificial denture as I have seen, but of the lower teeth the entire set was too dark, several shades too dark. In fact, the teeth were dark enough for the cuspids of the lower teeth, which means four or six shades. That is the only way we can express these things. It was magnified four or five times. We discussed the possibility of lightening the teeth, and next time I saw him he had lightened every tooth but the cuspids to match his upper teeth. He had fused most beautifully the color, which was, of course, white and had a perfect lower denture, shaded, with the cuspids the color of the original set of teeth. If Dr. Roach can do that, he can modify the glaring incongruities with regard to the present porcelain teeth we are putting in the mouths of our patients.

Dr. E. M. S. Fernandez, Chicago:

Mr. President, Ladies and Gentlemen: The subject of changing the tones, tints and shades of artificial teeth in order to match a special case by the use of mineral stains or by any other means, is certainly a beautiful and interesting study.

The essayist has covered the ground so thoroughly and intelligently that I feel confident he will inspire us to study and apply this method more carefully in our daily practice. Perhaps there can be a few remarks made that may lead to more discussion on this subject.

As the essayist has said, in the mouth of the blonde, the color of the natural teeth runs more towards the yellows, while in the mouth of the brunette the color tends more to the grays. However, let me remark, there are exceptions to this rule. I have noticed natural dentures in the mouths of some brunettes blend more to the yellows than to the grays, and vice versa, although the rule is, as the essayist has said. I have also noticed in quite a number of cases, natural dentures of a beautiful bluish white tint, in the mouths of blonde women.

The time for the manufacturer of artificial teeth to do everything for us, has come to a close and we, as prosthetic dentists, must

improve and perfect the deficiencies we find, in order to reproduce the required beauties of nature for the case on hand.

In selecting the proper shape and size of teeth required for the case, a good rule is to choose rather a light than a dark tint, but always bearing in mind to keep to the same color although not to the same tint. Color and tint are two different things; two teeth may be of the same color and still not of the same tint.

In the preparation of artificial teeth for vulcanite work, whether for partial or full dentures, I have had very good results by using porcelain instead of mineral stains. With the porcelain one can also produce many varieties of colors, tints and shades, as well as whatever irregularities may be required, that is to say, one can make a tooth larger, wider or longer and produce any special shape one may wish to imitate.

There is no question but that mineral stains are excellent materials for the purpose of staining artificial teeth in order to give them the tint desired. A careful dentist by using a little patience and carefully studying the technique of this work, can certainly produce with them a beautiful and harmonious piece of work.

Mineral stains can also be used to great advantage in the beautifying of continuous gum work. With them one can make a beautiful piece of work of a denture which may be a failure in color. If a continuous gum set when finished, is placed in the mouth of the patient, one can study to great advantage the different shading required and by the use of mineral stains, can produce them at will. I sincerely believe that mineral stains are indispensible in the practice of prosthetic dentistry.

In regard to the education of our patients, there is no question but that it is of great importance for them to appreciate scientific work, that is to say, work that will reproduce or rather imitate the lost beauties of nature. We all know how gratifying it is, when we have finished a difficult piece of dental work and have accomplished a beautiful result, to have the patient in return show us appreciation and greet us with expressions of gratitude. Appreciation on the part of the patient is the talisman which leads to succesful work on the part of the dentist. At the same time, the dentist must be careful not to lose sight of his professional dignity by allowing his patients to believe that they are the ones to decide on the quality of the work.

He must impress on their minds the fact that his knowledge and experience are the most important criterions.

1. (Reduced Scale.)
   Normal hue mixed with progressive increments of white, form TINTS.
2. (Darkened Scale.)
   Normal hue mixed with progressive increments of black, form SHADES.
3. (Dulled Scale.)
   Normal hue mixed with progressive increments of gray, form BROKEN TINTS.
   Commonly called "grays")

Dr. P. A. Pyper, of Pontiac:

I want to say a few words for the benefit of those who may not be so situated as to have furnaces and the necessary equipment to do the firing. The expression has been used that the dentist is a tooth carpenter, and I sometimes think we have rightly been called tooth carpenters when we ought to be artists, and I also think the manufacturer is simply the mechanical man instead of the artistic man, judging from the products he furnishes for us to put in as artificial teeth. However, we have to deal with these things as we get them from the manufacturers or supply houses, and make the variations as we see fit. The selection of artificial teeth is not a small matter. The rules given are good, but like all rules they will not meet all cases. I have found the only way to get what we desired for best effect in many cases is to select several sets of teeth in different shaped molds as well as different shades. Set them up in the wax and try them in the mouth. It is often necessary to tear them down and try several different sets before we get just what is in harmony with the individual, in shape and especially in color. The selection of the different shades for the different parts of the mouth is an excellent plan as has been mentioned in the paper. Those who have furnaces know that the furnace sometimes is of great help. Often when we get a set of teeth we have everything we want perhaps in shape, but not in color, and the variation in color can be gotten by putting some of them in furnace and refiring the teeth, which often intensifies the color which is there, giving us that variation we desired. That leads me to speak of one thing especially in the selection of all crowns to be rebaked or facings to be soldered. I find it advisable to keep out

of the blues and the grays, and especially so when there is to be a metal backing put on to any of these teeth. I also find that you can intensify the same teeth, and it almost always occurs in the refiring when you bake your porcelain crowns to your copings. Therefore, it is necessary to select a shade or two lighter than what you want. I have accomplished under difficulty some of the things Dr. Roach brought out in his paper in regard to shading. Not being able to secure the proper shade to get a variation in color in the tooth I want to use, I have ground away the tooth that was there and baked on the color I wanted. In that way I have broken up this mechanical shading. While there are a great many little retouches of the color, either lighter or darker, I have had to do it with the placing of a little lighter or darker porcelain on places in which I want it, and I only mention it from the fact that the porcelains I obtain the best results with are gotten by using the original colors. If you use the original colors, you know what you are doing. I had often thought of this proposition as I have seen my wife painting china, and I thought it would be a good application if I could only use it, but I was not energetic enough or genius enough to go at it and try it, so that to Dr. Roach credit must be given for being the discoverer of the application of china paints, and from the effects he is getting he has certainly opened up a wonderful field for us along that line.

Just one other thing in regard to the selection of teeth from the manufacturers. A representative of one of the manufacturers was in my office and said that he could match anything I needed with variation in shades and sizes in the tray of a hundred crowns. I failed to be convinced by his arguments, and did not purchase the tray. That day, before he left town, a patient came in who had accidentally broken off a tooth that needed attention at once. I took a model, and shade, and with all the supply of teeth he had on hand, he was unable to supply the one I wanted. I pointed out to him the reason why I did not purchase his crowns. He saw that it was not possible to match what teeth there were in that mouth, even with this entire selection and I had to get the color as I have previously mentioned. Now, since Dr. Roach has so ably shown us this new plan we can accomplish what is needed in a very much easier way, and the patient and operator will both be satisfied.

Dr. Geo. D. Sitherwood, of Bloomington:

I have been trying to paint teeth and change their color for

four or five years. Sometimes I made a great success of it, and sometimes a failure.

This whole subject was brought to my mind forcibly within the last week. I had occasion to make a small gold plate where there was no possibility of making a bridge. I desired to solder some old-fashioned gum teeth, but was unable to get them at the regular supply houses. A friend of mine, Dr. Brown, had some teeth that were probably made forty years ago, and I secured five single gum teeth and soldered them on a plate. The teeth on the plate, when in the mouth, looked so natural that I wished I could buy artificial teeth that looked like those now.

Most of the artificial teeth we get now are of indifferent colors. They have not the translucent effect in the tips of the teeth, and in the shading, having a darker shade near the gum line.

My experience with the mineral colors we have had, notably those furnished by Brewster, in attempting to change the color of a tooth, has been that when I applied the oil colors, well mixed, if I did not paint the tooth so that there was an even flow over the entire tooth surface before baking it did not look well. In other words, if I attempted to retouch a small place I made a failure. I wish Dr. Roach would tell us in his reply if that is the best method, or whether it is not better, where we use the oil colors and do not get an even flow of the color on the tooth, to cleanse it off and repaint the whole tooth again before it is baked?

Dr. T. W. Pritchett, of Whitehall,

was asked to continue the discussion. He said:

It seems as though we all have our troubles in some way about this matter of making artificial dentures that are good. There are three essential factors that enter into the matter, or four possibly—size, color, shade. These are of great importance, the blending of all these and getting them all right, particularly the form and size with which to do business. We need the proper shade or color to fulfill the esthetics of the case, together with the blending and the size. Now, if we can carry all these things in our minds and build the whole thing up in that way, we are beginning to get at the thing we want. If we can give the teeth sufficient action so that the patient can chew beef-steak, then we are going some. (Laughter.) There is a great deal in the color of teeth to make artificial teeth look well. As far back as thirty or thirty-five years Dr. Evans came out with the first

article, I think, bearing on that question of colors and carrying out the idea of blending of shades, breaking up of one general shade as the teeth are selected for us and arranged by those who make them. That impressed me very much, and particularly the arguments he advanced, and I endeavored to break up the uniformity of shade. Of course, situated as I am away from the dental depots, it is a matter of considerable difficulty unless you have quite a large stock of teeth, but I did the best I could. I have taken out a set of twenty-eight teeth many a time to get one tooth to make a bridge and take my chances of supplying myself in that way. So there was some difficulty about that, but lessons were learned.

Another point: The breaking of one shade is a good thing. It came about by the frequent necessity of repairs of breaks, as, for instance, a broken central, a lateral, or cuspid. The patient brings it in the morning and wants it for supper. You know you have to hurry. The form, the size, the color is a problem. You may have the form and the size, but if the color is thin you can't see it sometimes; it does not show. In trying to determine the possible degrees of shade I was happily surprised in a little while, when some of my patients, who had good judgment, and were willing to learn something, gave me an opportunity to make repairs, to improve their looks after I had put in something that did not match. (Laughter.) If you leave the matter of selection of shades or colors to patients themselves, the ladies in particular, they select the white ones. They want them to look clean; they do not need so much brushing when they are white. This, of course, is a mere inference of mine. It is right to a degree.

I am familiar with Dr. Roach's first publication. Happily, I had the opportunity of seeing his selections, and I approve very highly of his method. It is good. It strikes me that if we want to please our patients and do our duty to them, we must pay particular attention to everything that belongs to prosthetic dentistry, and then probably we will get better results and much greater rewards. To expect to have things done in the laboratory by a man who is paid three dollars a day which you cannot do yourselves is not going much. (Applause.)

Dr. E. H. Allen, of Freeport:

I have found sometimes in selecting a facing for a crown, say, for instance, a central or lateral, that the natural tooth adjoining had some peculiarities of shade and color about it, so that it would be

utterly impossible to find any facing in any dental depot that was suitable, because I do not believe they were ever made. For instance, I have never seen any teeth coming from a dental depot that had little white spots on the front of them similar to the white spots we see sometimes on finger-nails, and yet it was necessary to get something of that sort. And then the tooth was discolored by some stains that made it impossible to select a poreclain tooth that would come anywhere nearer than perhaps a fair blend with the full color scheme of the tooth. But it would be plainly artificial.

I see great possibilities for the method of Dr. Roach when one has mastered the technic and has learned just what shades to use in order to get certain results. I apprehend that in our attempts to use the shades or colors which he has prepared for us, it will take some knowledge and skill which can only be acquired by perseverance and repeated trials. If I were unable to get results at first, I would not be discouraged until I had met with many failures. Dr. Roach told me that now when he gets an artificial tooth from a dental depot he always selects one shade (No. 36). He does not pay much attention to the shades at the depot, but simply tries to get the form and size. He also showed me some specimens that are remarkable because originally they were a dark brown and by painting and putting on a much lighter color, he has brought about unusual and remarkably natural and lifelike appearance. You will be impressed with his method if you see these samples and try them in the mouth and get them up under the lip. We fail in selecting shades of teeth if we raise the lip too high and let the light fall on them. I manage to take a rim of wax and have the patient hold it between his jaws and stick the teeth on that, letting the lip come over it, have the patient look at me directly, so that I can get the shade, because the shadow of the lip coming down where the light strikes will utterly change the shade of the artificial tooth.

Dr. Edmund Noyes, of Chicago:

I do not think Dr. Roach in his paper said anything about the firing or baking of these stains, and some of us who may try this method will wish he did.

Dr. Roach (closing the discussion):

I have been exceedingly gratified at the kind remarks and frec discussion which my paper has elicited, but have been quite dissatisfied in that so many have left the impression that I should have some

credit for a great discovery. I do not claim it at all. There is nothing new about the changing of the colors of teeth with these stains, and I do not want to be given credit for it. It is not my discovery. I maintain that we should have in our minds some degree of appreciation of art in our work. We cannot expect to be considered as the highest type of dentists unless we put some art in with our mechanics, and it was with that idea in view I brought to your notice the use of the mineral stains. The only part that I do take any credit for as being at all new is in calling your attention to the use of these china paints. It is a new preparation that has been brought out by a china artist, Lennox, of New Jersey. His materials, to my mind, have given to us an addition to our equipment which simplifies the work. This work is not for the strictly porcelain worker, but for every one of us. I was told by my friends when I was asked to write a paper that the subject would not receive any attention, but we have had unmistakable evidence of interest being taken in it by this audience, for which I am very much gratified.

This is not to my mind a thing that is going to be a fad, but something every one of us can take and make practical use of. We nearly all have furnaces, and those who have abandoned their furnaces by reason of a lack of confidence in the use of porcelain can resurrect them and use them in this way to great advantage and benefit to themselves and to their patients.

There were one or two questions asked, one in regard to putting colors into the teeth. These Lennox stains work much easier than the mineral stains furnished by White and the oil colors of Brewster, although satisfactory work can be done if mastery of the other materials is accomplished; but with the use of the Lennox stains the work can be done more easily, and a great point in their favor is that you have a very definite and fairly accurate guide as to your resultant color in the oil stain as it is applied to the tooth, so that you can in that way minimize the element of experimentation in your work. Dr. Sitherwood's question was pertinent. It is an advantage that the color be placed over the entire surface. Rarely, do we find we will get the best effect by the placement of the colors in patches or on certain definite surfaces of the tooth or teeth.

Dr. Royce has told you about our clinic, and I want to advertise it again. We want, if possible, to show you that our claims can be carried out in a practical and simple way not only by us but by other

practitioners. I do not think it is fair to say that only artists can do this work. Every one of you can use these stains, and I believe I am perfectly safe in saying that I can show you in five minutes how you can take them and apply them and get results.

It may be noted in this connection that we do not get from the people who make these stains that exact color of greenish-greyish brown we want to use. They have promised to make this color, if I mix the powder, and give us the color we want. They do not make a color that will be nearly universal for our purposes. When we have that color with the tooth colors neutral-gray and yellowish-brown, we can accomplish 95 per cent. of all changes and variations in shades and colors from light to dark, and vice versa, we may be called upon to make.

I am so enthusiastic about the importance of this work, that I am willing to give you all the time I possibly can personally to have you understand how to make the application of these stains in the accomplishment of the highest degree of art in your work.

There was one question asked about firing. The firing of these stains may be accomplished with any kind of furnace you have at a degree of heat running about 1500°. The Lennox stains will fuse at from 1500° to 1800°, according to the color used. The White's and Brewster's stains possibly require a higher degree of heat, but, as a rule, they will fuse at about the same degree of heat. These colors may be fused quite satisfactorily with the blow-pipe, although the best results, as I know from experiments, cannot be obtained by the use of the blow-pipe. The work can be done quite satisfactorily by the placement of your porcelain in a bed of silex and protecting it with muffle on every angle or with platinum to protect exposure of the porcelain to firing.

AMERICAN DENTAL SOCIETY OF EUROPE, MEETING AT WIESBADEN, APRIL, 1909.

DISCUSSION OF PAPER BY DR. G. NORTHCROFT ON AN INQUIRY INTO VARIOUS METHODS OF TREATING SOME ABNORMAL CONDITIONS OF THE JAWS AND TEETH OF CHILDREN.

DR. W. MITCHELL, of London:

sincerely congratulated Dr. Northcroft upon the splendid manner in which he had presented a paper that he trusted would become one of the classics in connection with the work. The amount of work involved in the production of the paper could only be estimated by those who had undertaken a like work. The subject had been presented in a most comprehensive manner and the researches had been conducted on the lines of a thorough investigator, and he congratulated the society upon possessing a member who could undertake such work with the earnestness with which Dr. Northcroft had undertaken it. One point brought out in the paper appealed to him very much. About twelve or fifteen years ago he was discussing one phase of the subject which Dr. Northcroft had mentioned as having a very important bearing upon dental irregularities with a colleague in London who was connected with a practice where it had been almost a specialty, and he was told he was wrong in regard to his suggestions. He hardly believed at the time that he was wrong and it seemed now that he was right. He referred to the fact that undoubtedly there was an anticipation in the eruption of what had been wrongly called the six year molar. There was no question but what that molar was developing at an earlier age than had hitherto been believed; and there was no question at all in his mind but that the anticipated action on the part of the molar caused a great deal of the trouble dentists were called upon to correct later on. The first lower molar was the earliest to put in an appearance and no doubt if more attention was paid to the regulation of the mandibular teeth there would be much less deformity than now existed. In the past more attention had been paid to the regulation of the upper teeth, probably because they were a little more conspicuous, when at the same time the keystone of the whole situation was the arrangement of the teeth of the inferior maxilla, and the fact, as Dr. Northcroft had demon-

strated, that there was a greater amount of pronounced trouble when the age of the child had been approximately four and a half to five years when the first permanent molar had erupted. That showed that his observation he had referred to was not entirely groundless. He wished to know what was the difference between the "Badcock" plate and the "Coffin" plate. The "Coffin" plate was well known to him but he had to confess ignorance with regard to the other. For expansion he used the "Coffin" plate, and he was bound to say that it not only expanded but gave a lateral pressure which was of distinct advantage, and it also presented a masticating surface for the child which assisted very materially in promoting development and giving room for the molars when they came through.

Mr. G. A. Kennedy, of Berlin,

believed that the paper set forth the keynote of what was going to be the future success in orthodontia, because it dealt with the fact that if proper treatment was taken up at the proper time the irregularities seen in everyday practice would be avoided. He was of opinion that every dentist should make a thorough inspection of the temporary teeth to discern whether or not the permanent teeth were coming through properly. It was possible to tell even before the first permanent molars occupied their places, because if the interdental spaces between the temporary cuspids and the first and second temporary molars were carefully watched it was possible to know whether or not the others would come properly. If a pinched condition of the tooth was found,—a condition which was very often considered proper occlusion—the case should be referred to an orthodontist. In one of the slides shown referring to what was probably an over-development of the anterior teeth, it appeared to him it was not so much an over-development of the anterior teeth as lack of development of the posterior. That was also shown in the weak chins presented. He was very glad indeed that Dr. Northcroft had brought out the question of the study of bottle fed babies and especially the mechanical action of the bottle, because he believed that played a most important part in the matter.

Dr. William Law, of Berlin,

said it had been a great pleasure to him to listen to the paper because it was upon a subject in which he was most deeply interested. There was little left to be touched upon, as Dr. Northcroft had covered the ground in an excellent manner, but there were one or two points

on which he might make a few remarks. The temporary teeth undoubtedly did erupt in a very irregular position, but he did not know that the percentage was very much more than in the permanent teeth. It was mentioned that ten years ago everything was considered practically normal in children and since that time the question had as it were evolved until what was at one time considered to be true was now known to be false. It had been his experience to find irregularities just as marked and quite as typical in the temporary teeth as in the permanent teeth, and he thought the Angle Classification controlled the temporary quite as much as the permanent. In cases of temporary teeth irregularity he classified them exactly as he would classify permanent teeth except that he used the word "temporary." He thought if temporary irregularity was not corrected early enough there would be no result upon the permanent teeth as far as modifying their positions. With regard to the mesio-distal relation he thought the condition could be treated at almost any age up to the time when the permanent molars could be used for anchorage. The temporary second molar was very strong, the roots being long, and for a good while after the first molar had taken its firm position the second molar was very firm and on a level with the permanent molar. As far as expansions were concerned, it was certainly a fact that expansions should be made at an age averaging four years—some patients a little younger and some a little older, because in a great many cases the teeth did not begin to loosen until the fifth or sixth year; sometimes they were lost before five years, but that was only a question of conditions and not a general rule. Every case must be considered upon its merits. The question whether the palate rose or not, was only definitely to be settled by measurements from the skull. It was admitted that the palate did not rise—that what appeared to be a rising was simply a lack of lateral development, that the arch assumed a V-shaped form instead of an oval form because the tongue had not the lateral pressure. With regard to cases of protrusion of the upper incisors in the temporary teeth and permanent teeth where there was a normal condition in the nasal passages, that might be true, but he had never come across a case. From the appearance of the face and from the answers by the parents to questions, he had been satisfied that at one time during the development of the child mouth breathing was present, and that was sufficient explanation to him why the teeth had assumed a cer-

tain position for a certain type—natural forces had been lacking. There was a perfect normal occlusion in the temporary teeth up to a certain period and then suddenly there was protrusion of the upper incisors taking place. It was puzzling but not difficult to explain. If the normal functions were present up to a certain time, until the normal full development of the temporary arch and jaws had progressed, at a time when the temporary teeth were being lost or previous to the firm establishment of the permanent occlusion, the nasal function was lost and mouth breathing established, that was enough explanation for the change and the different appearance of the arch. Sometimes patients presented themselves with the temporary teeth perfect and one was somewhat puzzled to account for it, but the explanation was to be found in the fact that mouth breathing had been established. It did not necessarily follow that adenoids were present; any explanation that might involve mouth breathing was quite sufficient. The appearance of the face would give the case away. The question of bottle feeding or natural feeding of infants was a serious one, requiring much consideration. He did not think many valuable statistics were available as yet, but he believed if all dentists would study the normal relations of the teeth and become familiar with abnormalities, and obtain statistics to show what cases were bottle fed and what breast fed, a much more complete history would be obtained than could be obtained by relying upon hospitals for statistics. Hospitals knew nothing about normal relationship; they dealt with the development of the teeth and the face so superficially that their statistics were entirely vitiated. If practitioners, however, collected the data, and handed it over to somebody who would make a thorough study of the subject, some conclusions could be arrived at as to what the condition was due to. Natural nutrition was not the same as bottle nutrition. Whether the nutrition itself was at fault partially or wholly, or whether the presence of the comforter or the nipple itself caused a malocclusion, he did not know, but he thought nutrition had more to do with the matter of making the child susceptible than the nipple, because as soon as the bottle was removed and the child began to eat, if the nasal passages were normal and the child had had no trouble, normal conditions would immediately establish themselves in the mouth if any slight irregularity had occurred. The tongue and the lips would regain their normal function and Nature would take care of the rest. During the act

of sucking the tongue was pressed hard against the roof of the mouth and the short time that the child was using the nipple was comparatively insignificant. Investigation, however, on the part of a great number of observers would enable greater progress to be made than was made by any one man working alone.

Dr. W. Davenport

Thought it was greatly to be regretted the members had not had the opportunity of seeing a print of the paper before it was presented, because it was somewhat difficult to grasp the whole of the facts put forward. He had been impressed very much on one point; he was not quite sure whether the essayist intended to convey that the unfortunate result was brought about through the method of feeding the child or was brought about by the fact that the child had lost too many temporary teeth. One or two of the models shown were certainly a great lesson to him, especially the one that showed a lower arch in which the teeth had developed so much more rapidly than in the upper, so that the upper cuspids had dropped inside the lower arch through the too rapid development of the lower teeth, the teeth of the two arches not having developed in proper relation. It seemed to him that that was the cause of more irregularities than any other. During recent years he had seen more irregularities caused from lack of harmony of the teeth than from any other cause. In the models shown where the teeth apparently stood out, he imagined that the upper central incisors erupted too quickly for the lower central incisors and too quickly for the lower molars. He thought a great debt of gratitude was due to Dr. Northcroft for having drawn attention to the importance of keeping up the proper relation of the arches during the development of the teeth, because it was one of the most important things that had been brought before the Society for a long time. He had some very difficult cases at the present time where the first permanent molars developed in approximate relation. All the incisors were fairly well developed, but the bicuspids and the cuspids would not appear. The deciduous teeth were fearfully decayed and also loosening and falling out from absorption of the roots, while the other teeth were not growing. That condition had brought about an anterior protrusion and a great separation between the upper teeth and it was essential to tie the upper front teeth together. He had just learned how to treat that case by restoring temporarily the normal relation of the arches by keep-

ing them open with plates, allowing the first permanent molar to grow up, taking the pressure off the anterior teeth above, and allowing the front teeth to settle back in their proper places. In that way he would be able to remove the appliance on the front teeth. Dr. Northcroft had not said anything with regard to correcting the irregularities, but the fact that he had mentioned an appliance suggested that he was acquainted with the principles of the bite plate, which was nothing more or less than a method of establishing the proper relations of the front teeth. It was as important to keep the proper relation of the front teeth as to establish the proper relation of the first permanent molars.

Dr. Edmund Rosenthal (of Brussels)

Said there were two things that must not be disregarded in connection with the development of jaws. The first was the principle that the functions created the organs and that undoubtedly the organs were made to grind. The fact that children were not brought up by natural feeding, but were brought up on the bottle, was the cause of a great deal of the mal-occlusion so much seen in practice. The effects of bringing children up on the bottle were many. The bottle now used to feed children artificially did not compel the child to exert any suction on the nipple; in fact, the milk was poured down the throat of the child and the condition was not at all similar to breast feeding. When a child was brought up on the breast, it had to suck, and in the motion of sucking it developed not only the tongue, but all the muscles of the lips and cheek, and the insertions of the muscles into the bones gained in power and strength, and consequently the bones themselves developed. When the child was brought up on the bottle, that development of the bones did not take place simply because the function was not exercised. Consequently when the child was fed naturally it had not the strength to triturate or masticate proper food and generally when it ceased to have milk, it objected to eating hard food. Parents were as a rule very weak, and would continue the artificial feeding even after the bottle had been given up. Therefore all the functions were arrested and the development was also arrested. One of the duties the dentist had was to teach the parents the consequence not only of bottle feeding, but of feeding with soft foods after the bottle period.

Dr. Kirk Davenport of London

Agreed that a debt of gratitude was owing to the author for the paper.

He thought it was taken for granted that natural feeding was normal and that bottle feeding was abnormal, but there were many cases in which the feeding by the mother was certainly not normal. There were children who had starved on a copious supply of mother's milk but thrived on the objectionable method of feeding by the bottle, and that was a fact that was worth consideration. With regard to the expansion of teeth, very often it was advisable and could be very well done by a plate which allowed not only for expansion of the palate, but at the same time gave an opportunity of utilizing the bite guide. He did not quite know what the "Badcock" plate was, but was well acquainted with the "Coffin" plate. Another plate that had been used by him for fourteen years, a plate that was presented by his brother to the Paris Club, was one arranged in such a way that it did not open the bite in the objectionable manner it was opened by the old "Coffin" plate. It was a crib plate fastened on the tooth in such a way with a thin hard gold wire that the teeth could practically articulate in their old position. By those means he was able to get a large amount of pressure on the lower teeth when the mouth was closed and thus carry forward the lower jaw bodily, obtaining a result which he had never equalled by any other method except the Baker anchorage or the fixed bite guide which was cemented to the anterior teeth.

Dr. W. Davenport

Said the plate referred to by his brother was nothing more or less than a slight modification of the Kingsley method.

Dr. R. D. McBride (of Dresden)

Said the paper was so full of specific information, put forward with the greatest care and thought on the part of the essayist that very few members, without further study, could appreciate its significance. The little instrument invented by Dr. Northcroft for taking scientific measurements was most commendable and the most unique device of its kind he had ever seen, and Dr. Northcroft deserved to be highly complimented on its invention. It was only by means of such scientific data as Dr. Northcroft had submitted that any real scientific conclusion could be drawn. A great deal of theory was put forward but not sufficient practical scientific investigation such as was contained in Dr. Northcroft's paper.

Dr. N. S. Jenkins (of Paris)

Said that not being an orthodontist, it would be presumptuous on

his part to criticize the paper and therefore he only rose to say how proud he felt that the Society had a member who could present to it such work, work characterized in the highest spirit by thoroughness and accuracy and what might be termed fine self-restraint. It could be easily seen that the author had not rushed to conclusions, but had exercised what Osler called "the judicious faculty of mistrust." He had shown that he possessed what was perhaps the noblest of all the attributes of a scientific man, a scientific imagination; and the thoroughness and accuracy and the long continued methods he proposed to follow were such as to promise very great results. Also he wished to compliment Dr. Northcroft upon something so desirable in such a paper: its admirable literary quality.

Dr. George Northcroft

In replying on the discussion, thanked the members for the extremely kind things they had said about the paper. With regard to Dr. William Mitchell's remarks, he thought he must have read rather indistinctly, because he evidently did not make it quite clear that, in speaking of disorderly eruption of the teeth, he especially referred to disorderly eruption of the lower incisors before the first permanent molars came in. It was that which was a very strong point in the causes of irregularity in the front of the mouth—that the teeth started developing in the front before the normal period had arrived at which the jaw ordinarily started growing, the jaw not being developed enough for the front teeth to come through. He was extremely sorry he had mentioned the "Badcock" plate so cursorily, because he did not realize that it was not quite a familiar plate to everyone. Mr. Badcock, who introduced the plate, was the most modest man in the world and did not wish to connect his name with it. The new feature about the plate was that it had a jackscrew with a little guide post slipping into a tube above the jackscrew. Ordinary jackscrew plates would turn around and one never knew how much one had turned the screw and the plate soon got out of shape; but with the locking arrangement of the jackscrew in the "Badcock" plate it was impossible for the patient to turn the two sides individually; both must be turned together so that the sides of the plate opened simultaneously. He wanted it to be clearly understood that he never by any chance capped teeth in putting in those plates. The use of the "Coffin" spring plate and capping teeth had been mentioned in the discussion, but it was a method that he wholly

condemned. As a matter of fact, on the "Badcock" plate he occasionally used the Jackson crib such as Dr. Kirk Davenport described, but as a general rule the principal effect of screwing the plates up would let them in with a little click and they would remain perfectly tight. They were cut to a feather edge at the cervical margin, so that they simply fitted tightly on that edge and no more. Dr. Kennedy had suggested as one of the causes of overbite the lack of development of the ascending ramus or the depth of the horizontal ramus of the lower jaw, and that, he thought, was extremely likely. He had mentioned in the paper three possible causes of excessive overbite, and undoubtedly the shortness of the ascending ramus or the lack of depth of the horizontal ramus were two of the main causes of that condition. With regard to Dr. Law's remarks as to the Angle Classification also being used for temporary teeth, in that case it could not be the Angle Classification and should not be called so, because Dr. Angle's classification depended wholly on the relation of the first permanent molars. Dr. Law had also mentioned a fact which might prove very dangerous, that parents would come to him and say that Johnny had a beautiful little set of teeth when he was a boy. Unfortunately it was not possible to take patients' words for everything that happened and he should certainly feel very disinclined to base any scientific argument on the word of any of his patients. The normal use of the muscles was of extreme importance, and as he had pointed out in the paper, the question had been already studied by Dr. Sim Wallace in reference to infant feeding and the feeding of children. It was necessary to distinguish between the feeding of infants and the feeding of children because it was a very strong point that after children were weaned they should be immediately put on things they could begin to chew, and should acquire the habit of biting hard things. Dr. Sim Wallace himself, had two of his own children and eight other children under treatment of that kind; they had been brought up most carefully and taught to chew hard things from the very earliest ages, and he understood that those children would not eat soft food and had an absolute dislike to mushy things, such as milk pudding and porridge. The curious fact about it was that all those ten children had perfect sets of teeth, absolutely free from decay. He was very sorry he did not read the paper better and make himself clearer; otherwise he did not quite understand what Dr. William Davenport's difficulty was. He wished to impress

upon the practitioner at large the necessity of studying the value of the temporary occlusion so that practitioners knowing that mal-occlusions of the temporary teeth did arise, should instruct themselves on the subject and look out for such mal-occlusions—that was what he particularly wished to bring out in the paper. With regard to Dr. Rosenthal, the opinion he had given that children sucked at the breast was, he believed, a mis-statement. The milk from the breast was expressed into the mouth by a child pressing the nipple between the tongue and the palate, the milk as it were, being pressed into the mouth. The action of a child using a bottle was quite different, the child sucking the bottle and getting a contraction of its cheeks. Dr. Rosenthal was quite right about the necessity of a child being put on hard food and the probability that the reason why bottle fed children did not take to hard food was because their muscles were not sufficiently strong, owing to lack of stimulation. That was a very sound point. Dr. Davenport, with his usual common sense, had pointed out the weak spot in the whole argument, namely, that it was known perfectly well all mothers could not nurse their children and that some children did not thrive when nursed by their mothers. However, he thought the matter under consideration was one of those glorious exceptions that proved the rule. It was very good of Dr. McBride to compliment him upon the callipers. Certainly he had found them very useful and very accurate; all the measurements were taken in millimetres. He was afraid he had now arrived at an age when he could not blush, otherwise after Dr. Jenkins' remarks he should have sat down colored a beautiful deep red.

Dr. George Cunningham (of Cambridge)

Showed a series of slides made from skiagrams taken by Professor Symington, of Belfast, showing the development of the teeth in jaws from the earliest age and upwards. Some of the illustrations had been already shown in the "Atlas" published by Professor Symington. The slides were made from specimens of skulls.

DISCUSSION ON DR. C. F. BÖDECKER'S PAPER, "ENAMEL MORPHOLOGY."

Dr. William Dunn, of Florence,

Said the author had mentioned in his paper that there was more organic matter in enamel than was usually imagined and he wished to know whether Dr. Bödecker's researches tended to a belief that there was more than 4 per cent and if so, whether the percentage was much greater.

Dr. George Northcroft, of London,

Thanked Dr. Bödecker for the pleasure he had given him in listening to the paper, which was most instructive. His method of producing the slides was quite new and, he thought, eminently successful. Dr. Bödecker had asked a practical question and as he himself was a practical man, he would give Dr. Bödecker his answer. He had asked whether there was any knowledge of sensational enamel. In several cases—not in every case by any means—one certainly did seem to get sensation in the enamel, especially in scaling teeth where the scaler might pass directly on to the enamel. In such a case patients certainly did feel a sensation; it did not necessarily amount to acute pain, but there was a distinct sensation conveyed other than the mere sense of touch.

Dr. N. S. Jenkins, of Paris,

Also expressed his admiration at the long period of devoted experiment which Dr. Bödecker had carried on. He did not know whether the use of the violet light was entirely his own invention, but that it had been most efficacious and valuable in the experiments, was beyond all question. To many it was certainly an unexpected revelation that enamel contained such a very great quantity of organic matter, more than was usually supposed, and they were very grateful to Dr. Bödecker for his painstaking experiments showing that important fact, a fact which was of great importance, not only from the scientific standpoint, but from the practical standpoint. As to the greater frailty of the enamel where the pulp had been destroyed, he thought they must all be of one opinion, and also that the sensitiveness of the enamel was by no means an unusual phenomenon. Of course, clinical experience had shown that the most sensitive point of the enamel was to be expected at the junction with the dentin, but now that there was proved to be such a considerable quantity of organic matter throughout the construction of the enamel, it would be readily understood how sensation was conveyed through what seemed to be a thoroughly sound enamel. He thought the members ought to be very proud of the labors of their young fellow member, the able son of a distinguished and able father.

Dr. H. W. C. Bödecker, of Berlin,

Said with regard to the question of sensation, he had noticed there were some people who could immediately tell by the pain they experienced on their teeth, whether there was a piece of tinfoil amongst

the chalk in the tooth powder. It was not merely a sensation, but a direct pain as soon as the tin came in contact with the enamel at certain points. At first he thought it was simply because it came in contact with certain fillings, but he found the phenomenon when there was no filling. With regard to the method by which the organic matrix was sectioned and stained, it took almost four years to develop that method. It started with a very small idea, the idea of his brother simply to take the enamel and investigate it with seloidon and then decalcify, but he soon found that the hard seloidon formed a little chamber and everything in that chamber was destroyed by the evolution of the gases during decalcification. Then his brother and himself came to the conclusion to try liquid seloidon, making it as nearly as possible the specific gravity of the organic matter, so that when the prism was decalcified the lime salts would disappear and the organic matter would be held *in situ.* That was all right theoretically, but practically there was some slight movement, though as would be seen from the photographs, it was not so much but what it was possible to study the histological relation of the parts. It had to decalcify so slowly that there was no evolution of the gas, and what gas there was, had simply to pass through the very thick syruppy medium, as had also the salts that had been dissolved from the prisms. When the matter was first suggested to several microscopical men, they simply said that it was an absolute impossibility and his brother had a dispute with the School at Vienna on that point. They said it could not be done, but his brother had proved that it was organic material and therefore that it must be able to be done. Seloidon was only soluble in alcohol and ether; as soon as water was put with it, it became cloudy and precipitated. On the other hand, the calcium nitrate was absolutely insoluble in alcohol or ether and the right amount of water had to be added to dissolve and carry off the salts. It had to be carried out so gently that there was no disturbance at all, and therefore it would not surprise the members to know that it took as much as six months to decalcify one section.

The President

Suggested that in grinding down teeth, sensation might be accounted for by the heat generated.

Dr. C. F. Bödecker,

In reply, said, with regard to the organic matter, he believed there

was somewhat more than 4 per cent, because first of all for the chemical analysis only the central part of the enamel was taken, the outer surface, Nasmyth's membrane, being removed, as it would make a difference in the organic constituents. It was very hard microscopically to differentiate dentin and enamel, and therefore, in order to avoid the error of getting dentin into the chemical analysis, the dentin was removed far into the enamel and a great deal of enamel removed with it. It was just at that border that the most organic matter had been found, just as Dr. Jenkins had said the most sensitive part of the enamel was the dental margin. Often a superficial cavity was more sensitive than a deeper one. He thought that was the reason why the percentage had been gauged so low; it was probably something like 6 or 7 per cent. In the chemical analysis the enamel had been thoroughly dried out and the water removed from the organic matter. From the inorganic salts very little could be removed and therefore when 4 per cent of dry organic matter was found, adding the amount of water to it that was normal in the body during life, the percentage would be at least 7 or 8, because the normal tissues contained from 75 to 95 per cent of water. With regard to Dr. Northcroft's remark about sensation in scaling, that was probably due to the fact that the enamel was even more sensitive; no doubt the neck of the tooth contained more lamellæ than usual. He could not claim the honor of inventing the machine for the ultra violet light. Twenty-five men had worked on it for more than a century. It was possible that pain could be generated in grinding down a live tooth for a crown by heat, but he thought even if one was careful and did not allow the stone to run too fast and kept it under water constantly, there were times when a patient could not stand it.

DISCUSSION OF DR. HARWOOD'S PAPER, "A MISSING FACTOR IN THE TREATMENT OF INFECTED ROOT CANALS."

THE PRESIDENT

Said the paper was a very interesting one and deserved a thorough discussion. Discussions, however, on root canal treatment were very apt to wander into unknown fields and therefore he would ask the members to confine their remarks directly to the missing factor to which the paper referred.

Dr William Hirschfeld, of Paris,

Said it was a pleasure to be called upon to open a discussion on a paper which revealed to the profession something altogether new. Indeed, when he recalled the researches he himself made last year into dental literature with a view to collecting the views of all noted writers on the subject of root treatment, there was not a single one to be found who thought of furnishing the visible proof of the complete asepsis of a formerly infected root canal. Up to the present all efforts of men like Sohnier, Miller, Bödecker, Kirk, Harlan and Buckley, had gone in another direction, namely, to change chemically the dangerous contents of the putrescent pulp canal into a healthy body. The use of Buckley's formulæ had really solved the problem, and to treat definitely diseased roots, in no matter what condition, had become with its help a rational operation in everyday practice. But as Dr. Harwood had said, was it possible to be sure of the proper moment when to stop the treatment if the odour due to the medicament employed was liable to hide the characteristic smell of the infected cotton thread? Dr. Miller remarked in one of his articles, "The Relative Value of Antiseptics in the Treatment of Infected Roots," in the *"Dental Cosmos,"* 1892, that any antiseptic left in the root lost its property after twenty-four hours. If that was the case, how was it possible to tell that a dressing left in the canal for several days was perfectly aseptic if the smell of the infection was blended with the odor of the disinfectant? Under such conditions Dr. Harwood's discovery must be accepted as a great benefit to the profession, and from the practical standpoint its importance would appear instantly to every practitioner. If Dr. Miller had been present, he was sure the method would have delighted his heart and would have induced him further to study it from the scientific point of view. Buckley's researches came to a practical result only after through scientific study on the nature of the putrescent products of the pulp. But it was only by experimenting on their chemical changes with different acids that he was enabled to offer to the profession that special chemical which through its influence produced the same reaction in all circumstances. It remained now for the scientist to study thoroughly the elements which caused hydrogen dioxid to create the reaction. An endeavor should be made to discern that particular agent which could reveal the special nature of the infection, whether pus, serum, or simply gas-like products. That

was the special domain of the microscope and the biological laboratory and the work was likely to be carried out without difficulty, inasmuch as through Dr. Harwood's discovery the door leading to the new path was now open. He thought Dr. Harwood did not go too far by any means in qualifying his method as the missing and long sought for factor in the treatment of infected roots, and it would be one of his first efforts to try the experiment upon every possible occasion. He could only express to the essayist his compliments on his interesting suggestion and sincerely thank him for having given him the privilege to open the discussion on so important a subject.

DR. H. J. HARWOOD

Said he would advise the members to try the method as a means of checking the state of the canals at any time treatment of an infected tooth was being undertaken.

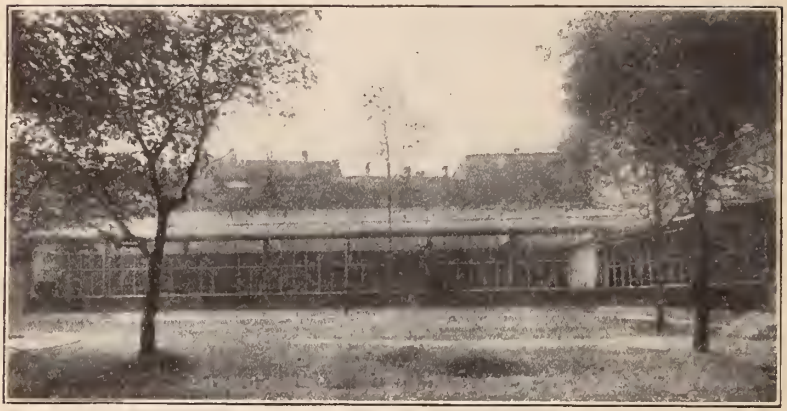
CHICAGO DENTISTS, ATTENTION!

We are mailing you the September number of the DENTAL REVIEW four days ahead of time so as to reach you at your old street number.

On the first of September all buildings on east and west streets of the South Side and all streets on the West and North Sides will be given new numbers, consequently it is necessary that you send us your new number *at once* in order that we may correct our mailing list in time for the next number.

If you fail to do so you must not blame us if you do not get your REVIEW promptly. We have done our part. You will find a change of address blank in this number; fill it out and mail it TODAY.

FOREIGN DENTAL COLLEGES



Dental Department, University of Munich, Munich, Germany.

Dental School, Buenos Ayres, Argentine.

FOREIGN DENTAL COLLEGES

Dental School of Dr. T. M. Kowarsky, Moscow, Russia.

Dental Department, University of Prague, Prague, Austria.

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Devoted to the Advancement of Dental Science.

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EDITORIAL.

AN UNUSUAL CASE.

Dr. W. A. Rothschild of Madison, South Dakota, reports a case which seems to us most interesting. The patient was a lady, 30 years of age, family history good and health perfect. Her upper teeth were in such a condition that ten crowns were needed and two fillings. The ten teeth needing crowns proved to be absolutely devoid of pulp canals, and were perfectly free from pain during grinding. Holes were drilled for posts in each case, and in no instance was there the slightest evidence of any pulp chamber or canal ever having been present. The teeth that needed filling were decayed so extensively that it was deemed best to treat before filling, but the same condition was encountered in these. In the lower jaw crowns were needed on three teeth and these were found to be similarly affected.

This seems to us a most peculiar case. We have occasionally found instances where it was impossible to detect an opening into the root of a tooth, but usually it was easy to trace the original location and size of the pulp chamber where calcification had taken place and the formation of secondary dentin in the chamber had left its indelible mark.

This condition is ordinarily found later in life when abrasion has worn the teeth down to the pulp chamber, and the slow approach of external irritation has caused the pulp to throw out a deposit of secondary dentin and recede in its own protection. But we have never known of so extensive a case as this occurring so early in life and leaving no evidence of an original pulp chamber or canal, and no sensation in the teeth.

THE EDITOR'S DESK.

THE AUTOMOBILE AS A RECREATION FOR DENTISTS.

A stock broker once said to me that during one of the worst financial panics he had ever passed through he saved himself from absolute nervous wreck by buying and running an automobile. It was a time when no one knew from one day to another what the stock market would do, except that it could pretty well be counted on to do the wrong thing. Everyone on the Board and Exchange was keyed to the highest pitch, and men were failing financially and breaking nervously on all hands. In the midst of the worst of it this man bought an automobile. His family thought it was an act of the wildest extravagance at such a time, but he contended that it saved him from collapse. During the interval between the time the Exchange closes in the afternoon and opens in the morning there is little that a broker can do but worry over the situation and dread the opening. If he can have something which compels his attention during this time it is a relief from the strain and he comes back to his office in the morning with a clearer mind. This man said: "When you are running an automobile you simply cannot think of anything else except the task you have in hand, and so I took my automobile out every afternoon and ran it myself. I consider it an important aid in the fact that I weathered the storm."

It occurred to me at the time that this would be a good thing for an overworked dentist, and the more I have investigated it the more I am convinced that this is true. There is something so fascinating about an automobile to a man who loves machinery that its manipulation distracts his mind and attention from the daily grind of the office, and makes of him a better-balanced and clearer-minded man. The automobile is something more than a mere fad. It takes a man out of himself for the time and renovates him as nothing else will. He can take short week-end trips and see the country as he can in no other way. He can give full sway to his mechanical tastes, and can contribute so much to the enjoyment and happiness of others.

By my series of articles "A Vacation on Tires," in THE DENTAL REVIEW, last autumn I unconsciously stimulated among dentists an interest in automobiles that I little dreamed of at the time. I know

of several instances where dentists have bought automobiles as a result, and I trust they are all getting the enjoyment out of it that I have.

One of the earliest enthusiasts in the profession was my friend Dr. Fred W. Gethro, who is touring Europe in his car this summer, and who has promised to take some photographs on the trip for THE DENTAL REVIEW. He shipped his car to Genoa and writes me from Alassio as follows: "Arrived in Genoa yesterday and spent the afternoon around the city—a very old and extremely interesting place, most beautifully situated. Left Genoa this morning and came over the Italian Riviera, and if it is ever my pleasure to see more beautiful scenery I do not believe I could survive it. If I could only describe the wonderful beauty of the Mediterrancan and the Alps along this shore you would pack your car and start within 24 hours. It is mountain climbing all the way—first up on the heights looking down over the sea, then a steep down grade for a mile through tunnels. Well—it is too much to write about, but I can entertain you when I see you for I cannot forget this day's trip if I should live to be a thousand years old. I am wonderfully pleased to find that the car is behaving beautifully with the mountains. Goes at them as if she had been brought up on them.

"This town where we are staying all night is a great bathing beach and tomorrow at 6:30 I will be in the surf. All day tomorrow we will be following the sea, and climbing the mountains, for we are going to Nice. From Nice probably north, etc."

Now, is not that enough to make a man's mouth water? In what other way could one see the country so perfectly? I am not trying to foster extravagance among dentists, but I really believe that as a diversion from office cares and worry nothing can quite equal an automobile.

BOOK REVIEWS.

THE AMERICAN POCKET MEDICAL DICTIONARY, new sixth edition, edited by W. A. Newman Dorland, M. D., editor "The American Illustrated Medical Dictionary." Sixth revised edition. 32mo of 598 pages. Philadelphia and London: W. B. Saunders Company, 1909. Flexible morocco, gold edges, $1.00 net; thumb indexed, $1.25 net.

This book is all that the name implies and the marvel is that it can be published at the price quoted. It is a most compact little volume and although it consists of nearly 600 pages it can be conveniently carried in the pocket. The nomenclature is up-to-date, and the entire work is very attractive and satisfactory.

A History of Dentistry, from the most ancient times until the end of the eighteenth century. By Dr. Vincenzo Guerini, Cav. Uff., Surgeon-Dentist, Naples, Italy; Dentist by appointment to the Royal House; Dentist of the Surgical Clinic of the University of Naples; Editor of the Italian Review L' Odonto-Stomatologia; Author of many odontological works; Honorary member ad vitam of the Italian Odontological Society; Member of the Italian Society of Scientists, Literary Men and Artists; Officer of the Order of the Crown of Italy; Doctor of Dental Surgery ad honorem of the Chicago College of Dental Surgery; Honorary Member of the National Dental Association, U. S. A.; Member of the Executive Council of the Federation Dentaire Internationale; Titular Member of the Society of the Paris Dental School and Dispensary; Honorary Member of the Odontological Society of Malaga, etc. With 104 engravings and 20 plates. Published under the auspices of the National Dental Association of the United States of America, by Lea and Febiger, Philadelphia and New York, 1909. De Luxe, cloth, $6.00 net.

The profession has looked forward to this volume by Dr. Guerini for some time and now that it is finally in print, those who are interested in the subject will find much in the way of entertainment and information. It is a book of 355 pages, consisting of a most satisfying presentation of the subject and available for all time as a book of reference on historical matters connected with dentistry. This is the first time that so complete a history of dentistry has been written and Dr. Guerini may well be congratulated on his noteworthy achievement. It is perfectly fitting also, that the distinguished author should receive the heartfelt thanks of the profession of America for selecting this country as the medium for presenting his work to the world. Altogether the work and the event are the most propitious, and the dental world is greatly enriched thereby.

Dental Metallurgy. A manual for the Use of Dental Students and Practitioners. By Charles J. Essig, M. D., D. D. S., late

Professor of Mechanical Dentistry and Metallurgy in the Dental Department of the University of Pennsylvania, and Augustus Koenig, B. S., M. D., Demonstrator of Metallurgy in the Dental Department of the University of Pennsylvania. New (6th) edition, thoroughly revised. In one 12mo. volume of 355 pages, with 77 engravings. Price, cloth, $2.00, net. Lea & Febiger, Philadelphia and New York.

This is a most useful and in many respects a really fascinating little work. To the student and practitioner alike it offers much information of a practical and scientific nature which will well repay study. The knowledge of metals on the part of dentists is very important when it is remembered how much these materials enter into our everyday practice, and in too many cases metallurgy has been neglected in an educational work. This book in its former editions has done much to encourage and cultivate an interest in the subject and therefore has done great good. We bespeak for the present volume the same cordial reception given its predecessors.

HANDBUCH DER PORZELLAUFULLUNGEN UND GOLDEINLAGEN, von Dr. Med. Ernst Smreker. First part. Das Fullen der Zahne mit Porzellan.

This is a distinct addition in the German language to the subject of filling teeth with porcelain, and will do much to systematize this department of practice among German speaking dentists. The work is amply illustrated, and the author has expended much labor in its preparation. He has gone carefully into the literature of the subject in other languages, and quotes freely from American authors. The book will prove of great value to those who read German and are interested in the subject.

THE DENTAL DIRECTORY, 1909. Containing the names and addresses of all registered dental practitioners, with description and date of qualification, practicing in the United Kingdom and the Colonies abroad. Compiled from official sources. Published by John Bale, Sons and Danielsson, Ltd., London. Price, two shillings and sixpence, net.

This work gives a list of the dental schools and hospitals in the Kingdom, the dental societies, and the periodicals published in different parts of the world, besides a directory of the registered den-

tists of the Kingdom, with their addresses. It contains much other valuable information—though some of it is not quite up-to-date. For instance, among the publication, the *Indiana Dental Journal* is listed, although it has not been issued for many years. The *International Dental Journal* is also given, and possibly others which have long ago suspended publication. But those interested in such a work will find sufficient of value in it to warrant them in securing a copy.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

To Relieve Operator's Congested Eyes:—

℞—Adrenalin Chloride (1-000)—Drs..... 1
Boric Acid, (Sat. Sol.) q. s. ad Oz..... 1

M. Sig.—Place a drop or two in the eyes when tired and congested.—W. H. Tweedle, Pierre, S. D.

Reading:—Were I asked to choose, on one hand, a college education and the deprivation of reading ever after—and, on the other hand, the privilege of reading books whenever I so desired, I would choose the latter. Books are the greatest companions of the mind, and you can dismiss them or entertain them without the usual conventions that obtain in polite society.—C. E. Bentley, Chicago.

Commissions:—Let the general practitioner who sends his patients to a specialist where he gets a commission, have a patient come to him through some one, and they demand twenty-five per cent on the bill for sending them. And see the moving-picture of his doing it. Yet he is willing to accept that which he would not give himself. Patients should be sent where they can get the best treatment, regardless of any returns to the dentist, and if he has their interest at heart he will do so, and not give the matter of commission a thought.—A Brom. Allen, Chicago.

Save the Teeth:—In school the first practical work we had was the treatment of teeth. We all know where the abscess row was. Is it not true that the most of us should be there at the present time? How many of us can successfully treat and fill seventy-five per cent of all root canals? Pause and think of the myriads of teeth that might be saved if we were more enlightened along this line. Think of the irreparable injury done to hundreds of individuals by extracting when the patient's health depends upon a few sound molars that have been injudiciously removed.—N. Melaik, Eureka, Ill.

Failures in Shell Crowns:—The all gold shell crown is undoubtedly one of the best forms of restoring badly decayed posterior teeth when properly constructed. Of the many faults made in constructing this crown I think the most harmful one, which has come to my notice is the lack of reinforcing the entire occluding surface. The cusps of these crowns are usually made so thin that in a few months the stress of mastication has not only worn them through, but has so flattened the occluding surface that the crown jams against the proximating teeth making a broad, unsightly contact which will collect and retain food.—D. H. Danek, Chicago.

Dental Electro-Therapeutics:—A straight glass tube filled with metallic filings conveys the current to the mouth, but has the disadvantage of discharging in every direction, on teeth, gums, cheeks, etc. The glass tube insulated with black vulcanite, about a quarter of an inch thick, sufficiently insulates the terminals. The most useful form is the horse shoe, as I can get it to both sides of the gum at once. I use this generally for pyorrhea treatment. My experiences confirm me in the belief that there is a great future for dental electro-therapeutics in which high frequency currents will play a pre-eminent part; but the study is more than two or three men can grapple with. We must have experimenters by the score.—William Dunn, Florence, Italy.

Intellectual Lives in the Profession:—Too many, both young and old, among us, are too exclusively given to the mechanics of the calling. In their desire to acquire skill in manipulation, which so many place above all else, they neglect almost entirely the cultiva-

tion of the theoretical and the scientific, the very fundamentals of their profession. Their interest in their society meetings and in their journals centers in the "practical papers" and the clinics. This is good and praiseworthy as far as it goes; also it is essential, but should not be allowed to exclude all else, upon which the intelligent application of even these "practical" details absolutely depends.

Every dentist should have some hobby, some interests outside his daily toil, but there is also a wide field in the intellectual side of his own profession, that will give him the opportunity of acquiring a larger and broader view of things, and of promoting even a general culture that will fit him to take his place socially and intellectually with the best in his community.—Charles B. Rohland, Alton, Ill.

Restoration for Abraded Anterior Teeth:—Instead of cutting away the proximal portions of the anterior teeth to secure additional anchorage over what could be obtained by deepening the incisal end, I groove the lingual surface extending gingivally to the lingual lobe, the depth being slightly more than the enamel and the width, such as to leave a sufficient amount of tooth structure to retain strength. A pin or post of gold or platinum may be employed for anchorage dentin under the lingual lobe to the depth of about one millimeter. A pin or post of gold or platinum may be employed for anchorage in the pit at the base of the lingual portion of the cavity or the linguo-gingival pit, though I found no difficulty in forcing the wax into position and cast the entire inlay.

The advantages claimed for this method are that of strength, less irritation of live pulps, preservation of tooth structure and sightliness.

No trouble is experienced in masticating any class of food material, and no shock from thermal change. The bite is open about three millimeters.—W. B. Tym, Charleston, Ill.

Operation for Removal of Adenoids:—Adenoids and tonsils should be removed at one sitting. As soon as the child is under the anesthetic a mouth gag is placed between the teeth, the jaws separated and the tongue held down with a stout metal tongue depressor. Some form of an adenoid curette is then passed through the mouth

above and behind the soft palate and the handle depressed against the lower teeth. The cutting blade is then swept along the upper anterior portion or vault of the pharynx and down the posterior wall exactly in the median line. Second and third sweeps may be made more laterally if required, care being taken not to injure the eminence of the Eustachian cartilages on either side wall. Having removed all vegetations possible with the curette, the forefinger is passed behind the soft palate and all offending shreds or films about the tube mouths and elsewhere thoroughly removed. Hemorrhage is brisk at first, but soon ceases spontaneously. The after-treatment is simple. The patient is placed on the side and kept warm and quiet until complete recovery from the anesthetic has taken place and the tendency to vomit is overcome.—Henry Glover Langworthy, Dubuque, Iowa.

Preserve the Soft Tissues in the Interproximal Space:—If the soft structure that occupies a large portion of the interproximal space is not preserved you not only have a recurrence of decay, but there is a possibility of establishing a disease process that the best dentists in the country seem to be unable to control.

There seems to be a law manifesting itself both in a physical and chemical way in tissue in the interproximal space and surrounding the entire tooth or teeth, and that is an extremely sensitive irritability; and on the slightest interference in any way with the tissue there is a cell irritability that manifests itself in the interproximal space with a greater variation of form of abnormality than is to be found in any other tissue of the body. Such imperfect spaces cannot fail to produce one of two things—caries of the teeth or disease of the peridental membrane. When fillings are placed in such teeth as well as other teeth, the most essential point to take into consideration is the finishing of the gingival margin. When there is a proper contact made and an improper margin is left at the gingival line of the filling the results will be the same, only with a proper contact the condition may be deferred for a longer time. I do not consider that the recurrence of decay is as detrimental as the pathological condition that may be established in the soft tissues.—George W. Cook, Chicago.

Open Face Crowns:—The dislike to the showing of gold in the front of the mouth led to the idea of the open face crown. Its fitting to a central incisor or cuspid is a task that often means a merciless use of the grinding wheel and when the grinding is done, the central looks like a lateral, and the cuspid like a pig-shaped supernumerary. Without this, the crown will not fit at the neck of the tooth, and the gum will always bear evidence of irritation. I have tried leaving the small gold band that runs across the front of the tooth unattached on one side and so arranged the loose end that it could be screwed tight to the backing, the artificial tooth being cemented into place after the appliance was tight in the mouth. In doing this work I trim the teeth sufficiently to allow the thickness of the gold to go between and also relieve the bite, so as to give space for the gold. I then take plaster impressions of the teeth to be crowned. A separate model is taken of each tooth to be crowned. On these models the crowns are then made in two pieces, back and front, and these are adjusted at a subsequent sitting to the teeth in the mouth. They are then wired tightly on to the teeth and a plaster impression is taken with them in place. This gives their exact position, and the case can be finished in the workroom.—J. H. Moore, Frankfort, Germany.

MEMORANDA.

Dr. G. V. Black, dean of the Northwestern university dental school, was born in Scott county, Ill., seventy-three years ago. He is at present in Colorado Springs, carrying on dental experiments with children thereabout.

CENTRAL ILLINOIS DENTAL SOCIETY.

The Central Illinois Dental Society will meet in Taylorville, Sept. 21, 1909. A splendid program has been prepared. All ethical members of the profession invited. E. B. Strange, Chairman Program Com.

OHIO STATE DENTAL BOARD.

The Ohio State Dental Board will hold its regular fall meeting in Columbus on October 19-22, 1909, for the examination of applicants for license. All applications, with the fee of $25.00, should be in the hands of the secretary not later than October 9.

For further information and blank applications address F. R. Chapman, secretary, 305 Schultz building, Columbus, Ohio.

DENTAL FACULTIES ASSOCIATION OF AMERICAN UNIVERSITIES

This organization was formed at Philadelphia, June 5, 1909. Membership is "limited to dental schools which are an integral part of state universities

or of chartered universities of equal standing of the United States of America, holding membership in the Association of American Universities, demanding graduation from accredited high schools that require four years of high-school work, or the equivalent amount of education, for matriculation."

RECENT PATENTS OF INTEREST TO DENTISTS.

926,583. Dental clamp, H. S. Miller, Rochester, N. Y.
926,977. Dental instrument tray, J. Brun, Christiania, Norway.
927,420. Automatic dental hammer, R. P. Lyle, Portland, Oregon.
927,844. Dental-silk receptacle, H. Emerson, Milton, Mass.
927,850. Dental appliance, J. Gartrell, Washington, D. C.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, Solicitor of Patents, Fendall building, Washington,

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The annual meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the State of Illinois will be held in Chicago at the dental department of the University of Illinois, corner Honore and Harrison streets, beginning Monday, November 8, 1909, at 9 a. m. The following preliminary qualifications shall be required of candidates to entitle them to examination by this board for a license to practice dentistry in the State of Illinois: Graduates of a reputable dental or medical school or college, or dental department of a reputable university, who enter the school or college as freshmen on or after the school year of 1906-7, must have a minimum preliminary education of not less than graduation from an accredited high school or a certificate from the State Superintendent of Public Instruction, equivalent officer or deputy, acting within his proper or legal jurisdiction, showing that the applicant had an education equal to that obtained in an accredited high school; which certificate shall be accepted in lieu of a high school diploma. Candidates will be furnished with proper blanks and such other information as is necessary on application to the secretary. All applications must be filed with the secretary five (5) days prior to date of examination. The examination fee is twenty ($20) with an additional fee of five ($5) for a license. Address all communications to T. A. Broadbent, Secretary, 705 Venetian building.

COLLEGE COMMENCEMENTS.

UNIVERSITY OF BUFFALO DENTAL DEPARTMENT.

Graduates—A. W. Arnold, A. G. Baits, L. U. Bidwell, H. W. Black, L. D. Callahan, S. J. Earley, E. W. Flagg, E. A. Galvin J. C. Gow, H. V. Heiss, C. A. Hill, C. F. Hogan, M. Kutyn, E. Lewis, M. L. Maxwell, P. A. McAlpin, C. L. Storms, R. W. Tench, J. M. Ward, I. T. Whalen.

DENTAL DEPARTMENT BALTIMORE MEDICAL COLLEGE.

Graduates—H. W. Mitten N. H. Baker, J. E. Auer, F. X. Masse, W. F. Hayes, I. Danker, H. E. Tyler, C. G. Baker, C. E. Sherwood, C. Constantine, E. F. Gill, F. T. Stenson, C. J. Hien, M. W. Belzer, C. H. Greene, J. W. Robinson, W. H. V. Miller, W. H. Desforges, L. P. McGovern, F. A. Heffernan, R. B. Randolph, J. J. H. Cather, F. E. Burden, B. C. Leslie, R. G. Miller, C. J. Ryan, R. J. Couture, J. P. Stanley, G. H. Samuel, P. A. De Marconay.

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SOME FAILURES.*

BY W. MITCHELL, D. D. S., LONDON, ENGLAND.

MR. PRESIDENT AND GENTLEMEN:

Most of us are pleased to dilate upon what we like to flatter ourselves are our successes, but few of us have the courage to speak of our failures; much less to have them discussed by our fellows.

Professional men as a rule are exacting and their criticisms verge upon cynicism when it is the method or discovery of another that is being discussed. This is not as it should be, and the carping spirit so manifest at times does not promote the best interests of either our profession or our patients, yet may go a great way toward preventing new, and in many cases good, ideas from our younger members being presented and discussed to the advantage and benefit of those of us who are still far from being perfect, and who realize that there is still much for us to learn.

There are very few of us here who have not met with failure, and few, if any of us, if honest toward ourselves, but recognize the fact that, had we the opportunity of doing many of our operations over again, could very much improve upon our previous efforts.

Some console themselves with the questionable solace that a failure is a modified success, and continue to wander along in the same old way, instead of analyzing for the cause of the result which may possibly prove as unsatisfactory to the patient as it is a source of solicitude to the one responsible for the unfortunate condition he has either through incapacity or negligence contributed to.

It has been truthfully said: "He who never made a mistake never made a discovery." Let us see to it that our failures are but

*Read before the American Dental Society of Europe, April, 1909.

the stepping stones to our successes. The great tendency of the majority of us is to spare both ourselves and our patients as much inconvenience and trouble as possible, and to take short cuts when considering many of the details of our work; this tendency is no doubt in many cases responsible for the conditions we have noted in connection with operations we had hoped and intended to be a credit to us.

This suggests the question, Is it honest of us to do less for our patients than we *know* is necessary to accomplish the desired result? The reply to this in many instances would be the modifying influence of the individuality of the patient, and its effect upon us and our efforts on their behalf. It was not so much upon the metaphysical side of the question that I intended to speak, as upon its practical application to our daily work, and its effect upon our work in our societies, and, incidentally, its influence upon the younger members of our profession.

Success may not always be attained, but a bid may always be made for it, if we start in the right way.

There are four potential influencing factors which lead to success. First, honesty of purpose; second, the careful selection of our ideal; third, setting a high personal standard toward perfection; fourth, a determination to do our best under all conditions or circumstances. If I have correctly stated the premises, then the converse must inevitably result in discomfiture or disaster.

Of the many failures we note along life's pathway, a large proportion no doubt are the direct result of an absolute disregard of, or inability to appreciate personal responsibility, when it comes to deciding between doing the easy thing or doing the right thing.

We are not all built alike, our physique, temperament, mentality and capacity differ, and in like manner must our ministrations to the public vary.

A weak, vacillating character can never inspire confidence in a patient, no matter how proficient otherwise a man may be.

The man who frets and fumes over an operation wears and worries his patient as much as he does himself, and thereby introduces a strong element toward failure by his lack of self-control. The man who is everything to everyone, and promises everything his patient may ask, has only himself to blame if retribution comes later on in the imprecations and probable loss of his patient whom he has deceived by his specious pretensions.

We all know the man with the profound patronizing air and impressive manner, who sagely arches his brows and corrugates his forehead, and who makes a mountain of a molehill when prognosing a simple case, and with the suavity of a bunco expert informs the patient his case is one requiring the most careful treatment, at the same time covertly insinuating that he alone is the one capable of effecting a cure, which when accomplished is spoken of as a unique experience, he "never having heard of a like case." Then we have the man who is, or would be, "chummy" with his patients, who does not mind asking them to have a cigarette or a drink with him in his surgery at 11 a. m.—his next patient may be a lady—and who would not hesitate to send round a note at 5 p. m. asking for the loan of a small sum of money, as he had backed a loser and the bookie insisted upon being paid.

Then we have the man who is shady with his colleagues in treating patients whom they may have sent to him. As the condition of his appointment book has no doubt a great influence upon the alleged necessities of the case, there can be no question as to either colleague or patient once tricked by this class ever affording him another opportunity of demonstrating his specialty in moral obliquity. As this type is usually a degenerate, we must not be too severe with him.

We also know of the man who has ability, who can and often does good work, yet takes little interest in anything which may benefit his profession or his fellows, unless he can see he is to secure an advertisement, or a direct individual advantage; he is a perpetual feast of admiration and satisfaction to himself, while a source of solicitude to those upon whom he intrudes a pseudo-friendship, from which they have not the courage to disassociate themselves. As all things with which we are cognizant are comparative, I have introduced a few types as illustrative of individual characteristics which in many cases contribute so largely toward failure in life in general, and incidentally to our profession in particular. I firmly believe that even the types I have delineated when they started out on their professional careers hoped and intended to benefit not only themselves, but their patients and profession by the way they would serve the public, and the part they would take in furthering the best interests of their profession; but alas, how "The best laid plans of mice and men gang aft agley," is demonstrated by the wreckage we so often find along the coast line of life's turbulent sea. The tendency of human

nature is chiefly to benefit self as much as possible, first, last and all the time, and this being so, I am of the opinion that our instructors in our colleges and institutions of learning do not lay sufficient stress upon or take the trouble necessary to inculcate an appreciation of the great responsibility their students are assuming when starting out upon a professional career requiring the many exceptional qualifications as does the practice of dentistry. I am more fully convinced than ever before of the many exactions made upon us by the exigencies of every-day practice, and no matter how systematic one may be in arranging his work, or how well he may have schooled himself as to the sequence of detail, there is always the factor of the unexpected, which may, and very frequently does, assert itself, and which it is impossible to foresee, and consequently cannot always be intelligently provided against, being, as it is, liable to present so many phases of a complex and unanticipated nature, which only tact, resource, and a cheerful, optimistic assurance can contend with with any reasonable degree of success.

On looking back over more than a third of a century, I note many changes in theories, as well as in methods of practice; of the two, practice has certainly had the best of the argument, founded as it must necessarily be upon more readily appreciated and exact laws. I remember perfectly well the war that raged over the question of the right of a man to use amalgam for filling teeth (those were the days when we filed up an old silver spoon or a Mexican dollar), and the final triumph of intelligence over preconceived ideas and opinions which has resulted in the investigation of and the development of a material which has been a boon to those whose bibliophilic predilections have prevented them appreciating the possibilities of any material requiring more skill in its application than a plastic filling. This has had its compensations, for there have been many more teeth saved than otherwise would have been for the man who could build up a good gold filling, given the material, could be depended upon to put in a better amalgam filling than the man who was merely a stucco manipulator. The failure in connection with the foregoing proposition was the inability of the "gold fillers" to realize that there might possibly be another side to the argument, and disdained to consider anything except their own opinion, instead of remembering the biblical saying, "prove all things, and hold fast to that which is good." Vulcanite, too, came in for a castigation at

the hands and tongue of a "holier than thou" coteric; theorists again were rampant as to its demerits, and its degrading effects upon the dental profession, and while these denunciations were possibly a safety valve in disguise, vulcanite has proved a public boon where intelligently used; the many wretched specimens we see in the way of vulcanite dental monstrosities demonstrate its reverse possibilities when manipulated by careful and capable hands. Here again the theorists had a bad time of it, for their criticisms were based chiefly upon work which in most instances had been turned over by them to incompetent and inartistic mechanics, because they—the critics—were unable to construct the work themselves. In discussing continuous gum work with men recognized and acknowledged for their alleged scientific attainments, and ability to discuss theories for the time in vogue, in no single instance have I known this work to be accorded the place it occupies in the opinion of the man who can construct it properly, or of the patient who wears it. Why is this? some may ask. The failure in connection with this proposition is the inability to appreciate the absolute necessity of starting right in connection with either of the two bases mentioned, or, for that matter, with any base. To my knowledge some of the men with whom I have discussed this subject were incapable if taking a correct impression, so why consider this matter farther? You may think I am rather severe with theorists. I am, and for the reason I, as well as many others present, have been compelled to change and readapt our theories so often, as compared with our fundamental methods of practice, that one pauses to inquire if it is not more often a craving to see one's name in print, and to outbid the other fellow for a little cheap applause and notoriety, that causes so many eccentric ideas to be given the publicity they are. The failure as regards this phase of our professional life comes of the fact that we have too few real students and thinkers in our ranks, and we too supinely submit to fantastic ideas presented by no doubt otherwise able men, but whose ability does not extend to a personal application of their theories to chair-side practice, which in my opinion is the best method of substantiating laboratory experiments. We should more often question many of the statements we have made at meetings, knowing frequently, as we do, how incompatible they are with methods and means we long have known as capable of producing satisfactory results.

The older members of our Society remember perfectly well the

attempts made to conserve the tooth pulp, and I with many others resorted to many expedients in the way of capping, with that end in view; speaking for myself, I am convinced in nearly, if not all, cases, it was a case of premature burial, as I frequently had to open the sarcophagus and do what I should have done in the first instance, destroy and remove the pulp, when all would have been well; and here, by the way, I would remark, coming from an erstwhile malarious infected section of Ohio, I would call attention to the pronounced and baneful influence malaria exerts in connection with lesions of the dental pulp and inflammations of adjacent tissues.

We have all heard of the beauties and success of the operation of amputation of the dental pulp, also of the successful and complete removal of all pulp tissue from all roots prior to subsequent treatment and filling of the roots. These two operations are always more easily and perfectly accomplished in the papers read at meetings than they are in the practices of the men having the effrontery to talk such rot to men who know better. The reason such statements are allowed to pass unchallenged has always been a mystery to me. The failure in this connection is possibly the desire on the part of the audience to be polite to the essayist, or their inability to do the subject justice except by the use of a few terse monosyllables which would probably be more forcible than elegant.

Students of the past few years have had their studies extended in many directions, theoretical as well as practical, but as "it is impossible to put more than two pints into a quart measure," so is it impossible for a college to extend its curriculum without a proportionate increase in time, and as the latter has not kept pace with the former, it stands to reason the veneer of knowledge in both theory and practice must inevitably be very thin in places.

The endeavor on the part of teachers to stuff their students with the various subjects that they may parrotlike give off to the examiners a sufficient mass of illy digested pabulum to secure a diploma, in my opinion, in most cases robs the student of the opportunity of weighing and comparing many phases of both his didactic and practical work, except in a most superficial and perfunctory manner, so that he leaves his college with but little judgment as to how best to handle the patient or to treat the case. The failure in this matter lies more in the commercial lines on which many institutions of learning are conducted and the competition incidental thereto than

in anything else. There appears also to be a desire on the part of each generation to make things as difficult as possible for each succeeding one, by shaping affairs, not always wisely, so that a more pretentious condition exists, which after all not infrequently is nothing but humbug and a delusion when it comes down to real and direct benefit to the public, and after all is said and done, that is the direction in which our duty lies. This is the age of specialists; nearly all callings are divided and subdivided, and our profession has not escaped this tendency toward segmentation. Working under circumscribed conditions necessarly limits one's horizon, as well as his faculties for extended observation, therefore the specialist is ever prone to view all cases from one standpoint, viz.: That of his own specialty. That not infrequently more may be accomplished in a given time, along certain lines, by confining oneself to one thing or line of action, holds good, but only with respect to mechanics or the exact sciences. Where science and art blend so intimately and interdigitate with such imperceptible gradations, and that, too, in conjunction with phenomena wherein vital physiological and pathological conditions exert such complex and varying influences, he who would specialize himself requires a special faculty for observation and deduction, a special phase of what would be a well nigh novel personality, and I would state right here that the man who can attain to the requirements of the aforesaid conditions during the brief space of his collegiate course, and arrive at such a degree of perfection, that he is fully justified in offering his services to the public along specialized lines, is little short of a phenomenon. This applies with singular emphasis as regards both orthodontia and the treatment of so-called pyorrhoea alveolaris. Diagnosis is such an important and necessary part of our occupation that I feel confident in saying we never thoroughly learn it, yet how many men appear to feel the necessity of impressing their patients with their knowledge and profundity, that they many a time hazard an opinion which they later on would give anything for the opportunity to gracefully retract, when the proper course to pursue would be to tell the patient the conditions required studying, and as a hasty diagnosis could not be satisfactorily made, a reasonable prognosis was impossible.

The ability to call micro-organism by their Christian names and then attempt to suppress them with a little pharmacal jiu-jitsu may, or may not, mean much; the same idea applies to correcting ir-

regularities and restoring the contour of distorted features; in the one case, not infrequently it is some other man who of necessity is called upon to extract the teeth which have been "cured" (?) of pyorrhoea, and it is rarely the orthodontist who has the opportunity of seeing his cases ten or more years after the time he has shown such a pleasing array of models of his "successful" cases to his admiring and interested friends. The failures in these cases are induced principally by the methods already mentioned, the floundering among many dogmas, and the neglect of study after leaving college, just at the very time when a man has really learned to study intelligently, and make logical deductions therefrom. At the present time micro-organisms occupy the center of our didactic stage, the public are doped and dosed for this, that and the other bacterium, until life is made well nigh a burden for impressionable people. The flora of the mouth holds the record for numbers and variety as compared with any other part of our organization, and we are told we must believe these are all pathological. Well, are they? that is the question. Not one of our investigators have given us a hint as to the possibility of there being such a thing as a physiological micro-organism, which may, either by itself, or in conjunction with a neighbor, or as a factor incidental to or in connection with ingesta, that might be or is an agent or influence in connection with metabolism. If all we hear be true, every butcher having the least respect for our theoretical friends should be dead and buried before he is twenty-five years of age, exposed as he is to cuts and scratches from knives and bones, in connection with his calling, and which must be contaminated from contact with dead meat as sold for food. Sewer men also should recognize their obligations to science, and not inconsiderately live merely to obtain the solatum of an old age pension, the way they do. Scavengers also show a disregard in this matter nearly as appalling as that shown by the medical profession in the way they ignore the presence of what we are told are the sworn enemies of mankind. At nearly all hours of both day and night have I passed along the streets of the west end of London, mostly favored by the leading specialists, where human ailments in all their sad and distressing phases are wont to present themselves, and if our information and teachings are correct, the atmosphere and surroundings of these consulting rooms, with their furnishings, should be recking with all the elements of the various ailments to which flesh is heir, but it has been a conspicuous

exception where I have seen an open window, or a room where God's pure air and sunlight has had undisputed entrance, both of which media are supposed to be essential to health and nature's antidote to bacteria. With these controverting facts in opposition to generally accepted theories, speaking more eloquently than any mere word painting or laboratory experiments, disassociated as they almost invariably are from the vis-vitae, the complexities of which even now we have scarcely invaded the fringe of, as far as understanding its manifold influences and possibilities. Are we not, therefore, more than justified in manifesting an intelligent conservatism with respect to our treatment of the public who favor us with their confidence? Let us see to it that we do not abuse that confidence for any slight personal gain; let us give them the best we have of what time and experience has demonstrated to our own satisfaction will be most likely to prove a lasting credit to us. Let us not be extremists, but weigh carefully the pros and cons of a case ere we stake our reputation upon any novel or striking method of practice which might for the moment tickle the fancy or appeal to the whim or vanity of our patients, but let us do our best for them, and the thing we know we would like done for ourselves under like circumstances; then, and not till then, can we have any explanation or excuse to offer, or any quarter to ask with respect to our failures.

A RENEWED PLEA FOR ESTHETIC DENTISTRY.*

BY N. S. JENKINS, D. D. S., PARIS.

Medical history is a record of sudden glimmerings of truth holding despotic sway for a period of time, and then broadening into wider and more temperate usefulness, or else becoming overshadowed through the growth of new ideas and falling into partial neglect.

Especially in the short history of dentistry has this tendency to run in grooves been observable. The older practitioners remember the time when, both in and outside professional circles, a dentist's reputation was chiefly based upon his skill in filling cavities with gold. The brilliant gold operator often despised all other branches of practice and spoke condescendingly, if indeed he spoke at all, of

*Read before the American Dental Society of Europe, April, 1909.

those whose usefulness to their patients took a wider range. It was attempted to exclude from some choice societies those colleagues who would not pledge themselves to refrain from using amalgam. The extremists called amalgam "an accursed thing," and declared that "any tooth worth saving at all was worth saving with gold." These were the days of the great contest between cohesive and non-cohesive foil, the days of the invention of the rubber dam, the dental engine, the electric mallet and innumerable minor improvements which made gold operations possible in any position in the mouth.

We can now see how essential it was to the progress of our art that the chief energies of dentists should, for a time, be concentrated upon this class of operations. There are no dental operations, there never will be dental operations, which are not dependent for highest success upon a rare technical dexterity. No other branch of surgery calls for such nicety of touch, such clearness of vision, such continuous self control, such immeasurable patience. It was neecssary for two generations to be carefully trained to the attainment of a supreme degree of skillfulness to establish for all time the tradition that only through such training can we hope to make dentists worthy of their calling. The commendable tendency to insist that dentists shall receive the same broad and thorough scientific training which is customary in all other branches of medicine may, therefore, be regarded now without anxiety, even by the most "practical" members of our profession, since the principle of high technical training is established forever as absolutely indispensable.

About the middle of the last decade another new departure began to influence enlightened minds. It was felt that the golden idol had been too blindly worshiped. The system had grave defects, such as being far too great a strain upon the vitality of both the patient and the operator, and of much too frequently securing healthful conditions only by the sacrifice of comeliness, the reverse of restoration to health in general medicine. Conscience, the sense of proportion, the love of beauty, were asserting themselves. The time was ripe and the age of porcelain dawned upon a grateful world. It was a splendid awakening. It was found, as is always the case in any true reform, that many minds in various parts of the world had been working upon the same problem and were hastening to impart the result of their labors to their colleagues. Some enthusiasts put aside their instruments for packing gold, feeling they should never need them more.

Numerous converts were constantly reported. Porcelain clinics were the order of the day everywhere. Dental literature and society discussions centered chiefly about this question. An animated but friendly contest ensued between the advocates of high and low fusing bodies and of platinum and gold matrices. There were as many methods proposed for shaping cavities as there were men who could hold a pen, and innumerable helpful details were presented and employed. Patients, especially European patients, among whom the esthetic taste is both hereditary and cultivated, aided in propagating the new gospel and all patients rejoiced over the marked reduction of suffering obtained by the inlay system.

This great reform, however, had many enduring obstacles to encounter. The conservatism of those who had so long gained great results with gold was a helpful obstacle; but the unenlightened conservatism of indolence, and the thoughtless enthusiasm of those who first welcomed the process and then abandoned it because of lack of patience or capacity to master it, were chiefly harmful. But still it kept on its irrestistible progress until its value became established.

Of late, however, the vogue of the porcelain inlay has experienced a reverse, occasioned by its over-triumph, and it is exactly upon this point that it is well for us to dwell.

We all remember that our greatest anxiety, in the beginning, was as to the stability of porcelain inlays. With the imperfect methods and inadequate cements of that day, our fear of dissolution, or dislodgment by force, was justifiable; but as we at last learned how to shape our cavities and how to roughen and groove our inlays, and how to use the improved cements, we came to see that an inlay was the most secure of all fillings and the only one, except combined tin and gold, which became more secure with the lapse of time. This conviction naturally led to the making of gold inlays in cases to which it seemed that porcelain was not well adapted and, from the first crude beginnings, it was but a step to the brilliant discovery of Taggart. The cast gold inlay is a most valuable invention, but it grew naturally out of the success of the porcelain inlay. There can be no doubt that there are many cases in which it is superior to porcelain, but it is, for the moment suffering, as is also the case with silicate cements, and as, in the beginning, porcelain suffered, and as the malleted gold filling suffered, by indiscriminate use. I will not touch upon the tendency, so often noted in the first use of gold inlay

work, of too great sacrifice of tooth substance and too reckless approximation to the pulp. These are individual and passing errors, which in time will be corrected. But I wish to insist upon the danger of temporarily forgetting, in our new and justified enthusiasm, the triumph already gained. Augustus found Rome brick and left it marble. The men who made porcelain inlays possible found dental restoration practical—but hideous; they left it more practical—and beautiful. These are two irrefutable facts. Any cavity can be so prepared as to receive and retain a porcelain inlay. He who fails to accept this conclusion shows that he has failed to grasp the principles and technicalities of porcelain work. As Reeves has so well and so often said: "Porcelain is only limited by the limitations of the operator."

This is not to say that, while porcelain inlays are everywhere practicable, they are everywhere advisable. It must always be a question of judgment, in obscure and complicated cases, as to what is the most desirable operation in the interests of the patient, a question not always easy to decide. But, a decision once obtained, the duty of the operator is clear. There are instances where we must resort to temporary and palliatory treatment and where any attempt to create a truly permanent operation would be an immoral act; but, when the question is settled as to making an enduring operation, we have to consider which operation will be most comfortable, will have the least tendency to cause, or assist in causing, secondary or neighboring decay, and which may be expected to last the longest time. I will not refer to the question of expense. The members of this society are chiefly in conditions of practice where they have to consider not the cost, but the actual value to their patient of any given operation, the very foundation of American practice in Europe being the belief that the patient will receive treatment conceived and executed paramountly in the interest of the patient. But I insist that no other material, not even the gold inlay, combines so many advantages as porcelain.

The preparation of the cavity, when once the principles are mastered, if not exactly always rapid, is sure and but slightly distressing to the patient. The lesson has been well learned that a cavity of any shape which does not give undercuts and which provides somewhere sufficient depth, and which has well defined and polished edges either for burnishing the matrix to the cavity or for taking a wax impression, is suitable for a porcelain inlay. Let me add that my ex-

perience and observation leads me to esteem now more highly than ever the advantages of the gold matrix and of elaborate grooving of the inlay with the diamond disk. When such an inlay has been gently coaxed into position and firmly held in place under one of the modern, quick setting, finely ground cements until the cement has crystallized, we have an operation which, from the first moment, is perfectly tolerated by the tooth, which improves in stability and appearance as the years pass by, and which is not only easily and naturally kept in a hygienic condition, and which in labial and bucchal cavities, alone of all fillings, remains intact under the action, mechanical or chemical, of the agencies which cause erosion, but which has also a protective influence over tooth tissue in its immediate neighborhood. In what other way can so many good qualities be combined?

But the prime purpose of this article is esthetic. We have gained, at what cost of strain of brain and nerve and time only the pioneers in this exquisite art can know, against ignorance and prejudice and selfishness and stupidity, the vantage ground of making a great contribution to the spirit of refinement and the sense of beauty. Untold millions walk abroad and are but dimly conscious of the morning glow, the mid-day splendor or the evening red. Thousands pass beneath the spire of St. Stephens, the towers of the Abbey, or the columns of the Madeleine with little uplifting of the soul and with only a mild satisfaction that such great mortal achievements exist. But let the blind forces of nature, or the sacrilegious hand of man work havoc, and there is no mortal so debased that he does not revolt at the sight of harmony destroyed and beauty defiled. Even more so with the god-like visage of man, into which we daily gaze with various emotions. If haggard with illness, debased by crime, distorted by pain, disfigured by crime, it excites pity or even disgust, and all the resources of our modern civilization are called into service to retrieve this hideous condition. So far as concerns the organs under our care we have retrieved, through the use of porcelain, the shocking effects of accident or disease. No longer, so far as we are concerned, need senility be repulsive. No longer need the youthful face of otherwise unblemished beauty be disfigured through evidences of restoration by dental art. We have no longer a vestige of excuse for allowing the traces of our handiwork be a visible offense; for it is our duty, as it should at all costs be our pleasure, not only to re-

lieve pain and to restore to usefulness, but also to restore beauty to the marred human face divine.

STRAY SUGGESTIONS.*

BY DR. G. H. WATSON, BERLIN.

There is a kind of cleverness, or artfulness, in an inexperienced writer presenting a subject with which his hearers are not familiar. He may lead some of them to think well, even with approval of his effort.

I should be grateful were I able to present to you a scientific paper of sufficient interest to be worthy of your consideration, or one so bristling with new and original ideas as to be of value to you in every-day practice.

But what I know along these lines is mostly common property, so I have chosen a few stray thoughts upon subjects relating to the dentist.

There are professions and occupations dealing with great questions and thought, in which men may be without technical knowledge or appreciation of the smaller arts. Dentistry is not a profound profession. Still there is perhaps no profession calling for more diversified qualities of mind and body than ours, and while the dentist may have a mind able to grasp and deal with large questions, his daily occupation must be to deal with an infinite number and great variety of small questions. He must have an unerring mechanical instinct, and this developed to a high degree of perfection, and more, a positive feeling for the artistic, one feature which marks the difference between a trade and a profession. He must possess the qualities necessary to a good physician or surgeon, first of all that sixth sense, common sense. There are few operations in dentistry in which good judgment is not a paramount need. The dentist must have a kind heart, a firm hand, a love for children, and must be able to meet them on their own ground.

But if dentistry is not a profound profession, it is one based upon science, counting men of undoubted scientific attainments, our progress depends upon it. Dickens, in his "Christmas Carol," makes it plain that Marley was dead to begin with, else nothing could come

*Read before the American Dental Society of Europe, April, 1909.

of his story. I wish to make this fact equally plain to begin with, for, in this paper I shall have more to say of the art than the science of dentistry.

Might not a profession which comes so close to the people, and has so much to do with the health, comfort and beauty of the human race, with so many problems still unsolved, be considered a worthy subject of consideration for the schools now being founded in America for original research? Could humanity be better served, or more widely benefited, than by adding a chair for pure scentific research in dentistry?

There are few surgieal operations exceeding in diffieulty or skill those performed almost daily by the conseientious dentist, who is so far without the benefit of any agent taking the place of chloroform to the surgeon.

These operations are often serious, disagrecable; often painful, exhausting and trying to the nerves of both patient and operator. I know of no more trying occupation, or one which calls for more ingenuity in the management of different temperaments, classes and conditions. (The rich do not select dentistry as an oecupation for their amusement.) To meet these conditions a dentist should form such a philosophy of life as will bring his mental and physical powers under perfect control. He cannot afford to be irritated by small things.

Modern life tends to develop the exquisitely nervous; to those we must supply nerves, to the weak strength, to the cowardly courage, we must minister to the unreasonable and to the foolish with sympathy and firmness with a nieety of judgment, mechanical and artistic ingenuity and skill in execution all of a high order, if the best interests of all patients are to be served.

To do this a man needs perfect health; much of his control depends upon it. Every enemy to good health is an enemy to good work; worry and hurry go hand in hand to turn a man's holiday into nervous prostration. We must take the initiative. Emerson says, "Most people have not the habit of self relianee and original aetion."

I have suggested eompatability of feeling between patient and operator. I think it a point worthy of praetical consideration. Dentists may be divided into two general classes, those who succeed from influences that seem to me external, and those whose success is due to undoubted merit, based upon seientific attainment. To the

charlatan the location, the furnishing, the arrangement and fittings of his office is all important; it must be striking in effect, it must excite comment. The same is true of his personal appearance, and his manners. He must create a mental impression or his trick is lost and he is done for, because he lacks the merit that would carry him on to legitimate success. If the charlatan can benefit by artful mental impressions produced to substitute worth, why should not the real, the scientific dentist benefit by a proper mental condition cultivated for a worthy and helpful object? Why should he not benefit by the art, as well as the science of his profession? Art is elastic and adjusts itself to conditions, science is hard and unyielding, and in the pursuit of it, it is well not to forget what art can do for us.

I believe each patient should take the chair in a mental attitude, so far as possible, favorable to the operation. To produce this condition I think the furnishing of the office plays its part. It should suggest restfulness and quiet comfort, good taste and radiant cleanliness, comfortable chairs and seats suited to the various temperaments of the patients, cheerful books, pleasing pictures, a few objects of rare interest will interest the observant, for if a patient must wait a few minutes he will come to the operation in a better mental attitude if he has found a book to his taste and a chair to his liking, and farther, if, for instance, a man who understands the art of conducting his practice has for a patient a man of large business interests, accustomed to promptness and dispatch in his own affairs, he will not keep that patient waiting, nor will he waste time in conversation, or fail to dispatch his work in the least time, compatible with the best results, for any other course would bring about mental irritation on the part of the patient, resulting unfavorably to the operator in his work. To meet a patient promptly, with a few words of cheerful greeting, will lighten the work of the operator.

I know a dentist of great reputation and large practice who was obliged to keep a patient waiting long beyond her appointed time. She came to the chair in a rage, the dentist's apology did not change the mental attitude of the patient, but when he looked into her mouth he said to her, "Madam, it is a rare pleasure to look at a mouth so clean and beautifully cared for as yours." It was the truth, had it not been it would have been the trick of the charlatan. It was said, not to flatter the patient, but to re-establish a favorable mental attitude between patient and operator. That man understands the art

of dealing with people for their benefit and his own good.

A man wise in the art of practice will cultivate his own mental attitude. In my own operating room can always be found such books as "The Meditations of Marcus Aurelius" or Emerson's essays, from which I read a sentence now and then during the day to help maintain my mental poise, and act as a buffer, or cushion, should the patients indulge in irritating comments, for people in pain are not normal. Dr. Johnson has said that "every man is a rascal when he is sick." And I find a good thought in the background of the mind takes off the metallic ring, and often inspires the "soft answer that turneth away wrath."

A man wise in practice knows that punctuality begets punctuality, faithful treatment, generous dealing. Seeking to give all one can for what he gets will be returned to him in like coin.

The word coin suggests money. If we only had within us something corresponding to the modern storage battery, by which to store up for future use the surplus energy and enthusiasm of youth, we could perhaps afford to lose sight of the money question. Modern civilization does not seem to have lost sight of it, nor has it provided a substitute so far. We have had pathetic instances of men in our profession, eminent men, who after years of princely income, when they should be enjoying the fruits of useful lives, find themselves in poverty. Money is not worthy of our first consideration, still it is worthy of consideration; it brings opportunities, gives leisure to improve them and to enjoy them, the power to do for those less fortunate; it has its blessings. Poverty deprives us of many comforts of life, often its cheerfulness, sometimes friends. A man in debt is a slave. I do not think the average dentist gives much thought to this. We are not considered generally to be very good business men. It takes courage and character for a dentist, meeting as he does on an equal social footing, people of vastly greater means, to regulate his own affairs in accordance with his circumstances, his duty to others, and his future well-being. There are professions in which the wisdom of advancing years and experience increase a man's value to the public and commands its price. Dentistry is not one of them. The clear head, under present conditions, has no market value to the public for the dentist physically exhausted, in America at least.

Ben Franklin in early manhood devoted his best energies to developing skill and speed as a printer. At the same time he became a

local authority upon the minimum cost of healthful living, that he might earn the leisure in which to pursue more congenial occupation and study. Later in life he became a great epicure, but he could afford it then.

It is the philosophy of proportion, to live well, but simply, according to our means, that we may grow old gracefully without the sordid care for material things. When we are ill we do not depend upon our amateur knowledge of medicine. If we meet legal difficulties we consult a good lawyer. Why not show as good judgment in the investment of our money? It has its value, to overestimate it, is degrading; to underestimate it, is foolish.

Each year greater demands are made upon the artist in music, and more difficult become the feats of strength and skill which the public demand of him. The surgeon of today must exceed in skill and technique the surgeon of yesterday. Compare the present methods and results in orthodontia with those of a few years ago; visit the Winter Garden or Hippodrome. There the specialty artist must offer something more astounding, calling for greater development, more strenuous training each successive season in order to hold his place. I never see these marvelous results of skill and training without wishing I could do my "stunt" in dentistry as well.

It is an age of technique, the survival of the fittest, and we fool ourselves if we imagine less advance will be required of us in our line of work. We see operations so well planned, material so well selected, and executed with such exquisite skill as to challenge our admiration, and show us the possibilities of the really finished artist.

But as American dentists practicing abroad, into whose hands fall many patients from many lands, I think we find that there is still much to be desired in the technique of our profession. How much the fault is due to the patient, how much to the conditions at the time the work was done, how much to faulty manipulation, it is hard to say. Perhaps the present methods of teaching technique are as good as present condition will allow, but they are inadequate. What reception would the public give to a musician who should appear with the same amount and kind of technical training given to the average dental student? Paintings, or productions in any of the arts, or even trades, would find little market if done as indifferently, from a technical standpoint, as the average operation in dentistry.

I would have the master in dentistry teach that part of his science

much as the master in music teaches the technique of his art, giving the pupil the same individual personal instruction, requiring the same drill and practice, advancing the student step by step as his skill develops, until he becomes as deft in the selection and use of his instruments, and as accurate in his results as the finished artist in music must be.

It is unfortunate that most teachers of dentistry are so insufficiently remunerated that they are unable to devote their entire time and energy to the business of teaching. Especially is this so in America.

I would make it possible for the master of the art of dentistry to do much as the master of music does. The lecture room for the theory, perhaps a general clinic, then I would let the student work from one to three hours a week under the direct personal supervision of the master, until with a definite system of technique comparative perfection in operating could be attained. In the long run it is real merit which brings sustained success, and titles count for little. Think of the gain to self-respect and added ease and gratification in one's work. It would pay also I think in the material and evasive dollar, for the only independence possible to the average dentist is that which comes from superior skill.

And as to the master, could he render humanity a greater service than by teaching hundreds of pupils to become more perfect in technique, and thus be able to apply to the best advantage what science is teaching them? If a real master of the art, science and technique of dentistry could teach as suggested, and could find himself as well or better paid as in general practice, would he not be of increased value to public and practitioner alike, for we could go to such an authority just as the student goes to his master, studying and paying for the teacher's time. Lowell says "we take our education about as travelers take lunch at a railroad counter." I feel sure that many of us well along in established practice would find it to our advantage to spend an hour or so each week at certain periods, with a recognized authority studying out the things that perplex us, improving our methods and learning new ones to keep abreast of the times, and meet ever-changing conditions, to help us out of our ruts, and to sweep the cobwebs from our brains.

Many a practicing dentist today would gladly seek the help of

the recognized masters of our profession, if he could go to them as to professional teachers.

During my recent visit to America I gave myself the pleasure of calling upon Dr. Taggart to pay my respects to the man who had recently given so valuable an addition to our methods. I was certainly well received, and Dr. Taggart, from the kindness of his heart, offered to show me his methods. I would gladly have sat at his feet to learn, but I did not feel that I had a right to personal instruction in his valuable methods without compensating him for time and energy taken from his practice and I feared to offend the sensitive nature of the man by offering him money.

Present methods of learning and improving our technique suggest what Oliver Wendell Holmes calls "brain tapping." Perhaps not from choice but from necessity, we go about like the traditional roaring lion "seeking whom we may devour." A man like Dr. Taggart, who has produced a revolutionizing method, gives his valuable idea to the profession. This is right, but it is not right that he should be asked to give his valuable time and energy to hundreds of his brethren to teach them the best method of using it.

There was a time in the dark ages of dentistry when men did their work behind closed doors, carefully guarding their secrets and sometimes selling them to their brethren. This had a degrading effect upon the profession. I would go to the other extreme, make all knowledge and all methods possible and obtainable at all times, through a class of professional teachers, able to give their entire time and energy to research and individual instruction, in the colleges and out. I believe in this way the interests of the dentist, the interests of the patients, and the interests of the profession would be better served.

SOME THOUGHTS REGARDING MOUTH BREATHING AS A CAUSE OF MALOCCLUSIONS OF THE TEETH*

BY WILLIAM GEORGE LAW, D. D. S., BERLIN.

I wish to call your attention to a few thoughts regarding mouth breathing with especial reference to the effects which it may have upon

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the development of the maxillae and the relative positions of the teeth. This implies not only the development—size and form—of the maxilla and the mandible individually, but also the relative positions which each occupies toward and with each other.

While doubtless you are familiar with some of the evils of mouth breathing, I am sure that comparatively few realize the great harm which results therefrom, not only the effect upon the occlusion of the teeth and the proportions of the face, but upon the entire physical economy. That a very large percentage of the cases of consumption, and many forms of throat and bronchial troubles, are caused or greatly aggravated by forced mouth breathing, we are compelled to believe, and that deafness is often caused thereby is without doubt.

Mouth breathing is a habit, caused, yes, forced, by an abnormal condition in the nasal passages or in the naso-pharynx. This abnormal state of the passage membranes may progress until there is complete nasal occlusion, or there may be only partial closure. In any case, to the degree that nasal respiration is rendered more difficult of performance just so great is the demand for mouth breathing. The nose proper may be the seat of an irritation which, if allowed to remain and grow, results in the necessity for mouth breathing. But the most common cause for this condition is to be found in the post-nasal space or the naso-pharynx. These troubles usually start with "colds." The children of today suffer altogether too much from this affliction and every effort should be made to prevent them if possible. When a coryza occurs then is nasal respiration rendered more difficult to perform. Still, the child endeavors to keep up this normal habit, with the result that if the colds are of frequent occurrence the forced adnormal suction caused by trying to breathe through the nose when it is very difficult or impossible irritates the already inflamed tissues of the pharyngeal tonsil which, if not relieved quickly, becomes enlarged and secretes excessively. This tissue then becomes more dense, and finally the entire air passage (or perhaps but one side) through the nose is closed. This condition is commonly known as adenoids, and when it has become hyperaemic, as described, it should be removed surgically as soon as discovered in order that the full normal respiration can quickly be reëstablished. If the adenoids are not removed, but are allowed to remain and be naturally resorbed, which occurs about the 15th year, then normal respiration is often very difficult to reëstablish.

When nasal stenosis has taken place and the child endeavors to breathe through the nose by force, a vacuum is formed in the upper pharynx. The tissues of the passage become inflamed and this, as the years go by, becomes extremely serious. In many cases the conditions resulting are incurable. In the nose proper the cartilages and bones may become involved and very often the turbinates become so enlarged that partial removal is necessary in order to make sufficient space for respiration. A free passage of the nose is necessary also when adenoids are removed, else they will recur. If a free passage is made, and normal breathing be reëstablished, we may have little fear that they will again appear.

It is quite necessary that we have a clear understanding of the nasal passages and throat in order that their functions may be clearly understood, and then we are able to see how a deviation from the normal may and does affect the development and form of all the tissues surrounding these parts.

When a function is disturbed or perverted as the result of an abnormal development in its immediate region, we know that all the different parts making up this region will either develop abnormally or take on an abnormal form after being developed, and we could hardly think that it would be otherwise in a case such as we are considering. Each part of the body is dependent upon another part for nutrition, support and stimulation. This is as true of the head as of any part, and I do not know but what it is more emphasized here than in other portions of the body.

THE NOSE IS THE AIR PORTAL OF THE BODY.

Nature has so ordered that we should breathe through the nose. The nasal passages throughout are so formed and constructed that there shall be a maximum of mucous membrane surface, the functions of which shall be to temper the air to the degree required by the lungs for its best use in order that there shall not occur shocks from sudden changes in the air. The inner surfaces of the entrance of the nose are covered with hair, which acts as a screen or filter, removing any particles of injurious matter which would otherwise enter the lungs. What escapes here finds lodgment upon the membranes of the nose proper and are later expelled. When the nasal space is in a condition which does not allow of a free passage of air, the mouth must be opened in order to allow it to enter the throat.

Here we find no such arrangement for purifying and tempering the air as is found in the nose. The mouth is not at all suited to breathing purposes. The air enters the throat and bronchial tubes in much the same condition as it does the mouth, and the delicate membranes are called upon to do work for which they are not prepared, and the lungs are greatly overstrained.

Under normal conditions during respirations the mouth is closed, and the lips are together. The soft palate is in contact with the base of the tongue. There is practically no air in the mouth, particularly after the act of swallowing, if done with the mouth closed. This allows the tongue to press closely against the roof of the mouth and the sides of the teeth. As the tongue enlarges the arches also enlarge until their full development is reached. Then its passive presence and gentle pressure outward just offsets the pressure lingually made by the cheeks and the lips. This is quite as it should be, in order that the required support to the arches be present and the proper balance between the upper and lower arches be established and maintained.

The arches are greatly influenced by the pressure of the tongue, the lips and the cheeks. This force, if normal in character, produces a form which is most harmonious for the individual,—arches which are characteristic to the individual. The form of the tongue should exert a great influence all during the development. Through normal breathing the floor of the nose is lowered and the sides expanded. By the laws of nature only those parts become strong and remain so that have work to do and do it thoroughly. Constant nasal respiration cannot but develop the nose as it should be, and the surrounding parts should then be in a harmonious relative development, and the occlusion of the teeth should be good.

CLASS II, MALOCCLUSIONS.

The type of malocclusion which is *most* associated with and caused by mouth breathing is called Class II. (Angle Classification.) This class is divided into two divisions. To understand this better: In both divisions the lower arch will be in a distal position to normal in its relation to the upper arch. Mesio-distally the upper arch is practically normal in the molar region. In Division I we find there are protruding upper incisors and the arch is long and narrow. In Division II we find retruding upper incisors and the arch is *not* partic-

ularly narrow. In the one is to be found a high palate and in the other quite a normal one.

THE DEVELOPMENT OF THE MANDIBLE.

At birth the mandible is flat or nearly straight. The processes are just beginning to take on a form. As time goes on we find an angle appearing in the distal part which decreases from being very obtuse to very nearly a right angle when adult years are reached. There is, then, this normal tendency and development which must be remembered and taken into account in dealing with these cases. During this development of the mandible we have forces which control the angle forming so that it proceeds with precision and in harmony with the maxilla. Should the forces be set awry the balance is destroyed and the angle forming progresses at will. These forces are: The occlusion of the teeth at rest, the force of mastication, the position of rest of the muscles, the presure of the tongue, lips and the cheeks. As soon as these forces are reduced or removed the mandible may develop its angle too rapidly and as a consequence it may assume a distal position to normal in its relation to the maxilla and to the rest of the head. The difference between the malocclusions of these two types of distal occlusion is that in case of Division 1 mouth breathing continues at least until after the eruption and placing of the upper incisors, which will be in a protruding position and the arch will be too narrow, while in Division II nasal breathing has been re-established before the eruption and placing of the incisors, and as a result we find them retruded and more or less rotated, which is the result of lip pressure being greater than tongue pressure and a lack of incisal occlusion. The arch as a whole, will, however, be much more nearly normal than in Division I type. The reason of this appears to be that the normal functions of the nose and mouth have been re-etsablished, the tongue doing its part to make the arch as large as possible. But it cannot push the lower arch and jaw forward for it occupies a position which is harmonious with them. The upper incisors in Division I type are often in supra-occlusion, as are sometimes the lower incisors and this condition must be reduced in most cases to their normal positions and firmly retained. The reason of this is: if the face is rendered harmonious by depressing them it would be made inharmonious by retracing them only and elongating the bicuspids and molars. By this latter treatment if uncalled for, the tongue would not entirely fill the oral cavity when the teeth are

together, therefore, the pressure from outside the arches would be greater than that from the inside. There will be danger of a crowding of the arches, or a narrowing, until the pressure is made equal. We should understand, in considering these cases of malocclusion, that if nasal breathing had been present 24 hours of every day when the patient was young there probably would have been a good occlusion of the teeth—the arches would be well formed and the face harmonious. Seeing that the forces which control these matters were disturbed we have an abnormal form as a result, and when this is the case we must try to establish the normal form of the maxillae and to obtain normal occlusion of the teeth and a full return to nasal breathing. When this has been done, if the teeth are sufficiently used during mastication and the retaining appliance is of a kind that will support the muscles in their new positions and also help keep the teeth in contact, thus keeping the mouth closed, the successful termination of our cases may be expected. Otherwise it will be very difficult to retain what has been accomplished through long and difficult treatment.

THE FUNCTION OF THE LIPS.

During the normal development of the upper arch the lips act as a controller of the pressure of the tongue. After Division 1, Class II, cases are corrected the lips must play an important role. Before treatment the patient's mouth is nearly always open. Of course this is because it is difficult in most cases to close the lips comfortably and also because of oral breathing. The muscles of the lips are often poorly developed and the habit of relaxed lips continues after the teeth have been brought to normal occlusion. It is necessary to use every means to make the patient keep the lips closed, and it is sometimes very beneficial to apply surgeon's plaster to them which remains in place during the night, thereby ensuring their being together during the most important time, for, we find that where mouth breathing has become a habit it is sometimes most difficult to break during the sleeping hours. At this time the patient breaths deeply and at the least lack of air through the nose the mouth opens unconsciously. By the use of rubber ligatures as an intermaxillary support, these cases of Class II can be successfully retained. They play a double part of keeping the muscles "balanced" until they become settled in their new form, and also of keeping the teeth in contact, thereby enabling the patient to keep the lips together more easily, and so assisting the re-establishing of full nasal respiration.

I have said that nasal breathing must be constant to afford success with these cases. If possible we must banish from our patients that dread enemy to normal occlusion, "colds." If we can do that we shall have won a big victory. From the beginning of treatment it devolves upon us to try to prevent the patient from having any nasal disorders. We must see that the nose and throat are kept clean and normal. Gargling the throat and occasionally spraying the nose with a germicidal solution will be of great value, and will in many cases prevent an attack of coryza.

"An ounce of prevention is worth a pound of cure." Let us apply this principle to the handling of our litte patients. It will be much easier to use the ounce of prevention, if we set about it in a right way, and then let us see if we are not able to avoid in many cases the necessity of using the pound of cure.

SOME PROBLEMS IN DENTISTRY WHICH SHOULD HAVE FURTHER DEVELOPMENT, OR A WIDER DIFFUSION OF PRACTICAL INFORMATION.*

BY G. V. BLACK, M. D., D. D. S., CHICAGO.

It is the intention in writing this paper to mention and briefly discuss, certain problems affecting directly the practice of dentistry. The subjects chosen need further development to render them fully available as guides in practice, or a wider diffusion of that which is fully known by the few, to render the information useful to the many. On some of these matters a much wider range of observations, by numbers of persons, seems necessary to fully establish important observations reported. In others, the usefulness of procedures in practice should have more definite and a wider range of tests. In still other directions, systematized observations should be undertaken along lines insufficiently explored.

The suggestions here made are not intended to interfere with, or in any wise take the place of, the post-graduate studies recently undertaken by the component societies of this body. But it is believed that the post-graduate work will very soon develop the desire for the wider testing of the correctness of certain proposi-

*Read before the Illinois State Dental Society, May, 1909.

tions, or open the way to original studies of problems not yet developed. If in the post-graduate studies, you can have before you the possibilities of future advanced studies, it may act as an incentive that will bring greater interest.

One of the most important subjects now under discussion is that of immunity and susceptibility of dental caries. At the present time there are no certain data that show what proportion of our people are immune from dental caries from infancy. Although caries of the teeth afflicts a much larger proportion of our people than any other disease, no effort seems to have been made to ascertain the proportion of immune persons. The gathering of data on this point seems very desirable. Every dentist knows a number of such persons, and could know many more by making proper inquiries.

Again, there is no published data showing any reasonable estimate of the proportion of persons who become immune to caries of the teeth at twenty-five to forty years old. My own personal estimate, based on observations during the last ten years of my practice, was that more than one-half of the persons became immune at thirty years old. This estimate included only those persons who were careful of their teeth, had frequent examinations made, and for whom I or others had succeeded in so managing the decay that had occurred, that the persons had good and full use of their teeth in mastication. The coming of immunity seemed to me to depend largely upon this point. Whether caries had been much or little seemed immaterial, provided this point had been attained. I think that extensive records of observations will show that immune persons are vigorous chewers of food.

Whom should be regard as immune? If a young person in my circle of patients has been having frequent new decays starting in his or her teens, and later this diminishes, and no new decays begin for five years, it is safe to regard that person as immune. If it has been ten years, immunity is confirmed.

In reckoning immunity, only decays beginning on the surface of the enamel in whitened areas, beside fillings, or at new points, or new surfaces, should be considered. Decays in progress in the dentin, or decays recurring because fillings have become leaky, admitting micro-organisms to the dentin, will go on in persons entirely immune to the beginning of caries of enamel.

Relapses to susceptibility occasionally occur, though they are not so frequent as to give much alarm. In noting relapses much will be learned by close inquiry into the conditions under which the relapse has occurred. Within my own observation, generally something has occurred to change the habits of the person in the matter of personal care of the teeth, and especially in the mastication of food. In the absence of something of this kind, the relapse is apt to be of short duration. Statistics on this point made from careful observations would be of great practical value. I have seen several relapses to a condition of violent susceptibility after twenty-five years of complete immunity. In each of these something had occurred, producing a profound mental depression, which brought about marked changes of personal habits.

STUDIES OF THE SALIVA.

From what is now known it seems quite certain that susceptibility and immunity to the beginnings of caries of enamel are primarily dependent upon varying conditions of the fluids of the mouth. Just what these conditions are, or what changes occur in the saliva, is the question now at issue. The effect is not one that inhibits the growth of micro-organisms, or the formation of acid by them, in the saliva; but an effect that in some way interferes with the attachment of colonies of micro-organisms to the teeth, or prevents them from being covered in upon the teeth so as to hold the acids they form against the surface of the enamel. Under these conditions the acid formed is freely dissolved in the general saliva as fast as it is formed, and the person is immune to dental caries.

It is the conclusion from long observation, first announced by Disirabode of France in 1838,[1] that the general saliva never becomes sufficiently acid to cause caries of enamel. The observation has been made a number of times that persons who have never before had decay begin in any of their teeth (immune persons from infancy), have had decay occur under bands used as regulating appliances. Also under similar conditions decay of the enamel has started under such bands, in positions on the surfaces of teeth in which decay does not occur in the absence of such bands. It is now well known that in the event of failure to properly cement any portion of these bands, decay will occur under them if they remain long in place. The presence of

1. Science and Art of the Dentist. Translated from second edition and printed in Vol. VII. (1847) *American Journal of Dental Science.*

the band permits micro-organisms to grow beneath it in seclusion; or free from disturbance by washings by food and saliva. This prevents the free distribution in the saliva of the acid formed, and it is applied directly to the solution of the calcium salts of the enamel. The study of the first beginnings of caries of the enamel, as it occurs generally in the teeth, shows that it always begins in secluded places where it is most readily covered in by deposits that interfere with the free distribution in the saliva of the acids formed. Therefore conditions of the saliva which favor glutinous deposits which will act as coverings, are the chief factors in inducing susceptibility to dental caries. These propositions have given great importance to the study of the saliva.

The saliva varies much in its composition in different persons, and in the same person at different times. Such substances as iodin, quinin, morphia, alcohol, and many others, appear almost immediately in the saliva whether administered in capsules or by subcutaneous injection. Products of faulty metabolism occurring in the tissues or organs of the body are also found in the saliva. It was on this proposition that Joseph P. Michaels of Paris based his studies of the saliva in its relation to dental caries,[2] and in the diagnosis of such diseases as cancer and various affections of organs and glands. Therefore it will be seen that these studies relate to (1) the discovery of a superabundance of some certain normal constituent of the saliva, or (2) to the detection of abnormal constituents and fixing the relation of one, or several, of these to immunity or to susceptibility to dental caries. While it is apparent that persons must have mastered the study of normal saliva before they may study its abnormal constituents, it is also true that persons of good intelligence, not so skilled in this study, may, under direction, assist in the work of gathering data by making certain prescribed tests and reporting them to persons in general charge of such work of investigation. In this way the Committee on Dental Science of the New York State Dental Society has already done important work under the leadership of Dr. Low of Buffalo. More recently Dr. Ferris of Brooklyn, New York, has become chairman of this committee. Dr. Ferris is now preparing new and improved apparatus for this work, which will soon be ready for distribution to those who will consent to assist by making

2. Brochure presented to the World's Dental Congress, held in Paris, 1900, and translated in the office of the *Dental Cosmos*.

certain definite tests and reports. From this it will be seen that this study of the relation of certain ingredients of the saliva to immunity and to susceptibility to dental caries, is taking denfinite form—a form in which many may assist in gathering facts that will influence conclusions and contribute to their correctness.

DENTAL CARIES.

The study of dental caries, particularly caries of enamel, and the utilization of its known pathology in filling teeth, should have more rapid diffusion through the profession. Caries of the teeth, when occurring on the smooth surfaces, always begins on the surface of the enamel at a small point. In each case it spreads on the surface, becoming larger in certain directions. These directions of spreading are determined by the forms of the teeth and the relation of the gingiva to them, which give opportunity for spreading in certain directions and to certain distances. As it spreads on the surface it extends deeper into the enamel following the length of the enamel rods toward the dento-enamel junction. This forms a conical area of decay with the base of the cone on the surface of the enamel and the apex toward the dento-enamel junction. This proceeds until the enamel has been penetrated and the dentin in the immediate vicinity has been softened. Up to this point there is usually no cavity. No enamel rods have fallen out, the form of the tooth still remains perfect. The decay is still progressing by the percolation of acid which is being formed by a colony of micro-organisms clinging to the surface of the tooth, growing and becoming broader in every direction in which the local conditions will allow spreading. Finally the enamel rods in the center of the area are loosened and begin to fall away. Then micro-organisms are admitted to the dentin and become implanted in the dentinal tubules. In this position they are hidden away and are no longer liable to disturbance by outside influences. Decay then spreads in the dentin (1) along the dentinal tubules directly toward the pulp of the tooth; (2) along the dento-enamel junction, widening in every direction from the starting point. This forms a conical cavity in the dentin with its apex toward the pulp, and its base at the dento-enamel junction. In this spreading in the dentin decay has no limits and no respect for any part of the tooth. Micro-organisms within the dentin are protected from outside interference by the softened dentin about them. Therefore decay of

dentin is pretty certain to progress continuously until the tooth is destroyed.

On the other hand, in caries of enamel the cause is always on the surface of the tooth where it is subjected to washings by the saliva, abrasions by the crushing of food over the teeth in mastication, etc. This confines its spreading within certain limits which in each case may be examined and mapped out, and cavity lines so laid as to prevent its recurrence.

From the standpoint of treatment, caries of dentin has no especial importance except the weakening of the tooth, exposure of the pulp, etc., caries of enamel is the initial lesion. Decay of dentin is secondary and will occur only after decay has penetrated the enamel. It is the study of caries of enamel, the local conditions of its beginning, the conditions giving opportunity for its spreading in certain directions, the limitations of spreading, etc., that are important to the practitioner.

No considerable apparatus is necessary for the study of the beginning, progress and spreading of caries of enamel. It is necessary first to find a beginning decay of enamel, one in which no enamel rods have fallen away, in a freshly extracted tooth if possible. It may be a tooth in which caries of another surface has called for its removal. Wash the tooth carefully, and as it dries watch for a whitish spot of beginning decay on the proximal or buccal surface. When one of these is found, map out its form carefully, using a pocket lens. Then grind away one-half of the tooth, stopping when about half of the decayed area has been ground away. Use for this purpose the ordinary grinding lathe and stone of the laboratory. A new unworn stone will make the flattest cut and is desirable. Then smooth the cut surface by grinding on the Arkansas stone in water. Wash the cut surface clean and then study it with the ordinary pocket lens as it dries. This simple means will, as speciments are multiplied, reveal the beginning, progress and spreading of decay of enamel, as more or less whitened areas, that will show the form of the penetration into the enamel, the spreading on the surface of the enamel, the direction of the spreading, and the whole scheme and progress of beginning decays. Such specimens can be kept indefinitely for study and comparison with other specimens. Of course the more intimate injuries to the enamel, such as the removal of the cementing substance between the enamel rods, etc., can be seen only after grinding thin

sections of the decayed areas and using the higher powers of the microscope. Remember that only those whitened areas of beginning decay in which the surface is still complete, from which no enamel rods have fallen away, are properly available for this study. After a few of these specimens have been collected, one should begin to study the relation of the point of beginning, form, disposition to spread, etc., of these decays, to the proximating teeth, to the gingivae, the form of the contact, the relation to the embrasures, to the crush of food over the teeth in mastication, etc.

If many together will pursue this study carefully in extracted teeth, and also pursue it carefully in the mouth as they examine patients, the relation of these to proximating teeth, to the gingivæ, to the depth and width of the embrasures, to the crush of food over the teeth in mastication, noting carefully the directions and limitations of the spreading on the surface of the enamel, including also in this the re-beginning of caries of the enamel at the margins of fillings, those so engaged will soon find means of making fillings of greatly increased value—fillings that will stand and protect the teeth from further decay two or three times as long as the ordinary well made fillings of today. That is, they will become able to intelligently adapt fillings to the treatment of decay from the pathological standpoint, instead of the mechanical filling of holes in teeth, as is now so generally done. Such a course of study, earnestly undertaken by many of the component societies, would result in great good to the profession and to our people.

This paper might be extended indefinitely, taking up subject after subject now well known, but neglected by practitioners, such as injuries to the interproximal gingivae by the crowding of food into the interproximal space because of faulty contact points. Many of these are made by the dentist in filling proximal cavities and neglected until the teeth are destroyed by recurring decay, or by disease of the peridental membranes which is induced. It is a neglect that causes the initial lesion in very many of the cases of so-called pyorrhea alveolaris.

We should have reports of the occurrence of erosion that would give us a good view of the proportion of people suffering from this trouble in widely differing localities. Such statistics might give us important discoveries regarding its causation.

But I must leave other things to be mentioned and discussed

by others. Much good work may be done along these lines by the component societies. With the number of members we now have and with the ability for combined work that is being developed, Illinois ought to make immense improvement in its dentistry within a few decades, and win from our poeple much greater confidence and credit.

THE PROPHLYACTIC TREATMENT FOR POVERTY IN OLD AGE.*

BY DR. J. D. MC MILLAN, MACOMB, ILL.

The term prophylactic, according to Webster, is a medicine which defends against disease, a preventive, so the sense in which I shall use it in this paper, will be: "how to prevent poverty in old age. There are many elements which enter into the success and failure of men, and there is no set rule or smooth beaten path that leads to either. Yet Shakespeare has said:

"There is a tide in the affairs of men
Which taken at the flood, leads on to fortune;
Omitted, all the voyage of their life,
Is bound in shallows and in miseries."

In my judgment the habit of industry and the value of a dollar, are two of the most valuable assets from a financial standpoint, that a young man, reaching his majority, can possess. The one balances the other. In these days we often hear it said of one who has achieved success in a marked degree, "He is a genius," but Edison says "his success is due to two per cent genius and ninety-eight per cent hard work." The men who accumulate a competency by their own individual effort, are men who began life on a small income and learned the true value of a dollar and have formed the valuable habit of spending less than they make. However, genuine thrift is not mere saving, not laying aside for the purpose of hoarding, but in order to make a future purchase, and, as some one has said "The whole secret of right thrift lies in the formula, 'save wisely,' so as to be able to spend judiciously in a time of need which will probably be greater than that of the present." So the small boy taught to save his pennies should also be imbued with the idea, that money is more

*Read before the Illinois State Dental Society, May, 1909.

useful at one time than another, and that by depositing it in some safe place free from the allurement of the candy store or the cigarette stand, he is reserving it for a more profitable use. Most men have a desire to make money but do not realize the need of saving money. If you think only of making money you may make it but you will not have it in the end. On the other hand, if you think only of saving money, there will be nothing to save. In either case the end is the same. But if you have the desire to make, coupled with the need of saving money, you will be pretty sure to have what you made in the end. For fear of being misunderstood will say I do not think that success in life consists in making and saving money, but from a financial standpoint, it certainly does, and it is not easy to do either. It seems to me that a paper on this subject, addressed to men such as comprise the Illinois State Dental Society is almost inopportune, because learning how to save money is like learning how to play on the piano. You must begin early or the chances are ten to one you will never learn at all. How many people do you know who learned to play the piano after they were thirty? and so surely as it is necessary to learn to operate a musical instrument while young, just so surely is it necessary to learn to save before the spending habit has gripped you. We are but tissues of habits, and once the spending habit gets a hold of us, like the drink habit, the chances are against us.

A man should save his money early in life when his family expenses are lightest, and before he acquires too many expensive tastes in living, for the average man's ability for making money by daily toil has reached the top at forty years of age. The man who begins his business career at twenty-one on an income of six hundred dollars per year and increases his living expenses each succeeding year in the same ratio as his income, when he is forty, earning ten thousand dollars per year, is still a poor man, and I will ask you to imagine that man's predicament a few years later when the hand has lost its cunning and the eye has grown dim, for we must acknowledge the reins of business life are held by the young men in every walk of life. The man who does not prepare for the famine years above suggested, is a pitiable sight, indeed. On the other hand, suppose he has saved ten thousand dollars, or the gross receipts of his earning capacity at forty for one year, the interest and compound interest accrue by leaps and bounds and when those famine years come, and they surely will, the competency laid by during the pro-

ductive period of life, is a thought worthy the consideration of every member of this society. Life insurance should be taken out early in life, when the premiums are small. I prefer the twenty payment life or the twenty-year endowment, for we pay for it when in the productive period of life, and it is not a life obligation. It serves as a protection, and while as an investment it is not quite as good as the money put in a savings bank at three per cent, yet, I do not think it a good idea to carry all our eggs in the same basket. The well-chosen mortgage or the 4 or 5 per cent gilt edge bond is all right, but let anything that promises more than 6 percent alone. The best company to buy stock in is the one in which you are president and your wife secretary and treasurer, or, in other words, let your home life be what it should be and let the home be the dearest place on earth. Oftentimes men keep their wives in total ignorance of their financial standing, when, if the real conditions were known, expenses would be cut down one-half.

The home is the place to recuperate, and is where we should spend most of our evenings, and by so doing keep ourselves up to the highest state of efficiency, and even then, the man who stands up under a heavy practice for twenty or twenty-five years has reached a time in life when if he practices longer he should do so by working short hours and for the pleasure he gets out of his work rather than from the necessity of working to keep the wolf from the door. If we could have an experience meeting here today and bring to our minds some things that will do us and our families a lasting benefit, our thoughts on the business side of life will not be amiss.

The old proverb that a dollar saved is a dollar made, is not altogether true, for it is more than a dollar; for every dollar put in the bank you make five in credit, in ability to secure capital, and in general standing in the community. Mr. Carnegie says for every hundred you can produce as a result of hard-earned savings, it will extend your credit a thousand, so it is the man who has proven that he has the business habits which create capital that can command the necessary credit, which every progressive man starting at the lowest rung of the ladder stands in need of. We often hear the statement made, dentists are poor business men, but as I do not intend to discuss the matter of fees as a preventative, will say that I believe the best preventative for poverty is to learn to turn out your work well and fast, for even in the smaller towns a dentist doing a business

of eighteen hundred per year can save but a very small amount of money each year, with the chance of only playing even, while the man doing a business of three thousand and upward can save one-third of what he makes or one thousand dollars per year. If he is doing a business of four thousand five hundred per year he can save fifteen hundred per year, and so on. Now, after saving his money, how can he safely invest it? Not in mining stock, oil wells or any of the get-rich-quick schemes. The best investment for small earnings is to put it out on interest properly secured. Money out on interest never decreases in earning capacity, but at the end of each year it is worth par. However, after getting considerable money together, buy some land, being careful of fictitious values which are often placed on lands in a new country, under the control of land companies, which land is often sold about ten years in advance of the development of the country. When buying land don't get in a hurry. Many a man has practically lost the hard-earned savings of several years by purchasing land through the agency of unscrupulous, organized land companies. It has been the writer's privilege to witness some of such work. For instance, suppose you own a property in your town or vicinity valued at four thousand dollars, which, to illustrate, represents the savings of ten years, outside of your home and office. A representative of one of these organized cormorants approaches you, and, after overcoming any objections you may have suggested as to his land proposition, you tell him you have no loose money to invest, but if you could sell a property you own, that is only netting you four or five percent, you might consider the matter. He has told you how rapidly land has advanced around your home town here in Illinois, which you know to be a fact. He also tells you the land he is selling is equally as good and it will only be four or five years until the land he is offering today for ten, fifteen or twenty dollars per acre, will be worth seventy-five to one hundred dollars per acre, so you talk the matter over with your better half, and the representative sees you again in a day or two. In the meantime you have offered your property, bringing you a monthly rental of fifteen or twenty dollars per month, for sale, but you find property of that kind is very slow of sale. In fact, some one tells you when you priced it at four thousand dollars you were asking one thousand or fifteen hundred dollars too much, so when you see Mr. Representative, you tell him you have thought over the proposition, but you havn't sold your property yet;

then he asks what kind of a property you have, and after you tell him in detail what rental it earns, he asks to see the property, making the suggestion, his company sometimes takes good properties in exchange, so at last he has struck the main spring, which to him seemed almost inaccessible at first, and from this time on, you are entirely under his control. You cancel all engagements, as the excursion leaves next Tuesday. He tells you by planning things just right he can make arrangements to have you back to your office by Saturday noon, and, of course, he has touched another key, that shows he has a personal interest in your welfare. The good wife suggests taking a lunch with you, but you tell her that it will not be necessary, as the land company has a special train with a dining car and a sleeper; in fact, the company seems to have provided everything for the comfort of its patrons. Tuesday arrives, and after telling the office girl several times you will return Saturday morning on the 11:17 train, and bidding your wife and babies good-bye, you make a hasty run for the train. The morning is bright, the air is refreshing, and after getting comfortably located in the car by the open window in comes Mr. Representative. In glancing over the car you ask where are my friends, Jones and Smith. He tells you that Jones telephoned him just a little while ago that his wife was sick and couldn't go this trip, and Farmer Smith was so busy he guessed he would have to wait until after harvest, and after you both express your mutual disappointment in not having them along, he says, oh, well, they will just have that much more to pay for land later, and with that suggestion, the maxim "the early bird catches the worm" passes through your mind with some degree of satisfaction. The train is speeding rapidly along to the large railroad center, where the company's special is made up, and here is where you fall into the hands of the well-organized grafters. The ten or twelve agents have each a victim or two from the town he is working, hypnotized the same as you have been. After an hour or two delay, headed by the president of the company you leave the company's head office in the railroad center for the special. Each agent has impressed upon the mind of his victim that the president of the company is a prince of a man, and it is a good thing your agent told you, for you would not have discovered it for perhaps a year or two. Well, this prince has had a conference with your agent concerning you, at the head office, as also with the other agents concerning their men. You have always prided yourself that when you took a

trip you always wanted to go right, and so you have a feeling of satisfaction when the prince drops down in a seat beside you, and after he tells you of the good big money he has made for his patrons, your agent comes along and says, "Colonel, my friend here, the Doctor, is a very busy man, and his time is very valuable, and I told him I felt sure we could plan the trip so he could be back home Saturday morning, and I was just thinking that when we arrive, by taking that best automobile we could show him the land and he could start back that same evening and get home Friday night, then he could rest up for his busy day Saturday," and after you hear the men planning to save a busy man's time (you would be dumb indeed if you failed to express your appreciation), the destination is reached. In company with your agent and the president of the company, you are going at the rate of twenty-five miles an hour over the broad plains. The day is perfect and you never felt better in your life. The land near to town is worth forty to fifty dollars per acre, but back just a little ways they can sell you just as good land for ten, and soon you arrive at the section of land that your friends say is the best bargain they have, and only an hour's ride from town, clear title and abstract always furnished. After you look the proposition over you want to keep up your reputation for prompt business sense, and say, "Well, gentlemen, if you want to take my property in on the deal at four thousand five hundred dollars and two thousand dollars in cash, you can call this a go." The prince of a man and your agent step off to one side and talk the matter over, get out some papers and a pencil, and after careful figuring tell you, on account of the influence you can be to them in getting the delayed friends and others in line, they will make the sacrifice, and after getting your check on the spot for five hundred to hold the trade, besides signing the usual contract, they hasten at once to get you back to the first train, and you feel well satisfied with your day's transaction, although somewhat tired. The president of the company goes with you to the station, the train due in fifteen minutes is on time. He further inquires for your comfort as to a sleeper, and the station agent assures him the Doctor will be able to get a berth on this train, and after bidding you good-bye and squeezing your hand to reassure you of his continued friendship, he wishes you a safe journey and waves his hand as you start homeward. You arrive home Friday evening, agreeably surprising your loved ones, and after telling in glowing terms of the inside figures

of the deal, you retire early, and get to your office one-half hour earlier than usual. You then remember the check you gave for five hundred dollars and hasten to your bank and give your note to cover same, and tell them of your need of fifteen hundred more when the deal is closed, and they assure you they will be glad to accommodate you and you go to work. At the end of two years by working harder and collecting closer the two thousand dollars is paid in full and you own your own six hundred and forty acres of good land, but being raw land it is non-interest bearing, and the company who assured you it would double in value in two years is out of existence, or at least you cannot get any reply to letters addressed to the head office, and being out of debt again, this is the first time you have felt able to take a trip to see your purchase, and you decide to take a well-earned vacation. You again leave the office in charge of the girl, don a new suit, and start to see things on your own hook. Arriving at the little town, you put up at the only hotel, where local one-horse land agents are numerous. You have decided not to let your identity or business be known, and you have gotten over being in a hurry. After getting a map of the county and looking it over and counting the section lines you have discovered for the first time that Section No. 26 is twenty-three miles from the station, but you make the best of it, get a livery team, start out early in the morning, and after getting off the right road a time or two and thinking you must have driven about thirty miles, you recognize a farmhouse that is on the section which joins yours on the north, and you remember having stopped there on the memorable day you had such a pleasant auto ride. On approaching the house you inquire if you can get dinner and feed your team, and being assured you will be welcome, you proceed to make yourself at home. Now is your chance to find out the real value of land in the vicinity of Section No. 26, so, on inquiring of the farmer what land is worth, he tells you unimproved land like 26 is worth from four to five dollars per acre, but a section like his, which lies much better than yours and is fenced and cross-fenced, fair house and barn and windmill, with perhaps fifteen hundred or two thousand dollars' worth of improvements, you are amazed to hear him say that he had been trying to sell but had not been able to find a buyer, at the nominal figure of seven and one-half dollars per acre, and you ask him how he can afford to sell for that price, and he tells you he bought it three years before for one and one-half dollars per

acre and that he also owned No. 26 until two years ago, but being in debt gave a land company a sixty-day option on it at two and one-half per acre, and they sold it to some Illinois man in about fifteen days. Then, and not till then, have you realized what a prince of a man the president of that land company is. You can appreciate the sacrifice they made in giving you inside figures, and you go back home to figure up how you stand in the deal, and find you made them a present of your property given in exchange, which they turned in a short time to one of your neighbors at four thousand dollars cash and four hundred dollars in property. Is that all? No, you are out two years' rental or four hundred dollars, and now what have you got? Your entire hard-earned savings of twelve years wrapped up in non-interest bearing property, and whether you will acknowledge it or not, you have been swindled out of four thousand eight hundred dollars, all on account of being a busy man, and in a hurry. My advice to any members of this society who have the land fever is to be careful of fictitious values, and while I consider land the safest and surest of all investments, the only way possible to arrive at the true value of the land in any community is to get next to the people who live there, and if you can buy the land direct from the owner, who really wants to sell, you possibly can save enough of money in the deal to buy the baby a pair of stockings and your wife a calico dress. However, there are reliable real estate men in every community that do business on the square.

Now, if I have been able to suggest something of the necessity of saving money and when saved how to invest judiciously, I will feel repaid for the effort, and when all is said and done, I would rather be in moderate circumstances with a good physical organization at seventy than with a million at my call but out of the fight at fifty.

PULP MUMMIFICATION, ITS DESIRABILITY, EXPERIENCE AND SEQUELAE.*

BY DR. A. D. KYNER, MOWEAQUA, ILL.

For fear that I may be accused of being a "muck-raker," delving in the dental bone-yard, and dragging forth a musty and forgotten

*Read before the Illinois State Dental Society, Danville, Ill., May, 1909.

skeleton of the oblivious past, I hasten to assure you, that from the very nature of the history of our subject, this skeleton still stalks through the land. The practically unbroken record of published successes, with only theoretical refutations of these statistics, at once places pulp mummification in a unique class by itself. Time, which is said to be the greatest friend to Truth, has not, as yet, proclaimed the verdict.

The method at once challenges your intelligence. You say no antiseptic is permanent. No tannifier can form an insoluble coagulum, which will remain so in its trying surroundings. Nature answers you and says: Have you forgotten the so-called dry gangrene of the pulp that you infrequently meet with? Can't you artificially produce the same? Practically no failures from pulp mummification are on record. You don't believe in it, but you want to. Your credulity is appealed to, but your judgment tells you it is impossible. Nature may do it, but her secrets are not revealed.

Dr. W. D. Miller says in the August *Dental Cosmos,* 1905: "The attempt to find ways and means of so impregnating the necrotic dental pulp as to render it permanently aseptic and innocuous, thereby doing away with the necessity of removing the last traces of it from tortuous canals, has not as yet met with as high degree of success as was hoped for. It is very desirable that investigations on this line be continued, since there can be no doubt that if successful, a great victory would thereby be gained over disease and countless millions of teeth saved that are otherwise extracted or simply allowed to rot away, spreading pain and disease all about them."

Let us briefly consider whether pulp mummification is desirable. Again referring to Dr. Miller's article, he expresses the opinion that the time consumed, difficulties attending and expense incurred in the treatment of molar teeth was so great, that taking the world over, only one person in a thousand could afford it. It has been estimated that seven million families in the United States subsist on an income of five hundred dollars and less per annum, the significance of which needs no comment. Someone has said that the paramount question among eighty percent of the people is one of bread and butter. Aside from monetary consideration, many a "Spartan like character" that Dr. M. L. Rhein says "we so much admire" has been lost beyond recall, by that exquisite instrument of torture, the broach. To the dentist, I need but to remind you that impaired vision must be the price

of attempting to locate pulp canal openings in the uncertain light in the posterior part of the oral cavity, and the intense nervous concentration necessary to the manipulation in small inaccessible canals, can not be exercised without its cost. These things need only to be touched on, as they are familiar to all. And then, from the earliest up to the present time, dentists have encountered difficulties in mechanically cleaning, medicating and filling small, tortuous and inaccessible pulp canals, and various means and methods have been employed to overcome them. Dr. O. E. Inglis says: "Human skill is not equal to the task of successfully opening all fine root canals, and the man who does his best to mechanically cleanse and place an antiseptic root filling in the canal, has done thorough work, whether he perfectly fills to the apex or not, and in nine-tenths of the treatment of such roots, a perfect filling to the apex is a lost art, or it never existed." Dr. A. E. Webster, Toronto, Canada, states that "from experiments and observation of fully twenty thousand attempts by students, I believe it impossible to remove all pulp tissue from all roots." Dr. James McGee, of St. John, New Brunswick, in a test, filled the roots of ten molar teeth outside the mouth. Skiagraphs were taken by Dr. Price of Cleveland, which showed only three teeth that were well filled, but the root fillings were better than found in the mouth. Dr. Price, in commenting, says: "This test proves what is true of all dentists, that even our best efforts at root fillings are not as good as we think." Dr. M. L. Rhein, of Brooklyn, first takes a skiagraph of the difficult cases before commencing treatment and another after the roots have been filled. Further quotations and citations are unnecessary, as it appears from the literature on the subject of root canal treatment, that it is the consensus of opinion among the best operators, that it is "impossible to remove all pulp tissue from all roots" as quoted from Dr. Webster, and that the pulp canal fillings are "not as good as we think," as found by Dr. Price.

Pulp canals have always been a source of concern to dentists where physical difficulties render complete removal of the contents uncertain. Dr. Flagg said, in 1899, that "pulp mummification had been the aim of dentists for fifty years." A brief review of the attempts at this procedure may be of interest. The above quoted dentist informs us that it was the universal practice in the early sixties to place a tiny pellet of cotton saturated with creosote at the apex of the root to prevent putrescence of any pulp tissue left in the canals. Later,

in the seventies, he employed an "inspissated canal paste" composed of Oily Carbolic Acid, Ol. Cloves ā ā add Sulphite of Lime and Acetate of Morphia, q.s. to make a thick paste. It was used for the purpose of mummification, incorporated with natural cotton as a pulp canal filling. Dr. O. E. Houghton, of Brooklyn, reports that in 1874-5, he devitalized a third molar, extirpated the coronal portion of the pulp, saturated the pulp chamber with phenol, filling same with oxychloride of zinc, completing the filling with amalgam. He called it pulp preservation. This is the first record noticed where an American dentist had knowingly left pulps in the canals and chemically treating them. The efforts of the dentists of this country prior to 1895-6 had been directed solely to mechanical cleansing of the pulp canals, using certain chemical adjuncts to facilitate the procedure. But the European dentists had been working on lines directed towards obviating the necessity of removal of the pulp canal contents. In 1874, Witzel of Germany, advocated that if the coronal portion of the dental pulp be extirpated twenty-four hours after arsenous acid had been applied, the remnants in the roots could be treated as freshly exposed pulps. Next, Dr. Baume, after devitalizing and removal of coronal portion of the pulp, applied borax to preserve the canal contents, converting it into a soapy, alkiline mass. Dr. Herbst, about 1890, advocated devitalizing the pulp with a Cobalt paste, burnishing tin-foil over the remnants in the canals, without further chemical treatment. The methods of Witzel, Baume and Herbst are only of historical interest. About this time, Dr. W. D. Miller worked along the lines of the Witzel method, except that he did not attempt to retain the vitality of the root pulps, but to prevent their decomposition by impregnating them with suitable antiseptics after devitalizing. Over five hundred experiments with different substances were made and from the results obtained, he classes dental antiseptics under three heads: First, strong or powerful antiseptics, such as bichloride, cyanide and salicylate of mercury, oil of cinnamon, sulphate of copper, diaphtherin, ortho-kresol, carbolic acid, trichlorphenol and chloride of zinc, the last four being decidedly inferior, lacking necessary powerful antiseptic properties and being too rapidly diffused, disappearing from the pulp in a few weeks. Second, doubtful; thymol, salicylic acid, eugenol, campho-phenique, hydronephthol, A. & B. napthol, some essential oils, resorcin, etc. Third, those nearly or quite worthless; iodoform, borax, boracic acid, dermatol, europhen, chloride of lime,

peroxide of hydrogen, tincture of iodine, etc. The mercury salts possessed the necessary qualification of being powerful antiseptics, but their solubility and irritating properties when their diffusibility was not modified, together with the unsightly bluish-black tooth discoloration, were serious objections. Thymol, in combination with either bichlorid, cyanide or salicylate of mercury, was found to give the best results. Dr. Miller reported at Chicago in 1893, having employed these combinations at the Dental Institute of the University of Berlin, in over two hundred cases, with one failure to his knowledge. In the November *Dental Cosmos,* 1895, Dr. Theo. Söderberg, Sydney, Australia, published an able article on this method, giving in detail his technique and formula of dried alum, thymol, glycerol and oxide of zinc. Neither Dr. Miller's report at Chicago, nor Dr. Söderberg's article in the *Dental Cosmos* produced scarcely a ripple of comment. Probably in the first instance the American dentist could not reconcile himself to the tooth discoloration caused by the mercury salts as recommended by Dr. Miller. And in the other instance—well, maybe the spirit was willing but the flesh was weak. But when Dr. Waas, in October *Items of Interest,* 1898, so ably and convincingly advocated the method, he aroused universal interest, as shown by the statement of the editor of *Items of Interest,* who said that when this article appeared and reference was made to Dr. Söderberg's paper in the *Dental Cosmos,* that he was deluged with inquiries, and the *Dental Cosmos* edition of that date was soon exhausted. Dr. Söderberg reports in the July *Dental Cosmos,* 1900, over nine hundred cases of pulp mummification with no failures traceable to the method. Dr. O. E. Houghton, of Brooklyn, in the September *Items of Interest,* 1904, reports six hundred and forty-two cases with a few failures. Dr. J. A. Waas, Hammonton, N. J., in the *Journal of the Allied Societies,* March, 1908, reports three hundred and fifty cases with failures so few and far between as not to be considered. I attempted to mummify one hundred and eighty-three from November 1898 to February 1904, and during the first four years, using the Söderberg formula, was obliged to either extract or resort to secondary treatment in twenty cases, and have examined eleven cases during the last few months that are failures after the lapse of six and seven years from time of treatment. They will be considered later, both in this paper and in the office (or some one else's office).

This method was adopted because it seemed to offer the solution

to the problem of pulp canal treatment to the host of men whose main incentive in this class of work is professional pride and conscientiousness, and most of the remuneration is realized in the hope of a future reward.

First in importance in a mummifying formula is the coagulator or tanning agent. It ought to be a powerful coagulator, capable of devitalizing live pulp filaments in the apical region, imparting to the necrotic pulp tissue a high degree of insolubility, freely soluble in water, doing its work rapidly and quickly disappearing.

First in importance also, but placed second, is the antiseptic. It ought to be a solid substance, stable in the dry state, developing strong antiseptic power in the presence of moisture. Very slightly soluble in water. These agents ought to produce a minimum amount of irritation and be non-chromogenic. Such an antiseptic would impregnate the pulp tissue very slowly, but if the coagulator had fixed this tissue quickly, the antiseptic protection may be late in arriving. The reason the coagulator ought to quickly disappear is, that a substance powerful enough to produce the desired effect in tanning the whole root pulp tissue, if permitted to continue its effect for any considerable length of time, would result disastrously to the peridental membrane, as will be shown later.

The well-known Söderberg formula of dried alumn, thymol, glycerine, ā ā j 3, oxide zinc, q. s. to form a thick paste, was first employed, mostly in molars, but frequently in bicuspids. The technique, as recommended by Miller, Söderberg, Waas and others, is as follows: The pulp must be completely devitalized, pulp chamber opened and cleansed of its contents under aseptic precautions. Dr. Miller crushed a sublimate-thymol tablet in the pulp chamber, moistened it with water and covered with either tin or gold-foil, completing filling with any desired filling material. The others, after cleansing the pulp chamber contents, saturated same with an antiseptic, then thoroughly dessicated, packed the pulp chamber full of paste and covered same with cement and completed filling.

The injunction to completely devitalize the pulp before applying the paste did not at first sufficiently impress me with its importance, and it was not until I had encountered several cases of severe pain occurring after making the application, that I became thoroughly converted to this desirable feature of the process. Many of the cases quieted down after a few days, but others would persist with

sufficient severity to render secondary treatment necessary. The well-known analgesic properties of the thymol, if it had been present, would have controlled this pain, but it is late in appearing and its penetrating powers limited, at least in the smallest canals, as will be noted later. Now the first difficulty arose. In those inaccessible cavities, with constricted, tortuous, and often invisible pulp canals, if you could not locate a pulp canal or get a broach in it, how could you ascertain that the pulp was completely devitalized? And in the smallest pulp canals it is not always certain that the sensation comes from a live remnant or from beyond the apex of the root. Dr. O. E. Houghton says that incomplete devitalization has given him more trouble than from any other cause. Dr. Miller reports that severe pain followed the application of the sublimate tablets in about thirty per cent of the cases. And I believe that represents the per cent of teeth where devitalization was not complete. Because if the irritation was caused from the specific effect of the sublimate, most of his cases would have suffered alike. Used in such cases where devitalization was incomplete, the dried alumn would be worthless, as it is only mildly escharotic and not sufficiently powerful to destroy the live pulp remnants in the roots or apical region. The result would be that, should the pulp remain alive for any considerable length of time, believing that the antiseptic protection is lost after three or four years, subsequent death of the pulp would render it liable to infection. That the pain from incomplete devitalization might be avoided, longer time was given for the application of arsenic and in those same classes of cavities and canals as mentioned above, it was uncertain whether devitalization was complete. Bourchard's Pathology says: "Some pulps, irrespective of pulp condition, exhibit a peculiar idiosyncrasy in resisting the action of arsenic, requiring large doses and a week or longer application before succumbing," and it may be added, indefinitely. Professor Witzel has found pulps healed and alive from eleven to thirteen years after his treatment. Dr. Söderberg reports in test cases examined, pulps alive from four to six years after mummification. The pulp usually dies in from eight to ten days after application of arsenic, but there are many exceptions. This incomplete devitalization is easily overcome with the broach (as mentioned before) when mechanical cleansing is practiced. Now, if too long time had been given, the pulp would have sloughed from the apical portion and mummification would have been impossible in that

part of the pulp. Dr. Luckie says that he has often noticed odors of decomposition in the necrotic pulp tissue eight or ten days after arsenical applications. As in cases where the absence of the analgesic effect of the thymol was noted, it is owing to its insolubility that the antiseptic effect is late in appearing and of not sufficient strength to be available. Professor Boennecken, Prague, Bohemia, in the May *Dental Cosmos,* 1899, says: "Experiments upon pulps of different animals have shown that thymol penetrates the tissues very slowly, from one end to the other, viz., in the course of several weeks,—and that it retains its antiseptic power, as it seems, for an unlimited time." He used a formaldehyde paste in thousands of cases, and where failures occurred, attributed it to faulty diagnosis. Dr. Leo Greenbaum, in September *Dental Cosmos,* 1902, reports a series of tests made at the Philadelphia Dental College under the personal supervision of Dr. O. E. Inglis, with mummifying paste; six teeth were mummified in the usual way. He says: "The result in two cases showed, upon examination, the formation of pyogenic micro-organisms. In one of the two cases the root canal contents upon removal were found to be very foul. The tooth was removed owing to trouble and the desire for examination, and it was found that the mummifying influence had not penetrated beyond one-third of the distance of the root canal." From a preceding paragraph it is inferred that he added formaldehyde to the above formula given.

Cases examined a few months after treatment showed that putrescence had occurred i the apical region, owing to the slowness of the mummifying process and antiseptic penetration. Another kind of trouble was encountered in a few cases, with no findable cause. These teeth simply ached. Examination showed the pulps to be mummified, paste present, tooth firm in socket and not unduly tender to percussion. It was not the kind of pain noticed from live pulp remnants, but more similar to a pericementitis of a sub-acute type, without the usual symptoms. These were probably cases of irritability as met with in other lines of operations.

A brief mention will here be made of arsenic. First, the general condemnation that it should not be used at all for devitalizing pulps, the chief indictment being that in the near or remote future, necrosis of the pericementum may occur. If a lesion as grave as the death of this tissue results from an application of arsenic, there would be little hope for the success of a method like pulp mum-

mification, because all the tolerance of nature, vitality, protective proteids, or whatever you want to call it, is needed about the apices that can be summoned, to aid in protecting this open pulp canal from without. Second, that the arsenic absorbed and retained in the necrotic pulp tissue is a source of menace, even to the extent of causing necrosis of the alveolar process. If this was a real danger, it probably would have occurred in some of the cases treated, as all of the one hundred and eighty-three teeth mummified would be subjected to the influence of the absorbed arsenic, and as no lesion of this nature was observed, it is improbable that it ever occurs, as this number would be a sufficient test.

During the first four years one hundred and forty-two cases had been treated with the Söderberg formula. Twenty had been the seat of sufficiently painful conditions to require secondary treatment. The trouble was a sub-acute pericementitis, teeth tender to percussion, sensitive to thermal changes, these symptoms being more or less severe at different times. No acute alveolar abscesses were observed, and no sinuses noticed about the apices of the roots up to this time. Eight teeth had been opened into out of curiosity, in which no trouble had been experienced. Of these, only one could be said to be in good condition, three in fair and four in bad condition. It was noted at the expiration of this time that the paste was not stable and had disappeared. These teeth were invariably filled with amalgam. According to demonstrations by Drs. George Cook of Chicago, and A. E. Webster, Toronto, Canada, it is impossible to seal a tooth with either amalgam, cement or gutta-percha. And in the case of the amalgam fillings, the leakage would increase with the age of the filling, owing to expansion, and also loss would be possible at the apical end of the root. It is not apparent what kind of a formula would be best to use to insure prolonged stability. If it was in the nature of a cement, or an antiseptic incorporated in an insoluble substance, as paraffin, the antiseptic activity would cease when the substance on the surface had been exhausted. That in the interior would not be available. The early trouble encountered from incomplete devitalization and putrescence preceding the mummifying influence, either from the slow penetration or not making the application at the proper time, have been mentioned. Out of the twenty-eight cases examined, it was noticed that conditions found varied. In many of the distal roots of lower and the lingual roots of upper molars, the necrotic pulp

tissue was in good condition, but in the smallest canals, the kind that require sulphuric acid to locate and enlarge, the mummifying influence had no selective action to ferret out, penetrate and permeate this class of canals, and they were the source of most of the trouble. From the literature on the subject, I had anticipated finding dry parchment or dry powdery pulp tissue, but what I really did realize was poor specimens of the Egyptians' art. None of them were dry, nor could they be. In the first place, the necrotic pulp tissue shrinks about one half, leaving a large space for moisture, which is always present in a pulp canal. The glycerin in the formula being hydroscopic, would attract an extra amount of moisture and then the action of the glycerin would be antagonistic to the tanning properties of the dried alumn. While glycerin is one of the best preservatives known, W. Frazer says in the *U. S. Dispensary*: "Glycerin is not suitable for preserving pathological specimens, as they are completely softened by its action." So it would seem that in the presence of moisture and the softening effect of glycerin antagonizing the tanning effects of the dried alumn, that it would be difficult for the necrotic pulp tissue to become dry and parchment like. In some of the cases examined, especially in the larger canals, as mentioned before, the mummified tissue was found tough and leathery; in others, mostly in the smaller canals, only softened shreds occupied the canals nearest the pulp chamber, showing that either the coagulated tissue acted as a barrier to deeper penetration, or else the mummifying influence was not sufficient to prevent disintegration in the apical region, or was too late in arriving. Other cases showed the canals empty, the tissue having been completely liquified. In this connection, it is important to quote from Dr. Miller's article in September *Dental Cosmos*, 1893: "I am convinced that the success of the impregnation method depends to a very great extent upon the character of the antiseptic employed and upon its chemical action upon the pulp apart from its antiseptic action." That thymol was classed by him as of doubtful value for the purpose of mummification is probably due to its insolubility in water (1,200 parts, x a little alcohol to aid solution) and gave the following reasons for combining it with the mercury salts. "The thymol being chiefly designed to prevent the sublimate being too rapidly absorbed, besides giving greater permanency to the application by reducing its solubility." And in the entire article no other use was attributed to it except its ability to modify

the solubility of the mercury salt. If a strong or powerful antiseptic, capable of impregnating the whole pulp tissue promptly is imperative, an insoluble substance would probably not have sufficient penetrating powers to answer the purpose, unless combined with a rapidly acting coagulating agent. For comparison of antiseptic potency, a few well known antiseptics, with relative strength of solution are here given: Sublimate 1:2000, formalin 1:200-1400, 01. Cassia 1:2200, 01. Cinnamon 1:2100, creosote 1:1300, thymol 1:1030, trikresol 1:1000 and phenol 1:300-400. It will be noted that thymol is about one-half the strength of the antiseptic potency of the known strong ones named above (sublimate, 01. cinnamon, etc.) and while it might have sufficient antiseptic power, its slow penetration, with a slow coagulator, like dried alumn, renders it of doubtful value in this combination.

It is now believed that it is a mistake to thoroughly dessicate the pulp chamber before applying this paste, as it would have a tendency to retard its action. Miller considered promptness so important that he moistened the sublimate tablet before covering with foil and it would seem that with the Söderberg paste, immediate action could be obtained by moistening with alcohol.

The condition of the mummified pulp tissue as found, was not considered satisfactory, and as at that time I laid more stress on the coagulator than the antiseptic, the failure of dried alumn to impart a high degree of insolubility to the necrotic pulp was blamed for most of the trouble. It had been selected on the recommendation of a layman (which is sometimes bad for dentists to act on, as will be noted later), owing to its ability to tan an ox-hide in one-tenth the time of any other substance, which was far from the truth, because formalin was just on the verge of coming into its own, and while it might be true that dried alumn was a perfect success on an ox-hide, it was due to the fact that it was applied to the whole surface, and not to the end of the tail only, and from what had been observed, the conclusion was reached that it might as well have been left in the tan-yard. In order to overcome the short comings of dried alumn, paraform was added to the formula. Its superior tanning properties had been known for some time, also it would have a hardening influence on the paste, insuring more permanency to the application. A brief reminder of formalin and an early experience may be of interest.

Prior to 1897, the dental journals were not crowded with articles

about this drug, although it had been discovered thirty years before and its antiseptic and germicidal properties known since 1888. It came to notice in 1897, in Merck's Digest, and in the light of present knowledge, this periodical is interesting reading. After recounting its powerful antiseptic, germicidal and non-toxic properties in extreme dilution, it says: "The odor and taste is not appreciable in the dilution employed for the preservation of food products, beverages, etc." It is apparent that the layman had beaten us to it, and it proved to be true. The soldiers got it in their canned beef during the American-Spanish War, and the embalmed beef scandal followed. The babies had their stomachs tanned and state boards of health arose in arms against the dairymen. The embalmers' art no longer required any skill, the undertakers had Pharaoh's craftsmen beaten to a "frazzle," and on the last page of the periodical is found the following paragraph on dental uses: "As a substitute for arsenic paste, it has the advantage that the tooth can be filled at once without further cleansing, since it kills the sound pulp completely and renders it aseptic at the same time." The insoluble tanning properties on albumen had previously been emphasized. A hasty mail order was dispatched to Merck & Co., for a supply, and two or three cases requiring pulp devitalization were reserved until it should arrive. It came, one of the patients, a young lady, was summoned, and an application of 40 per cent formaldehyde fresh from the still, was made to an exposed pulp. One of the properties of this drug is that its effects are immediate, and they were. (I know of only one exception, to be recounted later.) Everything was employed to stop the pain except the right thing—aqua ammonia. Not discouraged, applications were made in two other cases, and, as in the instance of the dried alum, I must have acted on the recommendation of a layman, because no dentist would have written that paragraph after applying this drug to a live pulp and noting results. I have no doubt but that formaldehyde will devitalize a live pulp, because from the agitation produced in those patients, I am satisfied that those pulps were in the agonies of death and could not have long survived, providing the application could have been retained but a short time. Another property of the drug noted in the early experience was that it was supremely indifferent to any other combination of drugs used to modify or inhibit its irritating quality. It overcame all opposition and was respectfully consigned to the top shelf of the medicine case

for a season. The following year the journals contained all kinds of articles about it. It appears that the European dentists had been handling this high explosive for several years and a number of articles contain accounts where dentists had employed it to devitalize pulps. It is evident that this dental paragraph in Merck's Digest had enjoyed quite a universal circulation. One American dentist, a member of this society, who deserves a niche in the hall of martyrs, not being satisfied with the inhuman methods of those experimenting with this drug on others, applied to the inner side of his leg, between the ankle and knee, a wad of cotton, saturated with a 40 per cent solution of formaldehyde, covering same with a rubber cup, to remain for the short period of twenty-four hours. The alarm clock was set and slumber sought. The exception to the immediate effect of formaldehyde is here noted. For the article stated that it required from four to five hours for the drug to penetrate and produce pain of sufficient intensity to arouse the sleeper. The experience with the paraform paste was strenuous. Its application in a majority of cases induced pain of all degrees of intensity. It was apparent that too rapid elimination of the gas was the chief source of trouble. To remedy this, a pellet of cotton was placed over the paste to absorb the excess of gas, and a tentative filling inserted to remain a few days. This was satisfactory, as little or no pain was experienced. Again covering the paste with cement and condensing filling, caused a repetition of the above trouble. The explanation is offered by Dr. Cook. Paraform sealed in a tooth without pressure may eliminate no gas. Put under pressure, the evolution of gas occurs. In proximal fillings gum septums were destroyed, diffused pericementitis was induced, and this activity of the paraform culminated in the destruction and necrosis of the floor of the antrum about the roots of an upper first molar. It was an occlusal cavity and must have been well filled and as the pulp canals were minute, the lines of least resistance were through the pulp chamber walls, which were unusually thin. The treatment was continued with a lessened amount of paraform in the paste, which reduced the painful symptoms to a satisfactory degree, until a lower first molar, occlusal cavity was treated. Violent inflammation supervened and the process about the mesial root was necrosed. An old amalgam filling on the buccal surface with a defective gingival margin served to conduct the gas along the mesial root. It is evident from these two cases that it is dangerous to seal paraform in a tooth

Even if lesions as grave as these do not occur, the effect of the prolonged action of formaldehyde gas on the peridental membrane is shown by a dark opaque ring about the neck of the tooth, nearest the place of application, causing recession and detachment of the gum at the neck and a more or less permanent impairment of the tissues about the roots. If the tanning properties of this gas is desired, it is better to apply a five or ten per cent solution for three or four days; it will do its work rapidly and quickly disappear.

This method was persisted in for six years and abandoned because more time was lost in after-treatment than had been gained from not treating the pulp canals in the usual way, although the above account does not give any adequate idea of what was experienced after applications were made.

The one hundred and forty-two cases treated with the Soderberg formula were lost sight of after four years. Some forty-one cases were treated with the paraform paste from December, 1901, to February, 1904. One case failed eight months after treatment. A second case appeared two years after treatment, exhibiting the usual first symptoms of impending trouble—sensitive to hot and cold. A third case showed up after three years with the same symptoms. Both subsided, and no farther trouble was experienced until last winter. Most of these cases were seen and examined during these years and seemed all right until during an epidemic of grip, eleven cases presented themselves for examination. Five had sinuses which had opened about the apices, although without the usual symptoms of an alveolar abscess. These are not prominent and could easily be overlooked. The impaired vitality of the peridental membrane caused by the paraform paste, I think has a great deal to do with their formation. All of these teeth were tender to percussion, sensitive to thermal changes and the seat of neuralgic pains. To offset this, twelve mummified teeth were examined for regular patrons during this time in which not a twinge of discomfort had been experienced. They were the silver lining to the cloud.

Out of the above eleven teeth, only one was opened into—a lower third molar, and the hopes of years had been realized. I had found a splendid mummy seven years old, but it was badly infected. The insoluble coagulum on which I had banked so strongly was not sufficient. It had no doubt been without antiseptic protection for several years, but had begun to disintegrate within the warm, moist pulp

canals and had become a media for the growth and development of micro-organisms.

The method is a success in the sense that teeth have been known to remain quiescent for years in which the pulps were only partly removed and canals imperfectly filled, or filled with broken broaches or drills. These were not successes through any merit of the treatment. Pulp mummification is analagous to the above. This method so alters the pulp canal contents that normal growth and development of micro-organisms is modified and their toxicity reduced. Believing that the antiseptic protection is lost after a few years, and that the pulp canals are constantly penetrated from the oral cavity, and liable to be from the apices of the roots by micro-organisms, it then becomes a question of how long nature will tolerate the condition or be overwhelmed.

A word about the nostrums. Sometimes a lie is a difficult thing to kill, more often living in the imaginative than in the malicious mind. That myths, legends and folk-lore pass current as truth whether having any real foundation of facts or not, is an inheritance from the past and has always been inherent in human nature. If it was not at least partly true, the dental nostrums would not flourish. I have no doubt but that the first bottle of hair restorer was either bought (or taken away from the agent), by the original Pharaoh. Cleopatra eagerly purchased a wrinkle remover, or more likely in the light of present knowledge, a fat reducer; and the great traveler, old Pythagoras, being obliged to go on foot, probably had his pockets full of all kinds of corn cures, and we have been investing ever since. Dentists buy a pulp preserver, knowing full well, or at least they ought to know, that Witzel and Herbst reaped a harvest of abscesses from attempting such a procedure. Any old paste with an iodoform odor finds a ready sale. Tablets are bought and crushed over bleeding pulps with the supplication to "blot it out and remember it no more against me." Dope is advertised that looks suspiciously like cobalt, guaranteed to devitalize the coronal portion of the pulp only, and miraculously rescue the remnants in the roots to a life-long ease and comfort, and mummifiers galore are salable and enthusiastically recommended by many of the profession. These nostrums are all infallible, they never fail, and are always the product of a life's long toil, or concocted by some alchemist by the wave of an Alladin's lamp. There is a Balm of Gilead to every ill the tooth

falls heir to, and dentists buy them, because, as P. T. Barnum said, "they love to be humbugged."

PRESIDENT'S ADDRESS.*

BY C. W. BRUNER, D. D. S., WATERLOO, IOWA.

Mr. Chairman, Members of the Iowa State Dental Society:

Today, we have laid aside the routine of daily practice and have assembled here in this, the capital city of our great state, to promote among ourselves, mutual improvement, social intercourse, and good feeling; and collectively, to take cognizance of the common interests of the dental profession of Iowa, and, may I add, the common interests also, of the three million people of this commonwealth who, directly or indirectly, are dependent upon us for the care and preservation of their dental organs.

Our responsibility is great. That we have not shirked our duty to our fellow man along this line is attested by the splendid achievements of our noble profession in the past fifty years. That we feel the responsibility of the present I have but to call to your notice the elaborate lecture and clinical program which has been prepared for our consideration at this time. In earnest of our willingness and readiness to face the future, I present this society working today under a revised constitution which contemplates, through the thirteen district societies of the state, together with this, the parent society, the placing of a veritable post-graduate course in dentistry within easy reach of every ethical dentist in the state.

Fellow members of the Iowa State Dental Society: I have great reason to be proud of my relation to the dental profession. Today, by your choice, I stand before you as president of the largest and best dental organization ever convened within the borders of this state. For this honor I desire to express my grateful appreciation.

Meeting, as we do today for the first time, as a reorganized society, we find ourselves, as it were, in new harness. There will be some confusion in getting the machinery of the new organization working in perfect order. Many problems will present for solution. Your officers and committees have done all in their power to set the various departments into harmonious action. To accomplish this to

*Read before the Iowa State Dental Society, May, 1909.

the fullest degree, however, will require time, patience and brotherly and fraternal love. The change from the old to the new is so radical and the situation so novel that your executive officer will probably err in many ways. None more than he feels his unqualifiedness for the duties and responsibilities of the high place to which you have called him. So at this time he asks your indulgence, sympathy and generous support.

Our program has been prepared to meet the requirements of all, in-so-far as possible. I desire here and now, to express my gratitude to our superintendent of clinics for his faithful and untiring effort in securing so varied and complete a line of clinics, the largest number and, I honestly believe, the best ever offered by this society; to the executive committee who have labored so harmoniously; to the officers and committees; to the members and to all who shall have contributed in any way to the success of this meeting.

Our district organizer and superintendent has labored assiduously to build up the districts of the state. The plan of organization has been proven and not found wanting. Of this work I need not speak further, however, as Dr. Volland has prepared a very complete report which I am sure you will all be interested in hearing this afternoon.

Following the idea presented by our president a year ago, our committee on ethics has prepared a very interesting and helpful exhibit. Are there any among us who are in doubt as to the limitation of ethical advertising? We would suggest a careful study of this exhibit, and a conference with the committee, who will be pleased to show you.

We are glad to note the success of our legislative committee in that they are able to report the passage of a bill by the recent legislature, by which we as dentists are exempt from jury service. The committee also gave valiant support to the black plague measure, which was indorsed by this society a year ago. That this measure met defeat is to be regretted. Yet, much was accomplished in arousing an interest in the subject. Having made an entering wedge before the legislators, the forces backing this much needed moral and social reform are not discouraged. They ask for a reindorsement from this society and a continuance of the support of our committee. It has been my privilege to have become somewhat intimately acquainted with the author and champion of this measure, and I can assure you that he is made of the kind of stuff that ultimately spells suc-

cess. Let us not falter in lending a hand in the furtherance of so worthy a cause.

Our interests in the state institutions have been looked after by the committee appointed to that work a year ago. While nothing definite has been accomplished, we feel that a good start has been made. It is ours to follow up the good work. I hope we may be able to have a report from the committee as to the work done, and that you will see fit to continue the committee, in action.

I would be derelict to the duties imposed upon me did I not make mention of the splendid, wholesome work being done by our State Board of Dental Examiners. The biennial report recently issued from the office of the secretary reveals the fact that four years ago there were, practicing in Iowa without license, one hundred dentists. Today there are none, within the knowledge of the board, save a few recent graduates who, under the mistaken notion that they were entitled to do so, have opened offices and begun practice, pending a meeting of the board. These, we are told, are coming under the vail of the law as rapidly as the board receives information of their violation.

Practical examinations in operative and prosthetic dentistry are now required. The standard for a passing grade has been raised to 80 per cent. Interchange of license or reciprocity has been established, in accordance with the Asheville resolution, in ten different states. Our board, as a member of the National Board of Examiners, is in touch with the board work of all the other states. It has established, with its own state society, and the profession of this state, a close relationship, which in point of good fellowship and harmonious action, is second to no state in the union, thanks to the wisdom and efficiency of our state dental laws. Right here, I wish to enter a protest against any attempt on the part of politicians, to nullify our present laws, by the substitution of any plan of commission control, that seeks public economy, which must necessarily be at the expense and sacrifice of the high standards attained, through the application of our present law, and the harmonious workings of our board and this state society. Be it known, here, now and forever: Our State Board of Dental Examiners, operating under a strict application of the law, is a *self-sustaining institution.* The expenses of the board are not met by a tax upon the people but, rather by warrants issued by the state auditor on the specific fund of the board which

fund is created and maintained through one source, viz.: The money earned by the board through its examination and other legitimate fees. We ask for no appropriation at the hand of our legislators. But, in the name of justice we demand that the moneys earned by the board and paid into the state treasury shall be held inviolable to the credit of the board.

The biennial report reveals the appalling fact that nearly one thousand dollars was charged off the board's account about two years ago. At the same time, I am told, the board had expense and per diem bills which in the aggregate amounted to nearly a like sum, and—an empty treasury. Since that time the board has been operating on personal accounts, with a very poor prospect of the income from the June examinations being sufficient to reimburse the individual members. An appeal to the recent legislature for the return of the misappropriated fund proved futile. Gentlemen of this convention, I submit to you: Does not such rank injustice on the part of a great state call for a remonstrance from this society? Let us stand for the maintainance of our present law, stand by the examining board and stand together in an organized effort to compel, if need be, the return to our dental board, of that which justly belongs to it.

The bill pending in our national congress whose import is to give rank to our regular army dental surgeons, claims our attention. We have cause to felicitate ourselves that the way has been prepared for this society to take a hand in the fight. By the recent action of the National Dental Association, one of our members was made vice chairman of the committee representing the interests and claims of our profession before the National Congress. I understand that our representative on this national committee has already laid designs on the political hide of certain of our Iowa delegation in Congress, if our claims be not heard and granted. Do we want to see this bill become a national law? Dr. W. H. DeFord, of Des Moines, Iowa, U. S. A., is the man in whose hand the power is vested. We shall have an opportunity to hear from him ere the close of this meeting. Shall he ask us to endorse this bill, as a society, or to write to our congressmen individually, let us make it our business to respond without delay.

The National Dental Association has awakened from its Rip Van Winkle sleep. At its recent session it determined to act upon the advice of the immortal Horace Greeley, when he said: "Go west,

young man, go west and grow up with the country." So, we are to have the next annual meeting of the National held at Denver, Colo., in July, 1910. We are proud of the distinction we enjoy of having with us today Dr. Burton Lee Thorpe, of America, the honored president of the National Dental Association, whose lecture we so much enjoyed last evening, and through whose counsel and influence Denver will be the center of attraction next year, for all wide awake dentists of this country. This will be our opportunity for combining pleasure, profit and recreation. We should send to this meeting a delegation second to no state in the union. Shall I say one hundred? "We can do it if we will." Aye, one hundred and fifty. Among the many important things done at Birmingham, the committee on the Dental Journal for the National Dental Association was instructed to begin publication of such journal in October, 1910. This first issue will contain the proceedings of the Denver meeting. The state societies may come into the National in a body and each member receive the Journal.

The subject of public dental education demands a rightful share of our thought and consideration at this time. The National Dental Association made a great stride along this line, when it authorized the publication of a booklet entitled, "The Mouth and the Teeth." By addressing Dr. Chas. S. Butler, Recording Secretary of the N. D. A., Buffalo, New York, this booklet may be procured in quantities, for distribution among school children, to our patients, etc., at a cost of 50 cents per hundred, in lots of two hundred or more. That you may have an opportunity to examine and become acquainted with this booklet, I have brought a supply to this meeting. Ask our Secretary for a sample copy at the close of this session. Being authorized, copyrighted and published by the highest organized dental body of the land, its use is strictly ethical. I take great pleasure in recommending that every member of this society write to Dr. Butler, enclosing remittance for as many copies as he can use. A copy in the hand of every school teacher, every school child, who is able to read and comprehend it, and in every home of the state is not too many for us to make use of.

This done, we are making good progress in the matter of public dental education. But, shall we stop here? I think not. Let us look about us; get our bearings and endeavor to analyze the conditions confronting us. Shall we go into our public schools and there

make examinations of the mouths and teeth of school children, we would find an average of about 75 per cent of such children having defective teeth. It has been proven beyond doubt that tuberculosis is induced by decayed teeth and general unhealthy conditions of the oral cavity. We know that many fevers, stomach and intestinal disorders are directly associated with diseased conditions of the mouth and teeth. It has been said "The germs found in a decayed tooth are also found in the appendix, and there is good reason to believe that neglected teeth are largely responsible for the increase of appendicitis."

The city of Boston, under the munificent laws of Massachusetts, has taken advanced ground in the matter of public, medical and dental education and inspection of school children. We find there an organization known as the Dental Hygiene Council of Massachusetts, composed of representatives from the six dental societies of the city. The object of this organization is to help encourage and promote better care of the teeth by: Putting into wide circulation a leaflet on the "Care and Use of the Teeth;" to furnish literature on dental hygiene and information and assistance in promoting the cause; to provide charts, photographs, instructions and literature for settlements, schools and institutions; to give practical talks on the care of the teeth, and popular and timely articles to newspapers; to co-operate with the organizations working to check and control tuberculosis; to provide lists of registered skilled dentists, who will work for nominal fees for deserving and worthy persons; to discourage the sale and use of dental preparations injurious to the teeth.

From a reprint, from the *Boston Medical and Surgical Journal,* of an article entitled "The Peoples' Disease; How to Prevent It," by Wm. R. Woodbury, M. D., I quote: "In June, 1907, *The Boston Transcript* made formal announcement of 'A Popular Movement Being Inaugurated for the Better Care of the Teeth' and gave half a column to that announcement. The *Transcrip* did this because the Secretary of the State Board of Health assured them that people did not know all about taking care of their teeth, and that such a movement was necessary." To quote Dr. Osler: "There is not any one single thing more important to the public, in the whole range of hygiene, than the hygiene of the mouth." "No one knows better than does the dental profession the evils which come from defective teeth; and next to the dentist, this knowledge comes most frequently to

physicians. The teeth are organs of first importance. They are essential organs of digestion. When they are lost, growth and nutrition are hindered; they are contributory factors in setting up diseased conditions of the throat, the nose, the ears, and the eyes. They cause a disturbance in the nerves; they increase markedly the chances for catching infectious diseases and decayed teeth offer a favorable opportunity for the development of tuberculosis."

"Healthy teeth, healthy stomach, healthy body," says an eminent German physician; and with these comes good general health.

It is recorded that Strassburg, Germany, is the first city to provide school dentists and to undertake a systematic work for the care of the teeth of school children. It was there discovered that 97½ per cent of the children had defective teeth. In this country there has been little systematic inspection and provision for the care of school children's teeth undertaken. The city of Boston stands among the first to have taken up the work and we are told that there the work has been done largely by the regular medical inspectors. Dr. George S. C. Badger, editor of *School Hygiene,* the official organ of the American School Hygiene Association, writes me under date of March 23rd, 1909, as follows: "There is no special dental inspector in our schools. The regular inspectors have made examination of mouths, and those found needing help (60 to 80 per cent) have been referred for treatment." Subsequent investigation reveals the fact that some experimental examinations have been made by dentists in the town of Brookline, a Boston suburb, and very gratifying results are reported through the interest this aroused. Children having record of defective teeth reported to family dentists for treatment and in cases of poor children, treatment was received at the infirmary of the dental college.

Regular medical inspection, however, has been in operation in the schools of Boston for some years and, since September, 1906, compulsory medical inspection of children in all public schools of Massachusetts has been in force. New York City and Chicago are doing much good work along this line, and we find the movement rapidly spreading throughout the United States. Already four states have passed laws, permissive or mandatory, for the medical inspection of school children. In Iowa we already have the machinery through which this work may be carried on. Here, in the capitol city, I note that medical inspections have been made under the control of the

Polk County Medical Association. Ft. Dodge is operating under the control of the local Board of Health. With these two exceptions no systematic inspection has been undertaken in our state. Credit should here be given for an experimental dental inspection undertaken at Iowa City under the direction of Dr. E. A. Rogers of the dental department of our State University, with the assistance of a corps of senior dental students. From this work much good is reported. Children whose teeth were found defective having reported to their family dentists or to the college infirmary for treatment.

Time forbids further discussion of the good work accomplished along this line. I would fail in my purpose in presenting this subject here today, however, did I stop at this point. My investigation of the subject has led me to conclude upon a course of action for this society, in an effort to bring about improved conditions in our public schools from both a medical and a dental standpoint. I believe we may never hope to see dental inspection successfully introduced into our public schools until some form of systematic medical inspection shall have been established. This accomplished, dental inspection will naturally and readily follow. If my deductions are logical and my reasonings good, then there is one thing for us to do, viz.: Unite our forces in a co-operative movement with the medical profession of the state in a campaign of education throughout the state. With this thought in mind, I have corresponded with the executive officers of the Iowa State Medical Society and the Hahnemann Medical Association of Iowa, who have expressed favor with the idea and have promised to give the subject consideration at their respective annual meetings this year. Being thus encouraged I have conferred with prominent medical men, of both schools, in my home city, with superintendents of schools, with members of school boards, and with their co-operation, together with legal council in the interpretation of our state health laws, we are able and pleased to present for your consideration at this time the following:

RESOLUTIONS.

Whereas, many children attend the public schools of Iowa, while afflicted with communicable diseases, or while suffering from remediable ailments that retard their advancement in school work, or who are mentally or physically defective from being badly nourished and deprived of fresh air and bathings necessary to wholesome living, and

Whereas, the conditions cited are detrimental to the public

schools, and to the best interest of society, calling imperatively for competent and systematic attention—

Now, Therefore, be it resolved by the Iowa State Dental Society, of the State of Iowa, that the State Board of Health and the various local boards of health throughout the State be called upon to exercise the authority vested in them by law for the adoption of such measures as will insure the regular and systematic inspection of all schools in cities having a population of five thousand or more, by some skilled and competent person whose duty it shall be to make regular and frequent examinations of all persons in attendance at such schools, who may appear to be suffering from disease, neglect, abuse or parental mismanagement, obviously injurious to them; and to undertake the correction of such objectionable conditions in the schools and also in the homes of children where they arise.

Be it further resolved, that School Boards throughout the State be urged to co-operate with State and Local Boards of Health in carrying into execution all reasonable regulations which may be adopted for the hygienic and sanitary inspection of schools and homes of school children, and for the correction of such evil as may from time to time be found to exist.

And, Be it further resolved, that these resolutions be given general publicity throughout the State, and that copies thereof be mailed directly to the Secretary of the State Board of Health and to the secretaries of the Local Health Boards and School Boards in cities having a population of five thousand or more.

Mr. Chairman: It gives me pleasure to recommend the adoption of these resolutions by this society, and to suggest the appointment of a standing committee consisting of three members, to be known as the committee on Public Dental Education, whose duty shall be to execute the provisions of these resolutions in co-operation with the Hahnemann Medical Society of Iowa today in annual convention assembled at Waterloo, and the Iowa State Medical Society, which will meet in annual session on the 19th and 21st of this month, at Dubuque.

ANOTHER MEDICINAL AID IN PROPHYLAXIS.*

BY J. B. PHERRIN, D. D. S., DES MOINES, IOWA.

It had been my intention to defer the introduction of this treatment for another year in order that it might not appear that the chairman of the executive committee had reserved space on the program for himself. With no apologies I will state that my appearance at this time is due to the insistance of a few friends to whom this treatment was mentioned about two months ago.

With a full realization that some more intellectual man among my co-laborers of the dental profession will more fully demonstrate the value of this treatment than I am able to do, I submit briefly the treatment and methods used in the past.

I shall refrain from mystifying my brethren by the use of any unpronounceable names or coined terms.

The drugs used are the preparations of zinc.

I wish in this connection to give due credit to my friend, Dr. A. H. Andrews, now on the lecturing staff of the College of Physicians and Surgeons of Chicago, who suggested to me the use of bismuth in powdered form in pyorrhea pockets on the 19th day of June, 1895, which drug was afterward mixed with oil of cloves to facilitate its use, and out of this thought grew the use of sterate of zinc which has been used in powder and paste forms of varying composition.

The various preparations of zinc have long been known and highly valued in the treatment of irritated and inflammed mucous membranes as well as in the treatment of skin diseases. Indeed, no other drug seems so efficacious. Zinc chlorid and zinc iodid have been in use for many years and could they have been confined to the areas treated would have had a wider use in the past.

Treatment: All incrustations of calculi must first be carefully and thoroughly removed. The pocket is then thoroughly irrigated with warm water and Dioxygen or Hydrogen Peroxid. This is followed by Adrenalin Chlorid solution, if the hemorrhage is profuse, and continued until hemorrhage ceases. Full strength deliquessed Chlorid of Zinc is then applied with a Sub Q syringe to the pocket. The pocket is then made as dry as possible and a paste of Stearate of Zinc 30 per cent, Pure Vasaline 60 per cent, white wax 4 per cent,

*Read before the Iowa State Dental Society, May, 1909.

Spermaceti 6 per cent, as stiff as can be used in a syringe and at a temperature that will be tolerated by the tissues, is then injected to the depth of the pocket. This is accomplished by introducing the tip of the syringe to the bottom of the pocket and slowly withdrawing as the pocket is filled. Superiority is claimed for Stearate of Zinc because of its persistent antiseptic and astringent action on the tissues as well as for its sedative, soothing and healing properties which exceeds that of Subnitrate of Bismuth. Neither does it discolor the cementum of the roots of teeth or the gums.

It has also proven excellent in necrosis after the removal of the diseased bone.

Appreciating my great lack of knowledge of oral Bacterio-Pathology, yet in confidence of the justice of your decision, this treatment is submitted. I beg for it a just share of your thoughts and efforts in your practice.

PROCEEDINGS OF SOCIETIES.

AMERICAN DENTAL SOCIETY OF EUROPE, MEETING AT WIESBADEN, APRIL, 1909.

DISCUSSION OF THE PAPER, "A RENEWAL PLEA FOR ESTHETIC DENTISTRY, BY DR. N. S. JENKINS (OF PARIS).

DR. W. S. DAVENPORT, of Paris:

Said it was a privilege to have the pleasure of opening a discussion on Dr. Jenkins' paper, because esthetic dentistry was as broad in its conception as it was artistic and ideal. Dr. Jenkins' life had been spent in educational work and research; he was one of the founders of the new school of dental art and had become the master. His porcelains, with their warm living glow, inspired dentists even as Whistler's palette inspired the great painters of his time. Both were epoch making in the history of their respective arts. Dr. Jenkins recognized the difficulties in reaching perfection. The "great reform" was the result of many years of labor and most careful study, and it was only natural that the great vogue of porcelain inlays should experience a reverse. Time was required to master an art of such importance and also considerable pains had to be taken in training assistants in order to make it possible to apply the work in general practice. Nothing could replace porcelain inlays.

Silicate cements were too temporary even to be considered. Gold inlays might very well replace many crowns or cements and amalgam fillings, but should never be used where porcelain was indicated. It should never be forgotten, in enthusiasm for inlays, that all inlays required extensive mutilation of the teeth. Also it was well to keep in mind the results attained by the old school. In his own mouth an X-ray photograph would be the only means of detecting twenty or twentyfive carefully hidden tin, tin and gold, cohesive and non-cohesive gold fillings, put in by his brother more than twenty-five years ago, long before the day of extension for prevention. He had used porcelain chiefly for esthetic reasons but preferred the use of gold in all places that were invisible, especially small cavities between the teeth. It was only those who had been fortunate enough to have been the pupils of Dr. Jenkins who could fully appreciate his wonderful achievements. It had been his own good fortune to study many cases with him, cases which represented a development of the entire system of porcelain inlay, and the results were most marvelous and convincing. He was satisfied that the statements made by Dr. Jenkins in his paper were based on sound experience and he felt confident that the appeal would awaken in all a fuller realization of the great possibilities that lay in them to make the mouth "a thing of beauty and a joy forever."

Dr. William Hirschfeld, of Paris:

Said the paper the society had had the privilege of listening to represented one of those documents which every dentist should keep on his desk. In reading it over he would find in every sentence matter for reflection and would be struck by the truth contained in the principles presented in such noble language. There was no doubt that the gold inlay tried to crowd out porcelain to a great extent, and that to the disadvantage of patients. It was too soon forgotten what porcelain was able to accomplish, and men were dazzled by the brilliant surface of the well fitting gold inlay. Dr. Jenkins asked whether dentists had a right to restore with gold blocks where before the introduction of the new fad they could only think of porcelain as the most ideal material. He could not help saying to Dr. Jenkins, yes, there were cases where the up-to-date operator must not hesitate to make a gold inlay in a position which previously he thought would be the domain of porcelain. Such cases, briefly stated, were pulpless teeth with large defects involving part of the masticating surface.

It was not possible to tell yet whether the gold inlay would preserve the cervical edge as surely as porcelain, but it had undoubtedly to be admitted in favor of gold that the edges exposed to mastication would resist better. He had found porcelain invaluable for the permanent saving of proximal defects between bicuspids and molars, but had to confess that in spite of every possible care such inlays became injured from time to time. He did not mean by that that they unduly dropped out, but that the parts too much exposed to antagonism became chipped; edges that in the beginning were close fitting showed after the second year tiny spaces, but the inlay would stay in and keep the tooth from secondary decay. Could that be said of the gold inlay? Was it certain that gold would have that desirable quality of checking new decay at the cervical margin? Could the gold inlay be expected to keep away discomfort to the parts where it touched a nearly exposed pulp? He did not think that the thin layer of cement which separated the gold from the pulp would be sufficient to protect it from the unavoidable thermal shocks which the inorganic porcelain so safely kept away from the delicate spots. In comparing the respective advantages and drawbacks of the two materials he had purposely left out the question which in the beginning secured the success of porcelain, the question of esthetics. There Dr. Jenkins had touched upon a subject which at all times had greatly puzzled the conscientious operator, namely, "Have we to consider in conservative dentistry the esthetic appearance of our operation before thinking of its solidity?" The great philosopher, Heinrich Heine, in speaking of what made success in life, said, "Das Schöne wird stets dem guten weirben," which meant that if anybody wanted to obtain success in a public enterprise he must first think of what would be good for the public, appearance only came secondly. Could that maxim be applied in dentistry? The answer to that question was pointed out by Dr. Jenkins when, in speaking of the development of porcelain, he said, "Patients, especially European patients, among whom the esthetic taste is both hereditary and cultivated, aided in propagating the new gospel." All he could say was that it was not in the dentist's power to decide whether the esthetic appearance would be the chief condition of the operation, that remaining altogether the privilege of the kind of patient, or rather nation, which the dentist was compelled to treat. In America the patient expected his dentist to do what he thought would be best for the conservation of the tooth; while in Europe the

question of looks came first, and he doubted whether Europe would ever give up porcelain—its esthetic and lasting qualities would claim its employment. In addressing his appeal to the members of the society Dr. Jenkins had defined their role in such an admirable sentence that he could not resist the temptation to repeat it: "The very foundation of American practice in Europe is the belief that the patient will receive treatment conceived and executed paramountly in the interests of the patient." A man who had such an elevated opinion of the American practitioner need not fear to see the use of porcelain crowded out by a system which could not and was not meant to take its place.

Dr. Kirk Davenport, London:

Said that it was a subject in which he had taken a very great interest, so much so that he thought himself justified in occupying some of the time of the meeting. He had the privilege of being associated with Dr. Jenkins while he was doing much of his early work, even before Jenkins' porcelain was heard of or even thought of. With Dr. Jenkins he went through a portion of his early development, and the pains, care, and trouble that was taken to find out and make it possible to bring forward the wonderful filling material experienced by Dr. Jenkins were very great. In starting out with porcelain there was an enormous ground to be covered, and in his opinion one of the most difficult things that had to be dealt with was to learn how to use cement. He believed that many of the early failures and many of the failures today came from the fact that the preparation of the cement had not been entirely mastered; certainly in the early days it was the most difficult part of the operation. Before touching upon the esthetic side he wanted to say again as he had said before that too great care could not be taken in the mixing of the cement for the setting of all inlays. The men who were fortunate enough to have lady assistants would generally get better results by teaching those assistants to do the work than they would get by mixing the cement themselves. The assistant's time was thus occupied with one operation whereas the operator was occupied with many. To division of labor he believed was due the failures which resulted in the profession largely discarding porcelain inlays, discarding a filling which was most beautiful for one which was inartistic and ugly. At one time it was a disgrace almost to use a gold filling where it showed, but now it had been found out again that gold inlays were

beautiful. Perhaps they were, as jewelry, but they certainly were not beautiful in the mouth, even in the back of the mouth. It was said of porcelain that it broke away at the edges, but no one seemed to have remembered that with a porcelain inlay which had gone at the edges, by surrounding the porcelain inlay with a delicately formed gold filling there was still a greater body of tooth color retained, and the porcelain, although surrounded by a gold filling, was still much more beautiful than any gold filling or gold inlay. He had in mind a tooth he filled for a young girl about fourteen years ago, who after the work was done took the glass and looking at the filling said, "Oh! that is an elephant's tooth!" Although she had now grown to womanhood and was a mother herself she still referred to the elephant's tooth that he put in for her so many years ago. It was a large anterior coronal cavity in the lower first molar, and during the time it had been in the edges had broken away and the inlay was now completely surrounded with a gold filling, and if he were not so modest he should say it certainly looked very well. There was a tendency amongst dentists to forget the patient. Many of the operations performed were not performed for the patient but for the personal gratification of the dentist. The dentist often said at the conclusion of the operation, "Well, a less clever man would have had some difficulty in doing that!" He did not often enough bear in mind that the patient might be saying: "Well, a less strong patient never could have stood it!" The preparation of the cavity was always a serious one. The preparation of the cavity was always a serious one. The porcelain filling and the gold inlay were closely allied and in many cases had been used where, if the dentist himself had been the patient, he would have felt that the cutting away of the tooth was often too extreme. The esthetic side of the matter should be carefully considered but not forced too far, especially where other materials could be used without subjecting the patients to too great a strain. That was the one thing he could say against the porcelain filling and it applied equally to the gold inlay.

Dr. W. A. Spring, of Dresden:

Was grateful for the clear and precise manner in which the essayist had presented the advantages of porcelain. He, however, had not touched upon the use of porcelain crowns and it might not be too great a disgression if he brought that matter up. It appeared to him as very regrettable in a well cared for mouth to see a gold crown or

even a porcelain faced gold crown. With the present methods of carving porcelain it was quite easy to make a carved porcelain crown even for a third molar, and it appeared advisable to make that kind of crown in preference to any kind of gold crown.

Dr. N. S. Jenkins:

In reply, said it was not his intention to open a general discussion upon the question but only to call attention to the danger of neglecting the esthetic advantages already gained. He had therefore only to thank those who had taken part in the discussion, especially Dr. Spring, for referring to a most important thing in the restoration of beauty to the mouth, a matter he purposely excluded from his paper in order to make it as short as possible, but a matter which was of enormous importance. There were innumerable cases constantly seen in practice of mouths, otherwise in a perfectly esthetic condition, where the unnecessary gleam of gold or platinum might be seen where only porcelain should be observed in an artificial crown. He was also particularly grateful that with the noted sincerity which attached itself to the name of Davenport everywhere one member of the family had expressed himself so emphatically in the interest of the patient. He would only add that as in every society each man finally obtained his natural and normal position irrespective of advantages of birth or fortune, so it was with that great idea of esthetic restoration in the human mouth; it would find its proper and abiding position in spite of obstacles.

DISCUSSION OF DR. G. H. WATSON'S PAPER, "STRAY SUGGESTIONS."

Dr. William Hirschfeld, of Paris:

Thought the paper could only have been written by a man who had gone through a successful career and was now able to give the reasons why he had been successful. Unfortunately he was not able to discuss every point in the manner he would have liked to do, but there was one most interesting point with regard to the outfit of the office. Dr. Watson said that a dentist who really cared for the welfare of his patients should have an office with a comfortable look. Fifteen or twenty years ago Dr. Sauvez of Paris started a new departure in the way of office fittings. He thought dental art was so much related to surgical art as to indicate a medical consulting room; he thought a dental office should present the aspect of a surgical office, and accordingly did away with everything that might be called comfortable, carpets, easy chairs, and so on, everything being

replaced by glass, iron, and porcelain. At that time the patients and his confreres laughed at him; but today they did not laugh. Dental science had made such progress that the question of microbes was a very predominent question even in the outfit of an office. When, therefore, Dr. Watson said that the office should have a comfortable look to please patients he should consider whether that could be combined with the modern exigencies of dentistry. He would ask Dr. Watson whether, if he were starting today in practice, he would not think first of the antiseptic condition of the office rather than of the comfort. Would he prefer the walls of the office dark in order that the mouth might look light, or that the walls should be perfectly white in order to show the absence of microbes? He thought if Dr. Watson were a little older perhaps he would agree to furnish his office according to modern ideas of asepticism.

Dr. George Cunningham, of Cambridge, England:

Said that if he were found poor in his old age it would be because the money had gone in a great effort to put the training of the dental profession on a true basis by the establishment of an institute of dental technology, an institute in which the machinery was now lying idle, and he had not the heart to break it up. The formation of that institute of Dental technology might be said to have been a complete failure, and it looked like that, but he thought it was not. One or two young men were trained there on a sound basis. In the study of dentistry the true alphabet was technique and mechanical training, the making of an artist before the dental surgeon. Today schools were all attached to hospitals but even hospitals had taken up mechanical training and the results were beginning to be seen. First of all, they had utilized some of the best products of the Institute of Dental Technology in the shape of the men educated by that institute who were now working in connection with the new Mechanical Departments formed in connection with the hospitals. There was no opportunity in schools attached to hospitals to obtain the requisite training having regard to the fact that the patients were entirely of the poorer class. He thought it was a great pity that in England a body of practitioners was being raised who were unfit to do the general run of dental work. The result was that a new class of men was being created which no longer kept a mechanic or a laboratory, but sent the work out to a man who made a specialty of it. The question of whether a surgery should look like a hospital or an artist's studio

was an important one. He was not unacquainted with the action of microbes and like Dr. Miller did not think they were all bad ones. If the microbe was dispossessed of his inheritance in the world, man would soon cease to exist. When Dr. Sauvez was putting up his studio he debated the matter with him and the result was that half the office was furnished as a hospital and the other half was left with carpets and the usual furniture of a dentist's office. He himself had given a tremendous amount of time to laboratory research in connection with bacteria and was not to be carried away with the ideas of people who had devoted no time to bacteriological research. He would undertake to treat patients in either kind of office and Dr. Hirschfeld would not be able to detect any difference. The question of making an impression on the patient was another matter. In another office in Paris he had had pointed out to him the fact that there were no decorations of any kind and that even the corners of the room were rounded. The owner agreed that it was a somewhat exaggerated carefulness, but confessed that he was obliged to do it because medical men who sent him the patients would only send patients to a dentist who had a hospital working room. He was an advocate of thorough cleanliness and having everything sterilized, but given a really cleanly studio the artistic studio was preferable to the other. Time would be better spent in clearing out the human sores that were walking about than in spending money in decorating the studio with velvets, glasses, and porcelain.

THE PRESIDENT said:

There was a class of men who were dentists alone and when dentistry was gone they were finished. There was another great class of men in which the late Professor Miller, Dr. George Cunningham, and a great many others, might be placed, a class of men not dependent upon dentistry. They were born teachers with talents not limited. That class of artists and teachers was always rich; such men were inexhaustible because they appealed to something which was always ready at hand and to be given. There were other men so limited that as soon as they could not make a gold filling their work was over. Dr. Cunningham was not in that class and never would be.

DR. GEORGE NORTHCROFT, of London:

Said there was one point in the paper he thought especially valuable. As men got on in life they found scientific knowledge of den-

tistry moving so rapidly that they felt they were getting behind the times. The desirability of being able to go to teachers who did nothing else but make a study of the science and keep in advance of the times was very desirable, and from that point of view he thought the formation of post-graduate courses in all the centres where there were teaching institutions was most desirable. Whether it would be practicable to carry out Dr. Watson's idea of having individual teachers unconnected with teaching institutions he did not know, but he certainly thought it would be extremely nice if professional men who had been out of college for some time could go and obtain further technical or theoretical instruction in various new departments of their science. He was extremely interested in the subject of appointments for surgeries, but with a great many of his confreres he had come to the conclusion that in dental work truly aseptic methods were absolutely impossible, and that it was simply pretending to be truly aseptic when the outside of the cup and platter was clean and no attention paid to minutiae. To be truly aseptic it would be obviously necessary to have the patient prepared as for a surgical operation, and that was quite out of the question. While he believed in the elimination of dirt and in true household cleanliness and strict aseptic precautions with regard to instruments and one's self, it was absolutely impossible in dental surgery to be as truly aseptic as an operating theater at a general hospital. One had to consider the reflex effect on a patient's nerves of having a well-appointed, quiet, artistic room, without the ghastly white enamel and iron constructions which were now put upon the market and used to such an extent. He quite agreed with Dr. Watson that a careful study of Marcus Aurelius would certainly benefit both the dentist and the patient.

Dr. William Hirschfeld:

Said he should like to put a question both to Dr. Cunningham and Dr. Northcroft. Personally he preferred some kind of artistic and comfortable appearance of the studio, but if either of those gentlemen had a son to establish as a dentist today, would they tell their son to look out first for the antiseptic appearance or for the most comfortable appearance?

Dr. G. H. Watson:

In reply, said the questions had been so ably answered by Dr. Cunningham and Dr. Northcroft that there was not much left for him to say. He confessed that his idea was illustrated perhaps as

well as it could be illustrated by a case that had recently occurred in Berlin. In Berlin there was a very celebrated physician, probably the most celebrated in Germany or in the world, and it was his privilege to know that gentleman for many years, Dr. Rhenvers, who made a great point of the mental effect upon his patients. His office was an elegantly appointed home without one thing in it suggesting medicine or surgery; and when he died one of the statements made was that Professor Rhenvers seemed to radiate healing. One of the things which helped him was the manner in which he met his patients and the surroundings he gave them. That was his own idea with regard to a dental office. A patient should come in and the idea of fear should vanish. It was not necessary to be extravagant in glass and porcelain to produce a quieting effect upon the patient. With regard to teaching, his point was not that teachers should be disassociated from an institution, but that there should be a class of professional teachers. There were many eminent men in the profession who were handicapped by the fact that they had to give their time to practice, and those men—and very likely Dr. Cunningham would be amongst them—who were great teachers might be enabled to give their whole time simply to teaching and research and in that way provide for themselves and give the profession a much better class of teachers.

DISCUSSION OF THE PAPER, "SOME THOUGHTS REGARDING MOUTH BREATHING AS A CAUSE OF MALOCCLUSIONS OF THE TEETH," BY DR. W. G. LAW (OF BERLIN).

Dr. E. D. Barrows (of Berlin):

Said it seemed a most reasonable cause of any irregularities of the teeth and it was quite plain that if one did not breathe through the nose there would be a lack of development in the upper jaw and the nose would be much narrower and the patient much less nourished. Where there was a lack of development it seemed to him an attempt might be made to regulate the space in the nose instead of sending the patient for a surgical operation. It was a matter of common experience that a man with a cold by raising the nose could breathe better. It seemed to him that if something could be done without an operation to relieve lack of development, where there was no growth, it might be an advantage.

Dr. Kirk Davenport, of London:

Asked Dr. Law if harm was not liable to occur in forced nasal

breathing where the passages were more or less closed. He was troubled somewhat in that way himself and had forced himself for a long time to breath through his nose when the other method would seem to have given better oxidation, and he was wondering whether the force in breathing through an organ which could not perform its duty was not dangerous to insist upon.

Dr. M. J. Quintero, of Lyons:

Was very pleased to hear Dr. Law's paper on such an interesting subject, as being a daily visitor to the hospital at Lyons he had had on many occasions seen patients afflicted with pulmonary tuberculosis, and he thought the greater number of those patients were mouth breathers. While he would not say that mouth breathing exclusively brought on such a condition, yet he thought that pulmonary tuberculosis was made more easy through the fact of people breathing through the mouth. The passing of the air through the nose cleansed it to a certain extent; it came in contact with a membrane which was highly vascular and was warmed before entering the lungs and also freed from dust and microbes to a great extent. In passing through the mouth the conditions were different; the air did not come into contact with as great a length of mucous membrane, the blood vessels were not as highly developed in the mucous membrane of the mouth, and there was less chance of the bacteria and dust particles being prevented from entering the lungs. Therefore he thought from a purely medical standpoint it was a great benefit to prevent mouth breathing and therefore to correct the conditions arising from mouth breathing, especially the mal-occlusions of class 2 cases.

Dr. Josef Grunberg, of Berlin [President of the European Orthodontia Society]:

Agreed to all points with his friend Dr. Law. If he understood Dr. Davenport's question it was that some means should be given to the patient to keep the lips closed after the patient was freed from his condition. If the teeth were in normal occlusion and the palate of the normal size, and yet the patient was still a mouth breather, he sent that patient to the surgeon, who examined the case and endeavored to do what was possible. Very often the surgeon was able to make a mouth breather into a nose breather by restoring the normal form of the lip.

Dr. George Northcroft, of London:

Said there was one question of international interest he should like to ask Dr. Law. It was stated in England—and the theory met with great favor—that the incidence of adenoids was due to the fact that so many English infants were allowed to sleep during the first year of life with the windows open when the air was damp and foggy. It was found that adenoids occurred in patients who inhabited regions where the air was necessarily damper than in drier climates. For instance, in the lake districts in America adenoids were more numerous than in drier places. He wished to know what was the custom in Germany in connection with rearing children with open windows. From what he understood, the windows in most German houses were kept hermetically sealed and therefore it would seem the theory did not necessarily hold good. He also wished to know whether the condition was very prevalent in Germany, because if so and the windows were invariably kept shut in early life it would seem to disprove the theory started in England that the incidence of adenoids was due to the breathing of damp, cold air by infants.

Dr. W. G. Law:

In reply, thought Dr. Grünberg had answered Dr. Kirk Davenport. He himself would never insist upon the patient having forced nasal breathing, because forced nasal breathing was the cause of all the trouble and the patient abandoned it after a great deal of the evil had been created. The nose had to be rendered as nearly normal as possible by the help of the dentist, the rhinologist, and the physician, and after that it had to be insisted that the nose should be used for its proper purpose, otherwise there might be a relapse to the former condition. As Dr. Grünberg had explained, after mouth breathing had been present for a very long time and the nasal passages were brought to their proper condition, it was often extremely difficult to get the patient to go back to nasal breathing because of his habit. If there were something that would compel a patient to keep the lips together then the nasal passages would be stimulated and the functions brought as nearly to normal as might be. Dr. Quintero had explained the point he wished to bring out with regard to troubles of the throat and lungs. Where a person was weak and was afflicted with colds, mouth breathing allowed the germs to enter the lungs, whereas with nasal breathing they could not have entered, and thus the air being purified by the nose the lungs were not infected. With

regard to the question of open or closed windows and the difference in climate, he thought there was a great deal in the matter of localities, because where the climate was dry and sunny people were afflicted less with adenoidal and nasal disorders than the people in damper climates. In Germany nasal disorders were extremely frequent—not perhaps so frequent as in England—but still very frequent. Of the patients he had treated in Germany he should think about 80 per cent of them had nasal disorders. Taking Switzerland, Germany, Norway, Russia, and other countries, a very good estimate might be obtained of the effect of different climates on the people. He had had patients coming from America and all quarters of Europe, and as far as he could see the people of all countries were to a great extent affected. In the southern portions of Europe, where there was much sun, adenoids or nasal disorders were not nearly so frequent as in the middle zone. In Norway, with its cold climate in the winter and clear dry air in the summer, there was very much less than in the moderate climate of Germany. In Germany it was the custom to sleep with the windows closed, the room being very thoroughly aired before retiring. If the child was given plenty of air in the day time it did not make very much difference whether it slept in a room with a closed window if the temperature was not too high. Every person had a different idea of what temperature should be. Whether the condition was helped by sleeping with the window open was very much in doubt, because a great many people did sleep with the windows open, especially in England. He really did not think it had very much to do with the matter, and with infants he did not think the frequency of adenoids was as great as later on when the children were allowed to run in and out and were not as well cared for as when babies. He thought the frequency was greatest at between four and seven years of age.

Dr. George Northcroft:

Thought the percentage of adenoid cases in England of children who slept with open windows would be something like 85 to 90. He simply wanted to have information from the different countries because then it would be a simple matter to find out whether there was anything in the theory. As the German infant slept with the windows closed that answered his question so far.

ILLINOIS STATE DENTAL SOCIETY, MEETING AT DANVILLE, MAY, 1909.

DISCUSSION ON THE PAPER OF DR. G. V. BLACK.

Dr. Fred B. Noyes, of Chicago:

Mr. President: The object of this paper was to present certain topics which, while they are fairly well known by some, are not so well known or understood by the majority of the profession as they should be and as they might be. It is perfectly true that in the whole history of the world the execution of various things has been in advance of explanations. Men knew how to make butter before they knew anything about the chemical changes taking place or the bacteriology in the flavor of the butter; and men knew some things about the treatment of disease before they had any idea as to the underlying principles.

There are two primary factors in dentistry—knowledge and skill—that are equally important, perhaps, and both of them are capable of acquirement. In all history there has been in all professions a very great difference between the extremes in knowledge and skill; but one of the greatest advantages, I believe we may look for from the organization of the dental profession, will be to reduce the distance between these extremes, and at the present time that is the most important work of the dental profession; that is, to have everybody know nearly as much as the wisest know and have everybody nearer able to do as well as the best can do.

The object of this paper was to point out the means by which the average of effective knowledge may be increased. I believe it is only fair to say that no man gets out of what he reads more than he can interpret by his own experience. He is limited in his power to interpret the work. A thing that has been discovered by somebody else, no matter how frankly, how perfectly and how explicitly it may be explained to another, it becomes his only as it becomes a part of his own experience. He comes to know it only, as he apprehends the steps that have led up to the conclusion. There is a very great difference between knowledge and information.

Not very many years ago, on the platform of the Illinois State Dental Society, I saw a man, very prominently known, point out transverse sections of voluntary muscle fibers, and describe them as osteoclasts. His description was perfectly true, but he did not know

anything about the matter. He was well informed upon the subject, but when he saw a certain thing he did not recognize it. It was foreign to his experience and he could not interpret it. Gentlemen, in the same way you may read about dental caries and study about it, but you will never know dental caries until you observe these things for yourselves and what you have been reading will never assume its true bearing, its relation to practice until you begin to look at the thing itself as it lies under your eyes.

The development of the human mind is a curious thing. Some men seem to have a natural gift for putting things together and putting them together right, in catching the relation between one thing and another. Others seem to lack that quality of mind, but it can be developed, and is one that we need to train in ascertaining the relationship between cause and effect, the relation between what we observe and what we want to do and what we want to prevent.

We have been inclined to think too superficially. We never look at anything quite sharply enough. I am firmly convinced that the use of certain remedies by members of the dental profession has been unsatisfactory because the water used has been tap water or river water, or any old kind of water, and they have dissolved delicate drugs in water that decomposed them, so that they never got the action of the drug at all, and then they would say this or that drug was no good. Water is distilled water, and not everything else. In the case cited the conclusion is reached that the drug is useless because of the superficial way of thinking of water as a chemical reagent.

In these particular subjects Dr. Black has pointed out certain lines that are waiting for assimilation by the rank and file of the profession, for only as they are assimilated by the majority of the profession do they become useful to the community.

The subject of immunity, which was alluded to, is absolutely in its infancy, and it will never get out of its infancy, so far as dentistry is concerned, unless some men get very, very busy, and they must begin a considerable distance farther back than most men want to begin. The question of immunity is wrapped up in the whole of physiological chemistry, not simply the chemistry of saliva, and we cannot study physiological chemistry unless we have some ideas of the reactions of acetic and hydrochloric acids. Unless we know something about the principles of chemical action, we cannot accomplish much, and you do not begin to get hold of the principles un-

derlying these things until you begin to work with chemicals, and you must begin with something that is simple enough for you to understand, and then there is no place you need stop, if you will keep going right along, but if you begin with something you do not understand your results will be such that you cannot understand, neither will anybody else.

There is nothing more practical than the study of dental caries as related to filling operations, and just as soon as a man begins to make such specimens, as have been shown here tonight, for himself, look at them for himself, his working knowledge will not only be useful, but usable. His knowledge of caries will be increased enormously, and the result of that will be an improvement in the value of his dental services to the community that can hardly be estimated. It is a shame that we have to stand before a community and say that the average life of a filling is so and so—I won't say what it is at present.

One of the most valuable things in this presentation, in my opinion, is that it gives every man clear, actual, detailed directions for the most valuable studies of dental caries, a thing that will bring it more quickly and more positively in relation to what he is doing every day than any other line. When he puts with what he has seen in these specimens, what he has read about bacteriology, about the multiplication of germs and their growth in colonies, and the pictures he has seen of colonies growing in gelatine, then he sees the relation of one thing to another as applied to the teeth. Science is not facts, but it is the relation of facts, and so as he looks at one thing he must put that in relation to all other things, in order to get its true perspective. Now, gentlemen, I believe that the dental profession has never stood in the position that it stands today. It has before it the brightest horizon that it has ever had. There is before every young man in dentistry today the most attractive field that can be imagined, if he will see in it all there is to see and will get out of it all there is to be gotten.

Dr. Rohland, in his paper, stated that the greatest thing a man got out of a college education was gall. He was right. Only a little while ago I came in contact with a young man of more than average ability, a man of more than average brain, who had always associated with men better educated than he was, of better tastes, of better opportunities, who had had more money and more things, who had seen

more of the world, had read more books and had a wider experience, and he was discouraged. He thought there was no chance for him; that he never could compete with the other men, because forsooth he had not the college education, while most of his friends had, and so he was going on from one day's work to another and going home and saying, "What is the use, I cannot keep up with the other fellows," and that was the only thing that was holding him back. If some one could have gotten him by the nape of the neck and shaken that idea out of him, so that it would not occur to him that he was not an able man, he would have outstripped all of them in fifty years, because he had the brains, the ability, and he was giving it up because he thought somebody had gotten a start ahead of him. For that reason, I say, let all of us get busy; but there is one thing I want to say in connection with that, namely, begin with something that you know, and go from what you know to something else; then you will know that, and put these together, and go on to something else, and there will be a straight line behind you that is clear, positive and definite. As soon as you go to something you do not know, that is not clear to you, there is something that you have not got that would enable you to explain it or understand it. Drop it, and get the thing you need to explain it. A thing is absolutely of no use to you if you cannot understand it. Get the other thing first and then go at it. The men who have gone up are the men who have had the nerve to do it, and, gentlemen, that is why the man who has had the poor advantages requires the nerve, because he has got to go back sometimes. He has got to stop and say, "Here is something I have missed. I have got to get it if it takes a year to do it." Get it, and then go ahead again.

The attractiveness of the present outlook for the man who is starting in dentistry is more brilliant, in my opinion, than it has ever been before. He has so many fields in which to acquire skill and in which to acquire knowledge. He need not be afraid of the other fellow, because it is a law of the human mind that a man will do what he likes to do best, and there are so many lines that there is plenty of room for the liking of your neighbor, and leave you a chance to do the thing you like and that he does not like. The young man who is starting out in dentistry to acquire skill must be able to do something over and over and study it all the time. He must learn to do a thing better next time, and a man who will go

ahead in this field of investigation, or that field of investigation, must be willing to repeat and repeat and repeat until he has eliminated the possibilities of error. If a man, no matter how skillful he may be, does nothing but exercise that skill, it would become tiresome, but when that skill is to be exercised constantly in the treatment of new problems, of new conditions; when that skill is constantly the servant of his brain, his calling becomes a pleasure, and his ability improves, his satisfaction with his own work improves, and so I believe that just in proportion as we tackle our own propositions with some intelligence, positively setting ourselves to acquire skill and acquire knowledge, the practice of dentistry will become a pleasure and the profession will advance. As fast as you acquire knowledge in one narrow field, you will find that it opens up a relation to all other fields, and you can interpret the results of another man because your own work gives you the key, and just in proportion as you have worked yourselves the result of the other man's work will become valuable to you.

There is one other thought that occurs to me. Almost every man, I believe, when he gets out of college, has more or less the idea, especially the younger man, that he is going to use in practice that which he has acquired. As Dr. Rohland has said, that is a fundamental mistake. He does not know anything about dental caries. He does not know anything about inflammation. He does not know anything about suppuration, nor about necrosis. He has just acquired sufficient knowledge to begin to learn about these things, and if he starts with that idea, that he may begin to acquire skill and knowledge, he may become a skillful operator, and a wise diagnostician, but only as he continues to study what he has a chance to see, and what he has had a chance to read about, and puts the two together, will he acquire knowledge instead of information. (Applause.)

Dr. A. H. Peck, of Chicago:

I believe one object Dr. Black had in mind when he prepared this paper for us was to emphasize certain important things in connection with our practice by repetition, because nearly everything in his paper we have had in previous years from his pen, and it is absolutely necessary that many things be repeated and oft repeated and discussed and rediscussed, in order to keep them constantly before us, that we may receive the greatest benefit from them, because many of these points we forget. I will occupy but a few minutes in try-

ing to emphasize two or three of the points which to me seem to be exceedingly important.

One of the thoughts is this: "Intelligently adapt fillings to the treatment of decay from a pathological standpoint." There is to me in that one paragraph or sentence a whole volume of meat. There is a great deal in it when you study it, analyze it, and get at its full purport.

You have seen pictures tonight showing the penetration of caries through the different tissues of the teeth, the enamel and the dentin, and there was another thought in the paper, namely, the lateral spread of the caries as it enters the dentin. Decay takes place through the enamel and into the interstitial spaces, so to speak, extending in a lateral direction at the dento-enamel junction. These spaces vary greatly in different teeth, according to their density or otherwise, and sometimes before much actual destruction takes place lateral spread of decay is considerable, and yet through the enamel itself there may be a relatively small opening. If one is not exceedingly careful and particular in the preparation of a cavity like that, not infrequently some of the products of decay are left in the lateral portions of the cavity underneath the enamel. The enamel walls are not cut back far enough to remove all of that affected tissue, and unless one removes completely these elements, just as surely as they are left the process of decay will continue underneath the filling, and thus the very object for which the operation is made is defeated.

Another thought brings to our minds the work that Dr. Black presented to the profession years ago, when I was comparatively new in dentistry, and which we now know ever since he presented it, under the cognomen of "extension for prevention," something that we cannot lay too much stress upon or place too much value upon, but how often we have heard through all these years from some members of the profession (I do not confine this remark to our profession in Illinois, but to members of it all over the country) slighting remarks of this theory and talk about waste of tissue in extending these cavities so far, so as to insure immunity from caries in the future. I believe that we would all sin more in this connection by not extending these cavities than by over-extending them. We overextend the margins of these cavities perhaps a great deal less number of times than otherwise. And then this other thought which seems a little thing to the casual observer, and if not studied by

each individual it will be passed by and anything like its full meaning or importance will not be appreciated. A slight injury to the gum tissues between the teeth in making a filling and in doing other operations is thought to be very trivial by some operators. The soft tissue is lacerated at the gingivae and we pay little attention to it in the great majority of instances; but you have heard tonight that it is estimated about 80 per cent, possibly, of the cases of pyorrhea alveolaris, so-called, have their origin or beginning from these troubles, so let us look more carefully and more thoroughly to these injuries, although they seem slight at the time, and give them as thorough and as proper treatment as possible, so as to prevent the destruction of tissue through the working of this disease, which we term pyorrhea alveolaris.

Again, the matter of studying the saliva of the mouth, not only the saliva, but other elements in the mouth, constituent parts, etc., with a view to preventing caries, is one of the most important questions from a practical standpoint that we have before us at the present time. If anyone in this audience tonight, after hearing what Dr. Black has said about this particular question, will interest himself or herself in it, and take up the study and is able to find out what these elements are or the nature of the conditions, and what forms of treatment will prevent the accumulation of colonies of micro-organisms upon the surfaces of the teeth and keep them absolutely clean, so as to prevent further decay, certainly he or she will have basis for enough glory for one lifetime in the profession.

Dr. M. R. Harned, of Rockford:

To me this paper illustrates how it is possible for us to utilize common every-day things about us, to develop the scientific sense and make for profcssional progress. One of the principal ways by which we make progress is by co-operation, and this is one of the important things which Dr. Black has suggested tonight. His suggestion is intended to interest all members of the dental profession to enter the province of scientific work, even in a small way, to become interested in the causes of and the remedies for disease, and the prevention of disease rather than plugging teeth. To me the principal difficulty which arises in this connection is not so much that we are unwilling to do our part in making examinations, observations, etc., but what we do not know is how to value or tabulate the information which we procure. It seems to me that what we need is

an organization which will be systematically drilled and become skilled in tabulating valuable observations, investigations and facts, and put them in such shape that they will be of service to the dental profession at large. If we could work through committees, at the head of which are men skilled in the collection and tabulation of material, and get the organizations to co-operate with us throughout the state, we could accomplish a great deal. There are wonderful possibilities along that line.

The subject has been discussed entirely from one side. Perhaps that was Dr. Black's intention, that is, from the side of what we can do. There are undoubtedly many things that we can do, but there are others we cannot do. We want the scientists to go further with some of the problems or questions that have been raised in connection with the studies of saliva. We would like to know more about the question which has been raised by Dr. Rose, who says that "in proportion as the lime salts are plentiful in foods and water for sustenance of people, so the youth are strong and healthy." We would like to know whether these same elements do not clog the system and bring about diseases with the advance of years. We want to know (as shown in the illustrations given tonight) why in the initial lesions the cementing substance is taken out before the prisms of the enamel are destroyed: What is the difference between the cementing substance and the enamel rods? We want to know why the cementing substance is attacked, and not the enamel rods. We want to know, too, what effect potassium sulpho-cyanide has on the saliva which prevents decay. How does it prevent decay? Another question: It potassium sulfo-cyanide prevents decay (and we observe in our practice that mouths affected by pyorrhea alveolaries are almost immune to decay), we want to know whether the sulfo-cyanide has anything to do with pyorrhea? It is possible that the element which confers immunity to decay is an important factor in the causation of the disease known as pyorrhea.

It is easy to ask questions and hard to answer them, but I have a feeling, and I think there are many others here and elsewhere who share the feeling, that there is in human nature what is known as the "urge," a desire to know and to understand. Dr. Noyes has explained very carefully to us that we have no right to know until we have prepared ourselves to know. That is very true, but does not take away the desire to know. My feeling is, and I think it is pretty

general, that some special study should be made in connection with the matters I have just referred to. For instance, a more careful study of the saliva in connection with the subject of immunity. I also feel, and I voice the opinion of the majority of the men of this society, that Dr. Black is the man who is capable of making those investigations, the man with discriminating sense and judgment, and I feel like uring upon him the taking up of this work. We have felt it so strongly in our component society that we took it up and have put it into the following resolution:

RESOLUTION PASSED MAY 7, 1909.

"Recognizing the desirability of scientific work upon the etiology of caries, particularly upon the saliva in its relation to immunity, and realizing that Dr. G. V. Black is the man to do this work, also knowing the expense which this work will incur, therefore

"*Resolved,* That it is the sense of the Winnebago County Adjunct of the Illinois State Dental Society, that this State Society should try to persuade Dr. G. V. Black to take up this work and provide an opportunity for us to contribute to a fund which should be adequate for the expense incurred in the work."

DR. J. N. CROUSE, of Chicago:

It does not seem to me that we have had any discussion of Dr. Black's paper so far, and if Dr. Noyes, in his extended remarks, hit the paper at any point, I fail to see it.

Dr. Black took up the question of the percentage of patients who are immune from decay of the teeth, and at what age. This subject is one that is very near to me just now, because for thirty years I have had very little decay in my teeth, and yet now in big cavities of from 30 to 35 years' standing, that have never been filled, decay is going on. Many of my teeth are decaying. The necks of them are sensitive. I dare not brush them except with great care. What is the cause? Do we know anything about this matter? I attribute the decay of my teeth to the great sorrow and great trouble through which I have passed, this bringing about a change of some kind which has caused my teeth to decay. I do not think it has injured the rest of my health. It seems to have affected my teeth more than anything else. It makes me more nervous. I could cite case after case of this kind, of business men, who were patients of mine, who had nothing but a little tartar on their teeth, and yet after some

calamity came their teeth began to decay rapidly. I know a woman who was abused by her husband to such an extent that in the last three or four years her teeth are all going to pieces from the sorrow and trouble she is having. What this change is I do not know. I do know, however, that these are facts. I have seen instances of this kind in prominent business men who have lost their fortunes or have gotten into financial difficulties and troubles of that kind. The teeth of these men have started to decay and to become sensitive, and some of them come to me and others go to other dentists to see if something cannot be done for them. I have taken better and greater care of the teeth of these people than I ever did, and yet in spite of that the teeth continue to decay.

What percentage of the cases that are considered immune come back? Dr. Black puts it at over 50 per cent, where active decay has been going on, and the patients becoming immune between the ages of twenty-five and thirty. I am sure, if I hunted up carefully my records, the percentage would not be as large as that of patients who are immune.

When it comes to the other question that Dr. Black spoke of, he has started out in a field to induce others to do what he would do, spread the teeth apart to see if decay is going on in the enamel. I can find more cavities already formed in the teeth of many of my patients than they are willing to hold to have filled or to pay for having filled, without disturbing the teeth where only the enamel has been whitened. I am not going to go on wedging and putting in fillings where I think cavities are going to form. I would rather wait for immunity to take place.

I did not come here with the expectation of making a speech or of telling you how to stop teeth from decaying; I am only speaking of some of the difficulties we encounter in practice.

With reference to pyorrhea, the statement has been made by no less an authority than Dr. MaWhinney that when the peridental membrane is loosened from the neck of a tooth, it never gets well. I am inclined to think that any tissue that is injured never gets well. I have two or three places in my mouth in which the tissues are very sensitive. The least friction will cause great soreness. I sometimes think that in these cases we will have to quit applying the rubber dam, because the peridental membrane is injured in putting it on. Undoubtedly, the peridental membrane is injured by those

who are not skilled in putting on the rubber dam. I do not think the statement that 80 per cent of the cases of pyorrhea come from injury of the peridental membrane will hold, because I can pick out a lot of cases where no injury was done to the peridental membrane, yet pyorrhea was marked, with half the sockets gone in some cases.

Dr. Truman W. Brophy, of Chicago:

I have been delighted with Dr. Black's paper. I always am with papers written by him. After what Dr. Harned has said, I am in sympathy with the movement to have this scientific work carried on, provided Dr. Black can be furnished with the assistance that he needs. I have the feeling, however, that it is not possible for any man to take up a work like this and carry it on in all its different departments and get it done within a reasonable length of time. Such a work involves studies in chemistry, physiology, and microscopy of all tissues, not only of those immediately concerned, but others. My idea was to suggest that others be brought into this matter in our State and the work carried on by them. The great movement inaugurated a year and a half ago has received an impetus that will carry it on to a finish, but how soon no one can tell. There is one man who devoted his life to the consideration of scientific subjects that have benefited the whole world, not the individuals of our profession simply, but the whole world has been benefited by the life of the late Dr. W. D. Miller, and under the shadow of his name this great work has been taken up, and it remains for us to determine whether we are interested enough in Miller and the magnificent work that he did to assist to the extent of our ability in carrying it on and having men of scientific trend of mind, men like Dr. Black, Dr. Hinkins, Dr. Cook, Dr. Buckley, and many others who have studied these questions from their points of view, carry on the work, and whether or not other young men, who have been trained in the lines of scientific research, cannot be influenced to give their assistance and their genius toward the great subject before us. No man realizes or feels more keenly than I do the work that was done by Miller and Black, and I believe from the depth of my heart that we have an obligation to assist in carrying on this great world work that was started two years ago, and which has been so enthusiastically supported by some of the States of the Union, in order that some means may be supplied and devised for carrying it to completion.

Dr. Black (closing the discussion):

I hope when my paper is read it will be considered carefully, for the men who do so will gain a better idea of my meaning than has been expressed here this evening. I know how difficult it is for men to see with their minds, and we often talk of seeing when we mean understanding, and one of the principal objects in writing this paper has been the hope that you may study caries physically, as it may be seen by the very simple methods I have given you. Those of you who will do that with intelligence and follow it carefully until you begin to understand its method of attack and its spreading will find out that there are ways to do immensely better at the chair. That is why I want you to take hold of it.

Immunity and susceptibility, perhaps, are more difficult to study, but every dentist ought to study the local features of caries for himself, and it is just as simple as A, B, C. If a man studies the habits of caries in the attack, he will know just what to do to prevent the spread of it. That is all there is. The whole story is wrapped up in that.

Now, immunity is a new subject in dentistry, and I am not surprised that it is not well understood, but you all have come to know by this time that there is such a thing as immunity to decay. In 1891, when I was writing a series of articles in which there was brought in the matter of immunity, a friend looked over a paragraph and said, "For heaven's sake, don't do it; they will think you are crazy." But now it is the general thought of the profession, and if I could tell Dr. Crouse the elements entering into his saliva that have caused a return of caries in his mouth, if he ever had any before, if he was not immune from boyhood, I could probably tell all the rest of you in such a way that you could prevent this return of susceptibility to caries in your patients.

What would there be in it? Increased longevity, increased comfort, increased usefulness for the citizens of this country. It is something worth working for. I had a return of decay on the buccal surface of one of my teeth some time ago. I have been practically immune from decay of the teeth from childhood; yet I found a buccal cavity there all at once. There is nothing more of it. That was banished at once. Those things that lie to the heart of what we are trying to do for our patients are what I want you to study. It is within the power of most of you in the component societies to

make these studies together. Bring in your specimens, talk about them, and learn something about them. That is what I want you to do. I am surprised that these things are so difficult to understand. I have talked with Dr. Noyes about them continually, and he has been over and over these things with me. He has studied these specimens; he has photographed them; he knows how easily they are made, and why can't all of you study this subject? It ought not to be any trouble for you to study not only for your own benefit, but for the benefit of the people, because I conceive every man will be benefited because he benefits his constituency. You do not want Dr. Crouse troubled with decay of his teeth. We ought to know how to prevent it. Most of the patients who came to me in years past with relapse of caries of the teeth, after having been long immune, have been persons who have met with some misfortune. While they may think so, they have not taken the same personal care with themselves that they did before. They have not chewed food the same. They have not eaten the same. One man between fifty and sixty years of age when a boy had many cavities. He became immune and so remained for twenty years or more, after which decay ran riot everywhere in his teeth. But he was not taking the same care of himself that he formerly did, and the thing to do for him was, first, to clean the teeth, and get him chewing his food again. He had not been chewing his food properly. But I will not say anything further about that. I only want to bring before you those things which will induce you to study. Let the component societies work together and study these things. Study them physically, and then you can accomplish something, but, as Dr. Noyes has said, it is impossible to understand clearly unless you have a physical basis on which to work.

DISCUSSION OF DR. M'MILLAN'S PAPER, "THE PROPHYLACTIC TREATMENT FOR POVERTY IN OLD AGE."

Dr. E. K. Blair, of Waverly:

It affords me much pleasure to congratulate Dr. McMillan upon the presentation of the very entertaining paper that has just been read to this society.

Every thoughtful member of our profession realizes that one of the most binding obligations that rests upon us individually is the need of making suitable provision for old age, and I deem it no

loss of time for this convention to pause in its deliberations of scientific subjects long enough to discuss briefly this all-important topic.

At the outset permit me to protest that I am in no position to offer advice to the older and more successful members of the profession, along the lines of thought embodied in the Doctor's suggested "Prophylactic Treatment for Poverty in Old Age," and I shall be content with a very limited discussion of the subject, differing but little if any with the author.

It is unmistakably true that of recent years the average dental practitioner has been so over-occupied trying to grasp all of the almost numberless ideas presented for his consideration, has been kept so busy with matters scientific, that things material have often been overlooked, until it is too late. In many instances, until the last day of grace has passed, and he finds himself forced to admit that he has well nigh exhausted his physical capital, without having made proper financial preparation for declining years.

This is a lamentable condition viewed from any standpoint and though some may disagree with the doctor as to what constitutes the best investment or what method of procedure will most surely produce the desired results in the end, we all heartily agree with him as to the great necessity for the adoption of some plan to be incorporated into our life's work, that will ultimately place us upon a moderately firm financial footing. Primarily of all things essential, the one most needful to be learned, is that if we are to be the possessors of both cash and credit later in life, we must not only develop the habit of earning—but must acquire the habit of saving.

Next in importance to this is the formation of the habit of saving at the threshold, at the very beginning of our business careers.

And right here let me impress upon your minds that I like the word "business" as applied in this discussion. If we are to dispel the generally accepted idea that "Dentists as a class are poor business men" it will be done by the cultivation of sound business principles, the adoption of clear-cut methods in our ventures outside of the office.

To sermonize upon the necessity of saving regardless of the amount of income we may enjoy is a hazardous venture, for many are the temptations to use freely the money that comes into our hands.

In youth the opportunities for outgo always equal, if they do

not exceed the income, and the strong arm and willing hand give promise of power to continue indefinitely to supply the needs of the passing hour. Our best asset is slowly but surely exhausted while we live only in the present and drift into the habit of smiling at those who strive to create the first small nucleus, around which subsequent financial hopes may be fostered.

Laying aside a portion of one's income, with well defined plans as to its future use, is not a miserly act that dwarfs a man and makes of him a despisable creature—distressing to his family and objectionable to his neighbors, but it is the act of what should be the clear-headed business man who reasons from cause to effect and accomplishes definite results. If I am to leave with you but one thought in connection with the discussion of this paper let it be—That it is not only manly to observe rigidly a well formulated plan of saving part of your income while life's blood flows freely and warm, but is wise, brave and courageous to do so.

Show me the man who hews to the line, who in sunshine and storm practices self denial, who sacrifices a portion of the glittering pleasures of the passing hour for the more substantial realities of the future and I will point you to one whose old age is to be blessed with all of the comforts any one needs. So much for the Doctor's timely suggestions on the habit of saving and now a word as to what he deems proper investments.

In most localities taxes, loss of time betwixt loans and general expenses unavoidable make 3, 4 and 5 per cent incomes on invested capital practically unprofitable. These low rates are only suited to heavy investors of unlimited capital, who carry long time loans and avoid the tax gatherer.

Insurance policies yield in most instances only temporary indemnity and often lead the insured into a pitiable condition where one's only solace is the thought that when death relieves him of this world's cares, the heirs will realize on his policies and a long struggle against failing strength and threatening poverty will have ended. As an accessory life insurance is indispensable. But to make it one's whole reliance, or permit too much of it to interfere with the effort to save a competency for old age, would be a grievous mistake. Carried judiciously it will prove a boon now and in the hereafter. Generally speaking, the straight life policy in a well managed mutual company seems to me preferable—but much good may come from the

assessment companies. Permit me briefly to cite you an example.

A bank president of my acquaintance asked for and received a $2,000 policy in the Court of Honor. The same day he took out a sufficient number of shares in a building association to mature $2,000.

The payments on the insurance policy and shares in the building association were kept up for 10½ years, at which time he drew $2,000 in cash from the building association and still had his policy in force in the assessment company, which meantime had stood ready to pay his heirs $2,000 had he died at any date subsequent to the issuance of the policy.

When you realize that at the end of the 10½ years this same assessment company, after having promptly met all of its obligations, had considerably more than $1,000,000 in its reserve fund subject to the mortuary call, you will not question the value of the policy—nor will you be surprised when I tell you that this same policy is in force today and a second number of shares sufficient to mature another $2,000.00 in the possession of the same bank president.

The rates of this assessment insurance company are based upon the American table of mortality and the plan of operation is modeled after like companies that have been in existence in England more than 100 years.

You are not forced to "die to beat the game," and that which seems better than all to me, after you have drawn the full amount for which you were insured from the building association you still find yourself in possession of a policy that you can carry indefinitely at the lowest rate consistent with the safety of investment. Think this over and you will as a side line in life insurance like it and profit by trying a little of it.

No doubt some of the Doctor's friends have enjoyed a trip to the west and met the hero of the present hour—*the land agent*. My only comment is, if the soil was fertile, if the climatic condition were favorable, if the rain fall sufficient, time will be the only factor needed and the same land agent will be ready before many years to handle the same property again at a handsome profit to its present owner, no matter where it is located in this rapidly growing nation. That hasty buying at inflated prices of any land is a mistake we all agree, and I hope but few are committing this unpardonable error. My observation has been that a wide awake business man can find in almost any community good paying investments. They may not

be of the "get rich quick" variety, but will be near at hand—can be looked after without expense of travel, almost daily, and by judicious management made to grow in value, as well as pay a good live per cent on the investment. This applies to all classes—city and country alike.

It occurs to me that as many have listened to the Doctor's plea for strict economy—the exercise of caution in business ventures and his urgent appeal to all to provide for old age, the task may be regarded as irksome and the ends to be attained not worth the effort. Only a moment's reflection will serve to dispel such a view. Thirty years' observation of the incomings and outgoings in our profession —with many illustrations pro and con, have led me to hope for myself, my friends and acquaintances as well as those yet to seek honor and emolument in our ranks, that we may be given strength for the day's duties, courage to do the right and that one and all may enjoy an old age, blessed at least in a small way with the bounties so richly deserved. I know of no calling so exacting, no duties more enervating, than the practice of dentistry. After years of unremitting toil how comforting would be the knowledge that a day of relaxation may be enjoyed. The years of strenuous effort may be merged by degrees into a comfortable season of moderate application to the most enjoyable lines of professional duties intermixed with periods of relaxation but sparingly enjoyed in the past.

Let us thank the Doctor for directing our thoughts into pleasant and I trust profitable channels and carry home with us these happy words from the pen of Robert Louis Stevenson: "To be honest, to be kind, to earn a little and to spend a little less, to make upon the whole a family happier for his presence, to renounce when that shall be necessary, and not be embittered, to keep a few friends but these without capitulation, above all, on the same grim conditions to keep friends with himself, here is a task, for all that a man has of fortitude and delicacy."

Dr. Joseph S. Wright, of Olney:

The question under discussion is one of major importance to us dentists. The days of youthfulness in our profession are limited, and the time to learn to save is when the practitioner is young. There are no hard and fast rules that we can lay down to govern us as to how we shall invest our money. The best we can do is simply to establish guide posts. There are many of us who prac-

tice in small towns. Our practices are limited, therefore we have got to practice saving or we will not have anything to invest. Banks are good things, but my advice would be to take out building loan stock, and by placing your money in a building and loan association, you will get some interest on it while accumulating, and in a few years it will amount to enough to make it worth while investing.

The subject of insurance was touched on, but, in my opinion, life insurance is not an investment. It is only a protection. We owe it to those who are dependent on us to protect them, and life insurance is the easiest way to do it.

The Doctor spoke of the promoter. My opinion of the average promoter is that he is a parasite. I would be inclined to pass up ninety-nine promoters out of a hundred.

After we go over the whole catalogue of investments, we go back to real estate as the perfectly safe one. If we invest our money in real estate, we know that there is no one going to run off with it. It will be ours all the time if we keep the taxes paid. I am interested in real estate, but not expensive real estate. I have invested my mite in swamp land, which may seem like a joke. When I bought, it was cheap. Today the drainage district is organized, the preliminaries in the courts have been gone through, and there will be five hundred thousand acres of land, which in three or possibly four years will all be reclaimed, and I am sure that in a few years it will be worth several times the price I paid for it. My experience would lead me to advise you to make a similar purchase where it will increase rapidly in value, and as the essayist said, "when your eye grows dim and your hand has lost its cunning" you will have something to take care of you.

Dr. H. W. McMillan, of Roseville (closing the discussion for the essayist):

Whether the latter part of the paper was an autobiography or the product of a vivid imagination, I do not know, but I will say, those who know my cousin know that he has a cheerful disposition and a good practice, and while he may have made some mistakes in his investments, it is hoped that some of them will make him good money some time..

DISCUSSION ON THE PAPER OF DR. KYNER, "PULP MUMMIFICATION."

Dr. Edmund Noyes, of Chicago:

Mr. President: I am very much gratified about two things.

First, I am gratified, and I have been for several years past, that we have not had any men coming before this society and telling us about having mummified six hundred or ten hundred pulps without having had any failures worth mentioning. That has been very gratifying to me, because it has shown our Illinois men to be conservative when they ought to be, and we all know they are progressive when they ought to be. The other thing that I am gratified about is that we have got one man who has tried this method carefully, in a moderate number of cases, and has learned the facts well enough to come here and tell us something of what really does happen to mummified pulps. I do not believe any of the other men, who have reported no failures, have told us the actual condition of affairs. This paper is so important and the things in it affect our duty and responsibility so closely, that I want to bring together a few points and put them before you in as striking a way as possible. The essayist had something to say about the desirability of this process, and we must all admit Miller stated this very strongly, and its great desirability has been the motive for its rather extensive use. It would be, if it could be made successful, as the essayist suggested, a wonderful relief to the man whose only adequate remuneration for the work he does in pulp canals is the hope of a future reward, and that of a sort that will not benefit his heirs financially. This itself constitutes a great temptation to try this method, and I am proud of the fact, which is conspicuously apparent, that western men have resisted that temptation to a far greater degree than European men or than some of our eastern men. I say this without wishing to be understood as making any broad generalizations to the discredit of the men in the eastern part of our own country.

I want you to notice that Dr. Kyner's experience and his conclusions correspond with the expectations and the judgment of the conservative men of the profession in regard to the probable results of this treatment, and they imply pretty conclusively that the cases of pulp mummifications are just about as successful, and not any more so, if anything perhaps a little less so, than cases of very imperfect and inadequate root fillings, which we all have to revise at frequent intervals, finding pulp canals in which the pulp tissue has not been entirely removed, and the canals one-half or two-thirds filled only, and the remaining space filled with decomposing material. The

resemblance between these cases and the mummified cases is constant and striking.

I do not think anyone in forty or fifty years has disputed the proposition of Professor Webster, of Toronto, and others, that it is impossible to remove all pulp tissue from *all* roots, and the most unpleasant conclusion to be derived from Dr. Kyner's experience, to my mind, is his observation that the action of pulp mummifiers was less complete and less satisfactory in these very fine canals that we cannot do anything else with, than it was in the big ones. You notice that in a few of those he opened he found the pulp in the large lingual root-canal of an upper molar tough and leathery, and in pretty good condition, with no trouble there; but apparently no mummification, and no benefit from the mummifying paste in the fine buccal roots. These are the places where we always get trouble after doing the best we can, if we have any trouble, so that to my apprehension it takes away the motive or desire to use a mummifier to help us out in the places where manipulation is impossible. He brought to our notice the efforts or claims of some men before the time when mummifying was undertaken to any great degree, to preserve the pulps in the canals of teeth, after removing the pulp from the pulp chamber, by covering them and keeping them alive. Such an operation was proposed a long time ago, and you will notice that Söderberg found living pulps in roots which had been subjected to the action of mummifying paste for several years. But there was a practice advocated a good while ago, before the idea of mummification, to apply arsenic to a tooth twenty-four hours only, remove the pulp from the pulp chamber, and treat the pulp in the roots as a freshly exposed pulp and cover it up, with the expectation that it would live. I think Herbst advocated that treatment, but somebody advocated it earlier than he. Only in the rarest instances will such pulps remain alive. We must admit that this will probably happen about as often as it used to happen forty or fifty years ago, when a certain Philadelphia practitioner was in the habit of using arsenic to control the sensitiveness of dentin, and used it almost constantly, until a crop of dead pulps and alveolar abscesses put a stop to the practice. Pulps treated in this way in root canals, after removing the body of the pulp, will live about as often as a pulp lives after applications of arsenic. Undoubtedly some did live where the application of arsenic was brief, and where there was great thickness of dentin between

the arsenic and the pulp, but experience showed that you could not put arsenic into the shallowest cavity for even a very brief time without the overwhelming probability that after a while you will find the pulp dead, without any other apparent reason for its death than having had the arsenic in it. If it were not for that, we would all be using arsenic to obtund sensitive dentin today. It will do it most effectually, as we know, and easily. The deceptiveness of this business is the slowness with which the evil results appear. There is no question but that a mummified pulp may in the majority of cases keep a tooth quiet for one or two or three years, and in many cases for a longer time, and I have an idea that if this process had been brought into use forty years ago, when practically all the amalgams in use were leaky that unless they happened to get into immune mouths, the molars and bicuspids into which they were put were usually lost in less than ten years and substitutions of artificial teeth of some sort were made for them. If mummifying had been done in those days, I think it is highly probable that its success would have been great enough to have established it as a practice, but in these days, when the roots of a tooth can be made to carry a serviceable crown just as long as it can be maintained in health and stability in the jaws, the preservation of a devitalized tooth for five or ten years does not fill the bill. We must take care of these roots of teeth, if it is possible for us to do it, so that they will support crowns until they are lost by other causes than apical inflammation or abscess pyorrhea or by any other cause. And, gentlemen, pulp mummification wont do it. The fact that Söderberg can report so many cases, that Dr. Hilton, of Vermillion, can report 642 cases, with very few failures, and another doctor 350 cases, with a few failures, can only be accounted for in one or two ways; either that they did not wait long enough, or as long as necessary for the complete history of the teeth to be observed, or they lost track of their cases and did not know about them.

One of the most significant things about this paper and about Dr. Kyner's experience is the condition in which he found teeth that had given no trouble. You noticed that he opened eight of these cases in which mummification was resorted to, and which had not made any trouble, and he found but one that was in a satisfactory condition, such condition as that the appearance, when it was opened, would justify the belief it would continue indefinitely without giving

trouble. Four of them were in a bad condition. Three of them only were in fair condition. With this experience, I submit to you that pulp mummification is not a safe practice. And these matters are sufficiently well determined practically for our guidance by this small number of cases which Dr. Kyner has had under his observation, for they will outweigh in value the three or four hundred cases of these other men who did not find any failures but did not open the teeth. A claim of such uniform success discredits the whole character of their observations and conclusions. We know by every avenue of knowledge that is open to us in regard to the subject that no man has mummified three hundred and fifty pulps with failures so few as not to be worth considering, if sufficient time was allowed to elapse and sufficiently close knowledge of all the cases was had.

Dr. Kyner seems to attach considerable importance to the question of the permeability of amalgams and cements and gutta percha to micro-organisms, and he referred to Dr. Webster's experiments. I heard Dr. Webster's paper, but I do not remember sufficiently well what he said to quote him or to speak positively of his conclusions. It seems to me, that clinical experience in this matter is pretty nearly conclusive as to the possibility of preserving root canals from infection by the fillings that we put into pulp chambers and into cavities, and I have had a good deal of clinical observation in regard to this matter. I have seen so many teeth in which the pulps died after filling operations, without secondary decay, and in which, although decomposition had taken place, and there must have been, I suppose, access of micro-organisms from some source, probably through the apex, the entire absence of such infection as would lead to pus formation and abscess, which would inevitably have taken place if there had been access of germs from the mouth, led me to conclude that these cases had not been infected through the mouth, and I cannot remember now a case of this kind in which a sore tooth, coming to me for treatment because of a dead pulp and irritation at the apex caused by the decomposition of it, but protected from infection by the mouth with a perfect filling, has developed an abscess. If there are pus germs in the blood an apical abscess will develop under such circumstances but my observation justifies the belief that infection of the pulp will not occur through or around a gold or amalgam filling that is perfect enough to preserve the tooth from decay. Another aspect of the question is that such teeth are very slow in developing

trouble, and others in which there is evidently leakage around fillings or an access of fluids from the oral cavity to the pulp chambers are invariably rapid in their development, and that is additional corroborative evidence to my mind that in the former cases infection has not taken place from the mouth.

Another aspect of the question relates to some tests that are shown experimentally. For instance, someone extracted a tooth which had an amalgam filling in it, and examined the joints with the microscope. Now, in order to have such an examination of any real value at all, it must be done with a great deal of care. I only need to remind you of what Dr. Black found out when he first began to experiment with amalgams in regard to their shrinkage and expansion, namely, that in all experimental work for testing the shrinkage and expansion, which had been done in ivory or in dentin, the whole value of it was entirely vitiated by the fact that dry dentin or dry ivory will expand and contract more by reason of the changes of moisture in the atmosphere of the ordinary office than any amalgam that was ever made. You will see at once, therefore, that unless these teeth are kept absolutely saturated from the minute they are extracted until the examinations are made, the appearance under the microscope of a crevice around a filling would not have any significance whatever as to whether it leaked in the mouth or not. We are constantly running against things like that, which have to be accurate and have to be known about in order to do scientific experimental work that is of any value.

Dr. Kyner told us about twelve cases that had been under his observation, that had been absolutely successful, so far as any knowledge of trouble was concerned, and he called it the silver lining, but in view of his experience with the cases he did drill open, we must not be too sanguine about those twelve cases.

Dr. Don M. Gallie, of Chicago:

When I was requested to open the discussion upon this paper, I received a note from Dr. Barcus to make my remarks short, and I wish he had selected someone more capable of handling dead ones and resurrected stiffs than myself. I take this opportunity of thanking Dr. Kyner for the careful and splendid investigation he has made of the literature of this subject. He has given us the results of an exhaustive research. He does not apparently believe in pulp mummification. Who does? Who in this audience believes in mummifying

pulps? Yet, I suppose, if we were to know exactly what is going on in the offices of such men as Miller, Witzel, Baum, Söderberg, and the New York dentists, who report no failures or very few, we would be very greatly surprised. But in spite of failures and crops of abscesses, I know there are men who are pinning their faith to mummiline, and are using this stuff because the wish is father to the thought that it will get rid of some of the pulps that through lack of skill they were not able to cope with.

Dr. Kyner spoke about impairment or destruction of eyesight and exhaustion of nerve force in trying to get into these canals. If we have a knowledge of the anatomy of the tooth and understand the location of these root canals, and open into the tooth sufficiently to make the openings of the canals accesible, we can enter such canals with a broach and accomplish what we wish, but if a canal is so small and tortuous that we cannot get a broach in there, I am sure mighty little of the mummifying agent will work its way in. In the cases the essayist investigated he found in the large canals better results; in the small canals poor results. That is the very opposite of the way in which we want to use this agent. Who wants to mummify the lingual root of an upper molar or distal root of a lower molar? And I would take my chances of properly removing and cleaning out small or tortuous canals with sulphuric acid and the reamers, and I would take my chances with chloropercha as a legitimate root filling, even though it does not go down more than two-thirds of the root, rather than to place some medicine on cotton and expect it to penetrate to the apex. The essayist has shown conclusively that he did not find the condition he expected to find. As was said to me this morning, it does not matter what you do, some teeth will remain quiet in spite of all kinds of abuse patients put them to. It does not matter how careless we are, in some cases they fail to give trouble.

In a lengthy discussion on the subject of treatment of pulp canals a few years ago, a distinguished New York dentist said he never had any failures, as he never allowed a broach to enter any pulp canal. The man who never has a failure does not get a chance to see his cases afterwards, and the chances are his cases are seen in the offices of other dentists.

This paper is timely. It serves an excellent purpose, in that it will warn people who are not members of this society, and warn members of the dental profession, against trying stuff that has been

tried by the most careful and scientific men, and found wanting, and if with all the care and precaution these scientific men exercise in their work it has failed, what results can we expect from the careless, sloppy way in which the average man uses it? I believe nine out of ten practitioners use it because it is supposedly an easy way of getting rid of the trouble.

The advocates of this method probably put a little pledget of cotton into the pulp chamber and let it go, and Dr. Cook, Dr. Webster and Dr. Black tell us the cements leak, they do not prevent seeping in of moisture, and there will be infection. So what is the use? We can get into the canals with broaches and with the aid of sulphuric acid and patience, and a knowledge of tooth structure. By using a lubricant or oil that is best fitted for the purpose, I think I can pass a gutta percha point in there; and after that point has been introduced into the canal, with the aid of a little plugger I can force that gutta percha point far nearer to the apex than the penetrating effect of so-called mummiline.

Dr. J. N. Crouse, of Chicago:

I do not think I can add anything of value to this paper or discussion; but there is one line of treatment which was quite common when I first commenced the study of dentistry, and that was to put arsenic in teeth, fill them, and then drill a vent-hole up under the margin of the gum, and I want to say that these were difficult cases to treat. If there is anything for which I have an abomination it is a tooth where the pulp has died, and I have got to drill into it, quiet it, without giving the patient any trouble.

I am not going to trespass on your further time by trying to discuss this excellent paper.

Dr. John P. Buckley, of Chicago:

I really have no business to participate in this discussion, for the reason that I did not hear the paper. Therefore what few remarks I make will be confined entirely to the discussions that I have heard.

I was sorry to hear Dr. Noyes relate his experience of not having seen in his long professional career any abscesses developing about the roots of teeth where there had been excluded all sources of external infection. If Dr. Noyes will read an article which was written about a year ago by Dr. J. G. Adami, professor of pathology in McGill University, Montreal, on *subinfection,* which article ap-

peared in the *Dominion Dental Journal,* and was subsequently copied in *The Dental Digest,* he will learn that it is not only probable but possible for abscesses to so develop.

Occasionally in my own experience I know I have removed pulps from the roots of teeth by various methods, and with all my care in trying to maintain asepsis throughout the entire operation unfortunately sometimes abscesses have developed. That is due to the possibility of infection from the circulation. I realize that this is a dangerous statement to make, because too many dentists are prone to attribute the cause of abscesses to this so-called subinfection, when, as a matter of fact, the abscesses are due largely to carelessness on their part. I am willing to confess for the benefit of my friend, Dr. Gallie, that I am one of those who are still willing to mummify, if you want to so consider it, that remnant of a pulp which he leaves in the fine tortuous root canal, and which he seems so willing to pass up to Mother Nature. Nature is a kind mother, fortunately for dentists. If she were not, I think many by their careless methods of treating and filling root canals would want to go back to the dry goods counter or to the school-room or to the farm from whence they came. Instead of leaving that remnant of tissue in the canal, which canal is so fine and tortuous you can scarcely enter it with a stiff, smooth broach, there is a place for you to use drugs and medicines. The drug or medicine that you use should be employed with some intelligence. You should know the constituents or ingredients of the remedy that you use or apply there. You should not only know them, but you should know why you expect that drug or remedy to do the thing that you expected to do in that particular condition. Instead of trying to put in a gutta percha point which is fine or finer than a hair, which you know or ought to know, you cannot do, in that particular case I would rather depend upon two drugs, thymol and formaldehyd. I would not use any body's celebrated pulp mummifying paste, but you can mix with zinc oxid or precipitated calcium phosphate, about two per cent of thymol, and use that as a powder, and use any remedy that contains formaldehyd as your liquid, making a stiff paste, placing it over the fine tortuous canals, working it down into the canals with a stiff smooth broach as best you can, and you can fill the cavity and give the patient hope that the tooth will not abscess. There is a place to use a drug or remedy, and I do not care whether you consider it the mummification of the remaining

pulp or not. I do not, for the simple reason so many are prone to mummify those pulps they can remove; if they are conscientious in their efforts to remove the pulp, they will open the canals and expose them in the manner indicated by Dr. Gallie.

There was a time when I felt like Dr. Crouse, when I opened into a tooth that was giving trouble, and as I was drilling through to the pulp chamber I used to hope that the tooth was alive. Now, as I drill into these teeth that are giving trouble, I hope the pulps are dead, because I can treat dead pulps with less pain to the patient, and with as much or more satisfaction to myself than I can remove a live pulp. The treatment of teeth, the canals of which are filled with putrescent material, is not as complicated a method of procedure as we had to contend with a few years ago.

Dr. Edmund Noyes, of Chicago:

I want to thank Dr. Buckley for reminding me that the statement I made was too broad. I did not mean that teeth with perfect fillings in them never developed abscesses. In fact, I said something about the possibility of infection taking place through the blood streams, and it would be certain to take place if there were a condition of the circulation in which pus germs were in the blood. I had in mind those teeth which come to us with trouble which have not yet developed abscesses but show indications that the pulps are dead. And in those cases if I feel sure there has been no infection from the mouth and my previous filling operation is a perfect one, I feel very confident that they can be treated without the formation of abscesses, and there are very few exceptions to that experience.

Dr. A. D. Kyner (closing):

The reading of this too lengthy paper consumed more of your time than any one member is really entitled to and I must be brief in closing. Many eminent men of the profession are suffering from arsenic-phobia; to them, the absorbed arsenic in the necrotic pulp tissue is a real menace. Other men equally as prominent are confident that arsenic is a safe drug to use. It seems that all have been content to let the investigations of Flagg in 1877, Arkovy 1884, and Miller 1894, suffice, and until some one gives us something definite, I suppose the question will still remain open. If the paper contained anything of real value, it is found in the fact of the penetration of amalgam, cement and gutta percha fillings by micro-organisms from the oral cavity as demonstrated by Drs. A. E. Webster (February,

1900, *Dominion Dental Journal*) and Geo. Cook (February, 1903, *American Dental Journal*), and it was this microbe invasion of the mummified tissue that explained to me the conclusion arrived at. And until some one proves that these men are wrong, I will never believe that this method can be a success. Dr. Buckley has recommended sealing Paraform in teeth to take care of pulp remnants in the apical region, impossible of removal. One object of the paper was to condemn such a procedure. The following is offered as attaining the same results with less risk. Pulp in the distal roots of lower and lingual roots of upper molars can usually be removed and the canals reasonably well filled. By the use of finger drills and sulphuric acid the minute canals in the mesial roots of lower and buccal roots of upper molars are opened as far as possible, acid in the canals neutralized and roots dried, dry cotton wicks are packed in the canals, over these a wad of cotton saturated with a 5 or 10 per cent solution of Formalin is placed to remain three or four days. The cotton wicks will draw the Formalin to the point where you want its effect, it will do its work and disappear and the tissues will not be subjected to a prolonged effect of the gas with the detrimental results as detailed in the paper. The cotton wicks are removed and replaced with dry asbestos fibre (sterilized by passing through alcohol or gas flame) and over these a sterilized asbestos disk soaked with a saturated solution of thymol in Ol. Cinnamon, covering same with tin foil and then cement, completing filling with any material you prefer. These drugs were selected because it was believed they represented a high degree of antiseptic potency with a minimum degree of irritating properties in this combination, and these outweighed the objection of discoloration, caused by the Ol. Cinnamon. In cases where it is impossible to locate canals, the medicated asbestos disk is placed in the floor of the pulp chamber with the hope that the obliterated canal will offer but little media for infection. I wish to express my appreciation of the honor conferred upon me in being permitted to appear before you and thank you for your courteous attention.

FOREIGN DENTAL COLLEGES

Dental School of Lyons, Lyons, France.

Norwegian Dental College, Christiania, Norway.

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Devoted to the Advancement of Dental Science.

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EDITORIAL.

THE MORAL OBLIGATION OF TEACHERS IN OUR COLLEGES.

When a man accepts a position as instructor in a dental college there is something involved aside from his ability as a teacher of technical or scientific subjects. It so frequently happens that the moral obligation of a teacher to his students is almost entirely ignored, and men are sometimes selected to teach students merely because of their superior technical skill and their ability to impart the necessary scientific knowledge to others.

But there is another side to this question which should be carefully considered. When it is remembered that the young men who come under the influence of a teacher are for the most part of an age to be easily impressed by the contact and example of those older than themselves, and particularly by those to whom they are supposed to look for daily instruction and guidance, it will readily be seen how far-reaching is any influence exerted, whether good or bad, by those in charge of the teaching interests of any institution.

Many of the young men coming to our colleges are fresh from a salutary home influence, where they have been subjected to very little temptation and have never seriously been put to the test. In college they encounter a new environment, meet a new set of faces, and are to a certain degree freed from the restraint of parental supervision and control. What is more natural than for them to turn in a measure to their teachers as being the ones most likely fitted to partially take the place of the relations left behind? It is second nature for a young man to look to some one older than he is for guidance during those impressionable years, and though he may not

even be aware of it himself, yet the example of his elders is a potent factor in the development of his character.

How important it is then for professors and instructors to have a just recognition of their obligation in this respect and to so deport themselves that their influence upon the students will always be in the right direction.

Many teachers think too lightly of this and some of them are grossly misled in their attitude toward the question. They appear to think that so long as their conduct is above reproach during the hours they spend at the college that their private life outside of this has no relation to the student body at all. There never was a more fatal mistake. A man's private life is sooner or later indelibly stamped on his countenance. It becomes an integral part of his nature and enters every fiber of his being. It pervades the very atmosphere about him and he advertises it as plainly as if he went about placarded.

Particularly is this true when he comes in contact with students. The instincts of a class of students regarding the moral status of an instructor are unerringly true, and they do not need to be told in so many words what manner of man he is. If he is a good man he does not need to preach to them about it, and unless he is good no amount of preaching will avail. The boys know, and be it said to their credit that they look up to a good man, and in their hearts they despise a bad one. But a bad man, even though he tries to hide his badness from the students, is calculated to do serious injury to the moral qualities of some of the weaker members of the class, and in view of the importance of developing the highest moral sense among all our students it is imperative to select for teachers those men who have an exalted conception of their obligation in this direction.

THE EDITOR'S DESK.

A REMINISCENCE.

When I began the study of dentistry it was not all roses and velvet and sugar plums and a fair wind to sail by. If it had been I fear I should have been a farther remove from a man than I am. But some of the hardships we experienced were not altogether salu-

tary. The theory of ethics was a remote and vague entity which we sometimes heard of, but did not understand. Professional etiquette in the neighborhood reached its highest essence when it permitted one dentist to beg, buy, borrow or steal a sheet of rubber from another. Oftener they "never spoke as they passed by." In the country districts in those days it was rare that a dentist spent all his time in one town. Usually he made several small towns on weekly or monthly appointments, and it might almost truly be said that he carried his office in his buggy.

In many respects it was pioneer work, but it did great good in carrying dental service to many people who would not otherwise have gone out after it. Gold filling was not often demanded or permitted by the patients. It was mostly amalgam, cement, gutta percha, extracting—ample practice in this for a boy studying dentistry—and rubber plates. What a line of work to bring up a student on! The technics of those days consisted in taking a worn-out excavator and going out in the laboratory and preparing cavities in extracted teeth. I remember once attempting to insert a large contour filling of tin foil in an extracted molar, and my conclusion was that the foil filling was a difficult procedure. I decided that the accounts I read in books of the insertion of extensive gold fillings in these molars were mythical recitals of impossible achievements intended to tantalize boys who attempted such operations, and I have wondered since if some of my own writings have not impressed boys in the same way.

I was brought up to work for the most part without a dental engine, and my greatest trouble then, as it has been ever since, was to keep my excavators and chisels sufficiently sharp. But the work was not by any means all drudgery, and if there were some uphill experiences there were plenty of down grades, and life flowed along less strenuously than it does today.

As soon as I was considered proficient I was given some of the "appointments" to meet each month, which necessitated a lot of driving in the open air and gave me an experience which has been valuable ever since.

I can recall many of the amusing incidents which happened in practice in those days, one of which was vividly brought to mind during the past summer while on my vacation. I was driving along a country road near my old home and looking over in a field I saw an abandoned log house, which thirty years ago was the residence

of a certain Irish woman, whose name for present purposes must be Mrs. Hooligan. Mrs. Hooligan was the proud possessor of a full upper set of artificial teeth on rubber, and during one of my trips to meet my appointments someone told me Mrs. Hooligan wanted to see me. So I drove into her place and found her on her knees, ostensibly scrubbing a floor which was the color of native Mother Earth, only a bit darker. The water in her scrub-pail was several shades deeper than the floor; in fact, it would have made a tolerable quality of writing fluid except for being a trifle thick. "So you're the dintist, are ye?" she affably began, when I had told her who had sent me. "Well, now, I've a sit o' tathe wit a hole in 'em, an' I'd like ye to fix em up a bit." She was still on her knees by the pail, and as she spoke she dextrously whipped the teeth out of her mouth to show me. Evidently they had not been out for some time, and to relieve them of some of their surplus accumulations she rinsed them off in the scrub water in the pail. Then to make them still more presentable to hand to the "dintist man" she wiped them off on the scrub cloth, and pointed with apparent pride to the hole in the roof of the plate. Somehow a spirit of boyish deviltry took hold of me and I was determined to see if I could induce her to put the plate back in her mouth. "Are you sure that they fit all right, Mrs. Hooligan?" I asked. "Before I repair them I should like to be certain they——" "Fit!" said she, "sure an' they fit foine. Just luk at that!" And she popped the plate in her mouth and lifted her upper lip into a grin so I could see how "beauchiful" they were.

Poor Mrs. Hooligan has long since gone to her final rest, but I never pass that old log house without renewing my youth over that episode.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Care in Preparing Wax Models for Cast Inlays.—A proposition that has worried me is the polishing of cervical margins, in interproximal spaces, of gold inlays without injury to the gum tis-

suc. The inlays cut much harder than gold foil fillings. We can burnish gold foil fillings and polish them smooth; but if we do not get the gingival margin of our wax model properly trimmed it is difficult to polish the inlay after it is set.—Edward H. Hickman, Arcola, Ill.

Retention of Inlays:—In a general way, whatever form is given to a good cavity for the retention of a foil filling will, when modified to the inlay plan, be good inlay cavity preparation. The need is plain for a mechanical locking of the inlay into its cavity against dislodgement from any direction but the one from which it is inserted, and the more such dislodgment is provided against the better will the cavity preparation be. Thus the truth has long been established that successful inlays are those placing least amount of dependence for their retention upon the cement.—J. F. F. Waltz, Decatur, Ill.

Testing Cotton After Removal from Infected Root Canals:—The method employed is of the greatest simplicity. The cotton on being withdrawn from the canal is carefully protected from contact with the saliva, placed on a clean slab and a quantity of hydrogen dioxid, 12 volume, poured upon it. The reaction will be immediate or slow according to the degree of infection remaining in the roots. It may be remarked that infection can be detected even when strong medicaments are used, showing the necessity of their repetition. In case of multi-rooted teeth one root alone may remain infected but its detection is easy by the method described.—H. J. Harwood, Lyons, France.

Selection of Artificial Teeth:—The selection of artificial teeth is not a small matter. I have found the only way to get what we desired for best effect, in many cases, is to select several sets in different molds as well as different shades. Set them up in wax and try them in the mouth. It is often necessary to tear them down and try several different sets before we get just what is in harmony with the individual, in shape and especially in color. Often when we get a set of teeth we have everything we want perhaps in shape, but not in color, and the variation in color can be gotten by putting some of the teeth in the furnace and refiring them, which often intensifies the color which is there, giving us the variation we desire.—P. A. Pyper, Pontiac, Ill.

One Phase of the Cement Problem:—Cement should never be used for any purpose on a mucky or damp day, or in any damp climate. I have made many tests and have found that it is hard to pull anything apart after it has been cemented on a dry day, whereas if it is cemented on a damp day it will easily come apart, even when the cement has been mixed scientifically. There are no two men who will mix cement alike. I have had four different men mix cements, put them in experimental tubes, and no two got the same results with any cement on the market. If you have an inlay you cannot stick well on a dry day, do not think of putting it in during damp weather, because it will surely fail. I believe that a great many failures in inlays are due to that fact.—J. N. Crouse, Chicago.

Enamel:—We all know that the dentinal fibers are prolongations of the odontoblasts of the pulp, and that they are factors in the nutrition of the tissue through which they pass. Therefore some change must take place in the enamel after death of the pulp. The brittleness of a pulpless tooth can easily be explained, for when the organic structures lose their vitality, the prisms are not held together so firmly. I would like to know if it has not been frequently noticed that enamel may be sensitive. This is sometimes the case when grinding a sound tooth for a shell crown. We rarely notice any sensation in the enamel during the preparation of a cavity for filling, for the decay usually so undermines the enamel edges that the prisms are entirely cut off from their connection with the dentin.—C. Francis Bödecker, Berlin, Germany.

Staining Artificial Teeth:—The mineral stains and oil colors are absolutely indispensable to the man who is striving for the highest degree of art in his work. And the mastery of their use gives one a feeling of independence that is satisfying. There are no cases of unusual coloring or shading that cannot be matched almost perfectly, and my experience justifies the belief that almost all of the porcelain teeth placed in the mouth will look more natural if a film of these stains be spread over their labial or baccal surfaces.

With a small camel's hair brush moisten the surface of the tooth and then dip the brush into the previously mixed stain and with a stroke of the brush across the surface of the tooth the stain

will be evenly spread where desired. The entire surface of the tooth should be gone over to obtain the best results, and care must be taken to avoid blotches by allowing the stain to accumulate in patches.

The firing of these stains may be accomplished with any kind of furnace at a degree of heat running about 1,500 degrees.—F. E. Roach, Chicago.

Selecting Shades of Artificial Teeth:—We are striving to replace the natural organs, when necessary, with artificial ones which will match so closely that the difference will not be seen, and this can only be done by variations of shades in the selection of teeth. If you are going to insert a lateral make it a little darker than the central, but have a greater difference between the lateral and cuspid. The cuspid is the darkest tooth. The lower cuspids are of lighter shade than the upper cuspids. The lower centrals are of darker shade than the upper centrals. The lower centrals and upper laterals are nearly of the same shade. The lower laterals are darker than the upper laterals, and the first bicuspids are lighter than the cuspids. Shade both ways from the cuspids to the centrals and second molars. No one ought to think of putting in teeth of one shade as substitutes for teeth that vary like that. I presume the reason this phase of the subject has not been more generally accepted is because of the impossibility of matching teeth from the different sets. I have done it myself in many cases with satisfactory results, but never with as much satisfaction as it may be done with the use of mineral stains.—E. A. Royce, Chicago.

Mal-Occusion Relative to Deciduous Teeth:—It seems that many cases of mal-occlusion commence with the deciduous teeth, and can only become worse if treatment is delayed. Expansion should be commenced early in order to stimulate growth at the natural time, but movement of the temporary teeth should take place at an age when that movement will most effectively react on the approaching permanent crowns, and not at an age when the power of the temporary teeth to effect the growth of the arch, is getting feeble.

In dealing with children's mouths I have preferred to use the Babcock split plate for expansion rather than fixed appliances, as this plate can perform the function of a biting plate as well, often

a matter of vital importance, as must be seen from the large percentage of cases with marked overbite. Also I believe that one gets a certain amount of transmitted pressure on the sides of the palate and the lower alveolar plates, that cannot be obtained by the use of the wire arch and the movement of the teeth only. The diseases of children are very serious while they last, and the risks of having fixed appliances in the mouth during the exanthematous fevers must not be forgotten.—G. Northcroft, London, England.

A Cheap Camera:—The "Pin Hole Camera." I was thinking of my boyhood days when the idea struck me to try it. I pushed a thin disk of German silver behind the shutter, having poked out the lens to get at it. I made the hole, and the tinest one, with a very sharp pointed round excavator, rotating it between my fingers until barely penetrated. The hole should be round and the smallest it is possible to make. It takes a longer exposure but you get sharper pictures. Expose for from six minutes in the sun at ten, eleven o'clock or mid-day, to half an hour to an hour and a half along about three-thirty or four o'clock. It is in focus at all distances. An object that will go on the film, will be reproduced at its exact size if just as far away from the pin hole as the film is from the pin hole. Closer to the pin hole than the film and your photograph will be larger than the actual size, and farther from the pin hole than from the film, the photograph will show the object as smaller than actual size. This little discovery that is "older than the hills" will be of value to any dentist who runs on to some little thing that he would like to give to the profession but might hesitate on account of the bother and expense of procuring a photograph. All he needs is a $2.00 camera.—W. A. Heckard, New York, N. Y.

MEMORANDA.

G. V. BLACK DENTAL CLUB.

The members of the G. V. Black Dental Club (Inc.) will hold their mid-winter clinic in St. Paul, Minn., February 24 and 25, 1910. For further particulars address R. B. Wilson, Secretary, 400-10 Am. Nat. Bank Bldg., St. Paul, Minn.

OHIO STATE DENTAL BOARD.

The Ohio State Dental Board will hold its regular fall meeting in Columbus on October 19-22, 1909, for the examination of applicants for license. All applications, with the fee of $25.00, should be in the hands of the secretary not later than October 9. For further information and blank applications address F. R. Chapman, Secretary, 205 Schultz Bldg., Columbus, Ohio.

NORTHERN ILLINOIS DENTAL SOCIETY.

The twenty-second annual meeting of the N. I. D. S. will be held at Elgin, October 20-21, 1909. Our regular most excellent program is assured Banquet Wednesday evening, which is free to all members whose dues are paid, is an innovation from which great pleasure is anticipated. Come and bring a new member with you. Mark the date on your appointment book.

F. H. BOWERS, Sec'y.

OHIO STATE DENTAL SOCIETY.

The forty-fourth annual meeting of the Ohio State Dental Society will meet in the Great Southern hotel assembly rooms, Columbus, on December 7, 8 and 9, 1909. The program of papers and clinics will be second to none of those of the past. Mark these dates off your appointment book now and come prepared to stay through the entire meeting. F. R. CHAPMAN, Secretary, 305 Schultz Bldg., Columbus, Ohio.

EXECUTIVE COUNCIL N. D. A.

A meeting of the executive council of the National Dental Association will be held at the Hotel Hollanden, Cleveland, Ohio, at 10 o'clock a. m. Saturday, November 6, 1909, for the appointment of officers of sections, and the standing committees and the consideration of such other matters as may properly come before it. Members of the association having any business to present are requested to attend this meeting. CHARLES S. BUTLER, Secretary, Buffalo, N. Y.

MASSACHUSETTS DENTAL SOCIETY.

Officers, 1909-1910—President, Cornelius S. Hurlbut, Springfield; first vice-president, Eugene H. Smith, Boston; second vice-president, Carl Lindstrom, Boston; secretary, C. W. Rodgers, Dorchester; assistant secretary, Coleman Tousey, Boston; treasurer, Joseph T. Paul, Boston; editor, C. Edson Abbott, Franklin. Dental journal, Journal of the Allied Societies, Massachusetts editor, C. Edson Abbott, D. D. S., Franklin, Mass. Place of meeting in June, 1910, Springfield, Mass. C. EDSON ABBOTT, D. D. S.

NEW YORK ALUMNI ASSOCIATION XI PSI PHI FRATERNITY.

The annual fall meeting of the New York Alumni Association of the Xi Psi Phi Fraternity will be held at the Hotel Astor, Times Square, New York City, on Wednesday evening, October 13, 1909. The meeting will be called to order promptly at 8 p. m. As the officers for the ensuing year are to be elected and several important changes to be made in the constitution, it is urgently requested that every alumnus of the Xi Psi Phi Fraternity residing in or about New York City be present. Further particulars can be obtained from J. Norbert Gelson, 673 Vanderbilt avenue, Brooklyn, N. Y.

PATENTS OF INTEREST TO DENTISTS, RECENTLY GRANTED.

928,542. Dental brush holder, R. M. Ryan, New York, N. Y.
930,082. Dental engine, O. H. and A. F. Pieper, Rochester, N. Y.
930,717. Dental tooth-regulating appliance, E. H. Angle, Larchmont, N. Y.
931,044. Cutter for toothpick machines, H. A. Dorr, Providence, R. I.
931,143. Rotary toothbrush, C. L. Phillips, Rondout, N. Y.
40,231. Design, barbers' chair, C. Pfanschmidt, Chicago, Ill.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, Solicitor of Patents, Fendall building, Washington, D. C.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The annual meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the State of Illinois will be held in Chicago at the dental department of the University of Illinois, corner Honore and Harrison streets, beginning Monday, November 8, 1909, at 9 a. m. The following preliminary qualifications shall be required of candidates to entitle them to examination by this board for a license to practice dentistry in the State of Illinois: Graduates of a reputable dental or medical school or college, or dental department of a reputable university, who enter the school or college as freshmen on or after the school year of 1906-7, must have a minimum preliminary education of not less than graduation from an accredited high school or a certificate from the State Superintendent of Public Instruction, equivalent officer or deputy, acting within his proper or legal jurisdiction, showing that the applicant had an education equal to that obtained in an accredited high school; which certificate shall be accepted in lieu of a high school diploma. Candidates will be furnished with proper blanks and such other information as is necessary on application to the secretary. All applications must be filed with the secretary five (5) days prior to date of examination. The examination fee is twenty dollars ($20) with an additional fee of five dollars ($5) for a license. Address all communications to T. A. Broadbent, Secretary, 705 Venetian building.

COLLEGE COMMENCEMENTS.

NEW YORK COLLEGE OF DENTAL AND ORAL SURGERY.

Graduates—W. R. Auspitz, W. E. Burns, L. H. Carr, F. L. Chambers, L. Cigal, G. E. Curtis, C. A. DeCamp, G. Eliowicz, D. H. Goldman, A. I. Gordon, M. W. Grosberg, R. Hall, I. K. Herman, R. Horwitt, J. A. Klein, J. J. Koob. B. Kriesberg, I. Kunstler, L. Lerner, A. W. Lewis, B. Lunenfeld, E. M. McKeever, M. F. McPhillips, A. M. Pierson, J. Rosenblume, M. F. Rothenberg, H. N. Schektman, E. Schneider, D. Schoen, A. L. Singer, G. G. Starke, F. A. Sterling, F. E. Williams, G. H. Wright, R. E. Yoder.

NORTHWESTERN UNIVERSITY DENTAL SCHOOL.

Graduates—A. E. Bergquist, O. T. Bergum, A. Bernhard, J. Bernstein, C. L. Bertram, G. M. Blair, G. F. Blaylock, E. H. Botkin, C. R. Brown, T. P. Bullard, W. P. Burke, L. A. Cates, E. A. Clevidence, C. J. Dahle, A. V. Dallow, W. T. Dawson, L. H. DeKrauze, F. G. Desmond, E. O. Dietrich, O. Dietz, J. F. Dillon, J. K. Donaldson, M. D. Donovan, H. L. Eggers, E. S. Ekstrom, J. F. Fietsch, P. D. Fridd, C. R. Hollister, R. H. Hudson, E. C. T. Huttmann, L. L. Innis, G. B. Jensen, J. M. Jesson, S. P. Johnson, W. B. Johnson, W. F. Kallaus, M. M. Kerr, M. E. King, T. S. Kral, A. C. Laing, S. D. C. Lee, E. V. Lindberg, J. E. Long, A. G. Loomis, J. E. Lucia, C. D. McBean, E. A. McDonald, E. McGovern, C. W. McKenna, A. A. Marquess, A. R. Messick, J. H. Miller, A. R. Mitchell, N. L. Mitchell, W. A. Moore, C. V. Nickerson, L. L. Noyes, T. G. O'Hara, S. H. Ohtness, C. M. Olson, R. E. Penney, L. G. Phillips, E. R. Pihlfeldt, R. W. Reed, W. E. Reid, E. G. Richards, J. H. Ross, O. Sandstrom, M. D. Schwartz, C. Sharp, W. E. Snow, L. C. Snowden, W. J. Stiehl, G. G. Stirling, R. L. Stout, C. S. Toay, L. L. Vosper, H. Walder, L. R. Walston, C. H. Welter, N. W. White, P. G. White, J. O. Wilder, L. C. Winseler.

OBITUARY.

DR. FREDERICK SHIVELY WHITSLAR.

DIED: After an illness of three days, Dr. F. S. Whitslar of Youngstown, Ohio, on August 7, 1909, in the 85th year of his age.

Dr. Whitslar was well known throughout the middle west as a progressive, painstaking and able practitioner. He had retired from dentistry about five years ago, having been in practice in Youngstown for fifty years. His career was in every way a most honorable one, and he has left the legacy of a well-rounded, useful life, and has set an example for all others to follow in his devotion to the highest ideals of a magnificent manhood. He began professional life without the aid of colleges and his first instruction was from Harris' "Principles and Practice." Then he attended dental meetings and became close friends with such men as Taft, Watt, Rehwinkle, Atkinson and many others of the old school. He was always a healthy optimist. The last years of his life were devoted mostly to preaching for poor churches and doing philanthropic work.

He is survived by three children, Dr. W. H. Whitslar, of Cleveland; Grant S. Whitslar, of Youngstown, and Mrs. Alice W. Carr, to all of whom the DENTAL REVIEW extends its sincere sympathy.

DEATH OF DR. J. W. WASSALL AND DR. E. E. DAVIS.

Just as we go to press we receive the sad intelligence that Dr. Joseph W. Wassall, one of Chicago's leading practitioners, was accidentally drowned on Saturday night, September 18th. He was taking a week-end trip by water to Milwaukee with a party of friends in a schooner yacht and was just about to retire when, in passing to the companion-way, a heavy wave struck the boat and tossed him overboard. The boat at once put about and he was discovered by the searchlight, but before he could be reached he sank and never came up. He was burdened by a heavy sweater and overcoat which probably accounted for his sudden disappearance.

His death has cast a gloom over the entire profession of Chicago, and his many friends in different parts of the world will be saddened by the news.

Dr. Wassall has been for many years one of the most successful practitioners in America and his untimely death will leave a void in our ranks which will not soon be filled.

Dr. Ernest E. Davis, of Chicago, only a week or so before Dr. Wassall's death, was killed by a train near his home at Elmhurst. He was driving across a railway track when a fast train, overdue and running to make up time, dashed upon him and injured him so that he died in a few hours. Dr. Davis was a graduate of the Chicago College of Dental Surgery, class of '87. He was a brother of Dr. L. L. Davis and was universally respected and beloved wherever he was known.

The sudden taking away of these two men has caused a profound shock to the profession of this vicinity. Lack of time forbids a more extended notice but THE DENTAL REVIEW wishes to pay this tribute to the memory of two such worthy members of the profession.

BOOK REVIEWS

DENTAL MATERIA MEDICA, THERAPEUTICS AND PRESCRIPTION WRITING. By Eli H. Long, M. D., Professor of Materia Medica and Therapeutics, Medical and Dental Departments, University of Buffalo, New York. New (3d) edition, thoroughly revised. Octavo, 311 pages, with six engravings and eighteen colored plates. Cloth, $2.75, net. Lea & Febiger, Philadelphia and New York, 1909.

Professor Long placed the dental profession under deep obligation to him when he brought out the first edition of this work and this obligation is increased by the appearance of the present volume. The book is in a class by itself and should be in the library of every progressive dentist.

THE PRINCIPLES OF BACTERIOLOGY. A practical Manual for Students and Physicians. By A. C. Abbott, M. D., Professor of Hygiene, University of Pennsylvania. New (8th) edition, thoroughly revised. 12mo, 631 pages with 100 illustrations, 26 in colors. Cloth, $2.75, net. Lea & Febiger, Philadelphia and New York, 1909.

Abbott's Bacteriology has practically become standard and this edition will not detract from its reputation. It is in every way worthy of the distinguished author and of the publishing house which brings it out.

A MANUAL OF CHEMISTRY. A Guide to Lectures and Laboratory Work for Beginners in Chemistry. A Textbook specially adapted for Students of Medicine, Pharmacy and Dentistry. By W. Simon, Ph. D., M. D., Professor of Chemistry in the College of Physicians and Surgeons, Baltimore, and in the Baltimore College of Dental Surgery; Emeritus Professor in the Maryland College of Pharmacy, and Daniel Base, Ph. D., Professor of Chemistry in the Maryland College of Pharmacy. New (9th) edition, enlarged and thoroughly revised. Octavo, 716 pages with 78 engravings and nine colored plates, illustrating 64 of the most important chemical tests. Cloth, $3.00, net. Lea & Febiger, Philadelphia and New York, 1909.

The test of excellence in any book of a technical nature is the demand for new editions and when we recall the fact that this book has gone through eight editions it is a recommendation for the book which cannot be ignored. The volume is amply illustrated, in many cases by colored plates, and the entire work is well worth the price charged for it by the publishers.

THE

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PORCELAIN INLAYS.*
(Their Indications and Technique.)

BY LESTER F. BRYANT, D. D. S., CHICAGO.

Only a few years ago a large part of the subject matter in our dental literature was given to porcelain inlays.

There seemed to be a wave of confidence in the porcelain filling sweeping over the profession. In weighing up the requirements for the ideal all-around filling material, it indeed looked as if it had been found in porcelain. But after a few years' observation it was found that this material had been over-rated and would not stand the stress of mastication.

In looking over our literature of today, we find the subject matter devoted to porcelain very much diminished, and about one-third of it far from flattering. This shows us that the pendulum has swung back so that the profession now is as skeptical of porcelain as it was enthusiastic about it a few years past; and why shouldn't a man be skeptical when he sees the dismal failures that come into our offices every day? Yet we must not be too prone to blame the material for our failures. By analyzing all failures encountered, I think it will be found that about nine-tenths of them can be traced to lack of judgment or ability of the operator.

When one individual will make an utter failure of a certain case with porcelain, another man would get a beautiful result of the same case. I know of no branch of our work that requires greater attention to the minutest detail of every step than the construction of a porcelain filling.

Sometimes the weather is on our nerves or we do not feel just

*Read before the Illinois State Dental Society, May, 1909.

up to the mark, and we attempt to make an inlay. When it is finished and we try it in the cavity, it does not seem to come up to our standard of perfection. If we would lay it aside and try it another day, we would have one less failure for some ultra-conservative to lament over.

It will be the mission of this paper to add its mite to the ultimate systemization for the indications and technique of making porcelain fillings, as I believe no one can seriously deny them to be good rational practice when indicated. It has been said that the indications for porcelain fillings were limited only by the ability of the operator. This may be slightly overdrawn, but I think that the indications for any material must be measured by our ability to handle it and our knowledge of its limitations.

The field for porcelain inlays may be said to include all cavities in the twelve anterior teeth that show from the labial aspect. This at first thought may seem a sweeping statement, so we will have to consider some of the fillings for these locations. The first question would be—how are we going to handle contour restorations that involve the angle where the bite is close and hard? Here Dr. Taggart comes to our rescue with his casting machine. The method will be taken up in detail later on.

Because of aesthetics we cannot consider gold, so the field is open for either porcelain or silicate cement, and where the silicate cement can be used, porcelain is indicated.

The writer believes that there is no comparison of their relative value as a conserver of tooth structure.

The preparation of cavities for porcelain I shall only treat in a general way. I can show this in my clinic better than I can describe it in writing.

In general, the preparation of many cavities for this work necessitates the sacrifice of some sound tooth substance in order to secure sufficient retentive form to prevent frail margins and for color effects. Cavities must be so formed that when the filling is inserted, it will go to an absolute seat and nowhere else. If the cemented filling does not go to its absolute seat, the margins may be four or five one-thousandths of an inch instead of one. The retentive form must be such that there will be enough mechanical retention, as cement alone will not be sufficient. Parallel walls should be avoided when possible. The walls should diverge slightly toward the margins. All frail

enamel must be removed. All margins must be well defined and polished.

Under the head of the formation of matrices, we will only consider platinum, as we are only going to take up high-fusing porcelain. There are two methods of forming matrices, namely—burnishing direct into the cavity and swedging into a cement or amalgam model. Each method has its advantages, so I shall briefly describe both and the indications for each.

The method of burnishing direct into the cavity seems to be the more popular and I think the better course, as a sharper matrix can be obtained. However, in labial or buccal cavities that extend under the gum, the impression method is the more accurate. I will describe the direct method first. Of course, the first requisite is sufficient space. This may be acquired in different ways. Personally, I like the slow wedging with cotton or waxed tape.

We will assume that the cavity be a mesial or distal in an upper anterior tooth. Cut a piece of platinum about one-eighth of an inch wider than the cavity is from gingival to the cutting edge and long enough so that there will be considerable surplus labially and lingually. Form the platinum around the tooth, working it carefully under the free margins of the gum, without attempting to burnish into the cavity. Next, take a piece of twilled tape, about as wide as the tooth is long, and pass it around the tooth, holding the ends with the left hand. Now, with a ball burnisher as large as possible, burnish over the tape, working the platinum into the cavity. It will be found that by working slowly and diminishing the size of the burnishers, the platinum will be stretched over the margins and worked well into the cavity. The matrix is now removed, annealed, and replaced in the cavity. This time a strip of tracing cloth is stretched over the platinum and moistened slightly to relieve the harshness and liberate the starch which acts as a lubricant for the burnisher.

In burnishing over the tracing cloth, considerable pressure should be exerted to work out any wrinkles. The margins may be gone over without the tape or cloth with special inlay burnishers. However, if this is necessary, the matrix must be removed, annealed, and reburnished with the cloth to remove the spring.

The impression method is used mostly for buccal and labial cavities. The first step is to take a modeling compound impression of the cavity. This is set down in plaster, and cement pressed carefully on

the impression. This will give a very sharp model into which the platinum can be burnished and swedged.

We now come to the case where the bite is close and hard.

First burnish the matrix in the ordinary way; then with a piece of casting wax build up the lingual portion of the cavity to contour; this should not fill more than one-third of the cavity. Now remove the matrix with the wax in place and cast with seventy-five per cent platinum and pure gold and you will have a lingual surface that will stand all the attrition that it may receive.

In order to select colors intelligently we must have some idea of the phenomena of color, so we will consider color from a theoretical and practical viewpoint.

First the source of light must be considered. Light is that form of radiant energy that acts on the retina and renders visible the object from which it comes. Visible objects are either luminous or illuminated.

Examples of luminous bodies are afforded by the gas flame and the sun. From these sources of light luminous rays are sent out. Sun light is considered to be white; light emitted from a gas flame is said to be colored.

Color is a sensation produced by certain waves or vibrations which affect the corresponding fibers or rods of the optic nerve. These are translated by the related brain cells into color.

There are many conditions that influence the color of a porcelain inlay. Some of these are uncontrollable, while others may be modified to produce a pleasing effect. Then many of them need not be considered at all, as influences that make a great difference in the intense colors have very little effect on the weakened hues and delicate tints of color that we find in the natural tooth. However, it must be remembered that the trained eye is competent to distinguish a thousand hues in the normal spectrum. Add to these the hues produced by increments or decrements in luminosity and we have a total that must be measured by hundreds of thousands. These bright figures might tend to confuse a beginner, but they are of use to the colorist.

Some of the phenomena that affect color which we must consider are the absorption, transmission, reflection, and refraction of light. Then as we are using a pigmented material, the three constants of color must be kept in mind, namely—hue, purity, and luminosity. To

imitate the different hues and tones of color of a tooth depends upon our ability to note the various gradations of color.

The first characteristic of a color to be considered is its hue, and as the normal spectrum is the standard of color, we can identify each hue by means of its wave length or refrangibility.

The purity of a color in pigments and colored objects depends upon the proportion that the white light bears to the colored light emitted from it. The addition of white to a color not only makes it paler but alters its hue.

In constructing a porcelain filling, we must keep in mind the difference in density of the porcelain and the tooth, because of the difference in the refraction, so that in choosing what colors we are going to use, the tooth should be viewed from all possible points of incidence.

Then we must consider the thickness of the filling, because of the absorbent power of two or more layers, absorption differs in kind as well as degree, the thicker layers cutting off in succession groups of various colored rays which the thinner layers would permit to pass through. We might suppose that a thick layer of one color would simply be a darker tint, but we find that the hue is altered as well as the richness, by comparative freedom from white light.

These points may give rise to misgivings and doubts, but the operator should experiment by making combinations of bodies of various colors and thicknesses. Then he will work with greater confidence and skill.

My method of procedure in applying colors to contour porcelain fillings is as follows: The first baking is a layer of an opaque white porcelain; this should nearly cover the matrix, leaving about one-half millimeter from the margins free, and should be fused to a glaze, as a glazed white is the highest in the scale of luminosity, gives a more perfect refraction, and, being opaque, a better absorption of light, as the white reflects the light back into the colors. It is also used to control the effect of the cement.

The second bake is either a yellow or brown hue to imitate the dentine. This should be built to contour, then the labial half or two-thirds is cut away. This obviates the distortion of the matrix from shrinkage and puts the color about where you want it. This color must be of considerable intensity to counteract the effect of the white lining. The intensity must be regulated by the thickness of

the filling, for in a thin filling it would have to be more intense than in a thick one. This layer should be roughened slightly on the labial surface before putting in the oven. The roughening of this surface is to cause a greater dispersion or scattering of the light rays as they come through the succeeding layers.

In the third application of porcelain, the different hues are laid in, varying from the browns or yellows at the cervical, to the grays or blues at the cutting edge. At this point our knowledge of the variations of color comes into play. For instance, by additions of white to a colored porcelain, the intensity is weakened or lightened, a tint of that color being formed, while additions of black form shades of hues, the intensity being saddened or made darker.

A filling placed in a strong light would have somewhat the same effect as additions of white pigment; therefore, fillings placed in positions where the light falls directly upon them should be darker in tone than fillings placed in the more secluded positions. Other influences which modify the production of color are the several varieties of contrast. These are dependent upon one or more of the three constants of color, namely—purity, brightness and hue. If two adjacent colors differ in brightness, the brighter of the two will increase in luminosity, while the less luminous will have its brightness diminished. If two adjacent colors differ in hue, such difference will be increased, each hue tending to change as if it had been mixed with the complementary of the other. However, in case of two complementaries, no such increase of difference in hue is possible.

Contrast caused by difference in brightness, commonly called contrast of tone, may occur alone or may be associated with contrast of hue or purity. Another element comes into play, namely—the background on which the hues are placed. For instance, if the second layer of porcelain be yellow, the succeeding hues would not only be affected by the transmitted light, but would be tinctured with the complementary of the yellow, so if blue were used, the light passing through the blue loses its red, orange and yellow rays, which are absorbed, and are not therefore transmitted to the yellow, but green, blue and violet are transmitted, leaving green to be reflected.

The purity of the green light reflected is dependent upon the thickness of the layers and the purity of the yellow and blue. If yellow and blue are used over browns or grays, the underlying colors have the property of shading or saddening the overlying ones, be-

cause the transmitted rays from yellow and blue are largely absorbed by brown or gray.

So it will be seen that in the third layer of porcelain there is a great scope for the variations of color necessary to match the tooth. Many times it will be found that the contour has been restored and color obtained with this third application of porcelain. The filling then is ready to have a neutral color applied. However, in many cases it will be found necessary to use a fourth or even a fifth application of porcelain to gain sufficient contour. If this be the case, further modifications of color may be attained.

As has been said, a neutral color is the final layer; this layer is to represent the enamel and is lower fusing porcelain than the preceding layers. It should receive a full glaze. As this layer has most to do with the reflection of light, it deserves considerable thought. First, if the surface of a filling be perfectly glazed and perfectly smooth, it will reflect light regularly, because the angle of incidence and the angle of reflection are equal. This explains why a filling will match perfectly at one point of incidence, but change that point and the match will be poor. Therefore, it should be our aim to have this surface irregular, not underglazed, but a surface covered with minute elevations, so that the incident light may strike them at all possible angles, making an irregular or scattered reflection.

The firing of the different layers of a filling are a series of very important steps. To get perfect results, each firing must be accurate, because overfused porcelain will be lighter in color and in most cases porous. Underfused porcelain will be of a duller hue and less translucent. The colored layers should be fused to a high biscuit only, because repeated firings at the maximum fusing heat will tend to overfuse the mass. The last layer or enamel should be carried to the point of glazing.

Fusing tests that have been very successful for me are the pyrometic cones furnished by Dr. A. E. Matteson. This method seems to me to be a very reliable one, because it measures *heat work* and not temperature alone. The porcelain and the cones are of like material, so when they are subjected to the same condition, they are influenced in a like manner, which is indicated by a change in form. The cone is placed in the pan, as close to the filling as possible, slightly inclined in the direction it is desired to bend. The base is then covered with fine silex, to prevent it from falling. The pan is placed in

the oven so that the cone may be seen through the mica or peep-hole. The best results seem to be obtained by raising the temperature slowly and uniformly, timing each step until one is reached that will require one and one-half minutes to make the cone wilt.

When the baking is finished, the matrix may be stripped off, and great care must be used, as a filling may be spoiled by chipping the margins. The filling should be grooved or etched after it has been separated from the matrix; it is then ready to cement.

It has been my custom to set all inlays with a white cement. There are two reasons for this. The first is, that the effect of the cement is always the same; whereas if cement of different hues were used, that would not be the case. The second is, that white reflects and does not absorb light.

When the cement is thoroughly mixed, the cavity and the etched surface of the filling are coated with it. If the filling be a simple approximal or approximo incisal, it is inserted with the pliers or fingers; then with a piece of tape the force should be applied in such a manner that the filling will be rocked into position. When the surplus cement has been expelled, the filling is forced into its seat by exerting constant pressure with the tape. Care should be exercised so as not to cause pressure enough to fracture a margin.

SOME MISTAKES IN OPERATIVE DENTISTRY—THEIR CAUSES AND CORRECTION.*

(Illustrated by Stereopticon.)

BY FRED W. GETHRO, D. D. S., CHICAGO.

This paper has not been written in a pessimistic view, for, on the contrary, the writer holds the most optimistic views for the future of dentistry. The title of the paper is so broad that it will be quite impossible for me to more than touch on some of the commonest failures. I know full well how easy it is to find fault, to tear down, and yet not have anything better to offer, and I have tried to avoid being open to such a charge. It will be my aim to hold up the mirror so that we may look squarely at our mistakes, determine the causes, and then apply the remedies.

*Read before the Illinois State Dental Society, May, 1909.

Is it true that we, as a profession, are making a large percentage of errors? In answering this question, I will first ask: Are you keeping a record of your refillings, I mean fillings in cavities that have been previously filled? What percentage of your operations for adults is in this class? In other words, what percentage of all the operations performed for adults are refillings, in this sense, because the original operations were imperfectly executed? From records kept of cavities refilled and from the best information obtainable from other practitioners, I believe that at least 60 per cent, and possibly 75 per cent, of our operations done for adults are required because the fillings were not perfectly done in the original operations.

Now add to this statement the fact that an enormous number of teeth are extracted daily from the mouths of people who are supposed to be giving their teeth the average amount of atention, also that many patients are being referred to X Ray specialists and oral surgeons for diagnosis and for operations, occurring because of imperfect treatment of pulp canals, and I think you will admit that there is great room for improvement.

It is generally admitted that gold fillings hold the best record of any material down to the present time. From the best statistics that I have been able to obtain, and from records and searching inquiry among the older and better known practitioners, I should place the average life of gold foil fillings at five years. Many contend that this is too high. If the average life of gold foil fillings is five years, what must be the average life of fillings made of amalgan and of other filling materials? One thing strikes me as being inconsistent, and that is the great difference between the average operator and the skilled operator. The gold filling of the average operator lasts five years, and the filling made of the same material under exactly similar conditions by the skilled operator stands practically a lifetime. I believe that any dentist can learn to be a good operator ,and, therefore, there is no excuse for this condition. The same statement applies in a general way to other filling materials.

Why this difference? In some cases it is a lack of knowledge of the pathology of dental caries, which could easily be remedied by careful study. In most cases, it is due to indifference or to carelessness, either of which is very difficult to remedy. The skillful man gives careful attention to every detail both in the planning of the operation and in its execution. The conditions calling for the operation are

carefully studied, the best positions for cavity margins planned, and the outlines of the cavity cut to them. The finishing of the cavity in resistance form, retention form, and convenience form is made carefully with the rubber dam in place. The necessary form of the finished filling is carefully considered. If it is a proximal cavity, the separator is placed, and the necessary space for finishing the proper contour obtained, etc. All parts of the operation are carried out rapidly, perhaps, but all with the same care in every detail. A careless man may know about all of these things, but does not take the pains to do them well. This is the difference. It is the difference that reduces the excellence of filling operations to so low a standard.

A failure to make a correct diagnosis must be considered as a common cause for many of our failures. I believe that quite a percentage of our patients who leave our offices with the assurance that they are now in good condition for another six months have decay in places we have failed to discover. How many of us take the time and pains to adjust the dam, supply the separator and lift the teeth apart to examine suspicious proximal surfaces in bicuspids and molars? Have you not had the experience of filling a simple occlusal cavity in a bicuspid or a molar and some time later, when the patient returns for examination, discover a considerable mesial or distal decay in the same tooth, and didn't you reason very quickly that the beginning must have been there when you placed the occlusal filling? It is of the utmost importance that we discover these decays in their beginnings. Decay may extend very deeply into the dentin of the tooth and endanger the life of the pulp or even cause its death, and yet the decay only involve a small area of the surface of the enamel. How often we discover what seems to be a small pit cavity in a bicuspid or molar, and later, when the cavity is opened, we find most of the dentin of the crown involved.

The life of the pulp of a tooth is a very valuable asset to the patient. It is unfortunate that the patient does not realize it. Most patients have no regrets when they learn that a pulp has to be removed —provided it does not hurt. Most of them believe that the removal of the pulp ends their troubles. They are not aware of the fact that a healthy pulp is complete insurance against alveolar abscess, that abscesses of this nature can only occur after the death of the pulp. Too much cannot be said in favor of a most thorough examination.

If time would permit, I would like to consider some of the mis-

takes made by placing patches in defective fillings. I will only say in passing that very few of these defective fillings can be made into perfect fillings by patching. You are usually doing your patient and yourself a great injustice by attempting to reach the extent of the decay by such an uncertain process.

Probably the commonest and most serious of our mistakes is the failure to restore a contact point of normal form. There is no other one thing in dentistry that is productive of so much mischief as this failure to establish a normal form of interproximal contact. I know of nothing that causes patients greater discomfort than the lack of this contact, and I know of nothing that will make a patient more grateful than its restoration. Many of the diseases of the soft tissues, including the so-called "pyorrhea," are caused by a loss of normal inter-proximal contact. At the last meeting (April) of the Chicago Odontographic Society, the evening was devoted to the contact point, and Drs. G. V. Black and Elgin MaWhinney read exhaustive papers on this important subject. These papers will appear in the DENTAL REVIEW, and I trust that those of you who did not have the opportunity of hearing them read will read them in the REVIEW.

In considering some of the causes for the failures enumerated, reference must first be made to dental anatomy. It is lamentable that the profession is not better informed on the anatomy of the teeth. For instance, I doubt if the average man knows, or remembers while operating, that he should find two canals in the mesial root of a lower first molar and that this root first inclines to the mesial as it leaves the crown and then inclines to the distal. I question whether the average operator remembers that in 50 per cent of the upper first bicuspids he will find two separate roots. Perhaps there are some who can tell a lower first from a lower second molar. Certainly some serious mistakes are being made because the dentist was not able to determine whether a tooth was a deciduous or a permanent one. All of these questions of dental anatomy, in their minute detail, are essential to the successful practice of dentistry. In looking over many hundreds of skiagraphs, I found a large per cent of the abcesses on the lower jaw were caused because this mesial root of the lower first molar had been imperfectly treated. The glaring defects we see in contoured fillings give testimony to the fact that the operator did not have in his mind's eye the original contour of the tooth, the form of which he was trying to reproduce. The many mistakes we see in root treat-

ments, and the openings we find on the sides of the roots, all tell the story that the operator did not know just the size, shape and inclination of the particular root he was treating.

The selection of the proper filling material is of great importance if we would avoid failures. Wherever gold foil can be well placed, except where it should be debarred for esthetic reasons, it should be the material used. I know that there are many who are now using the gold inlay almost to the exclusion of the gold foil filling. I admit that the gold inlay is the more attractive from the standpoint of both patient and operator. The patient suffers less inconvenience and the operation is less wearing for the dentist. Notwithstanding these admissions, I maintain that under the conditions just cited, the gold foil should be the filling material selected. I will admit that in the hands of some dentists the inlay will give better results. This is not because gold foil is inferior to the gold inlay as a preserver of teeth. It is because the operator has not mastered the technic of gold foil. Dividing operators into four classes, poor, ordinary, good and skillful, I should say that the poor operator using some degree of effort will have better results with the gold inlay. I know of nothing poorer than a poor gold filling. With the man of ordinary ability, or a fair operator, it is about an even chance, but with the good operator, or the skillful operator, the gold foil filling is by far the better filling. Who would be content with being in the first or even the second of these classes? I do not want to be understood as decrying the gold inlay, for I believe it has a large field of usefulness. The gold crown has produced very bad results, and the gold inlay should, and I believe it will, largely replace the gold crown. In large cavities in the bicuspids, especially mesio-disto-occlusal cavities, the gold inlay fills the requirements beautifully.

The more general use of the modern high-grade amalgam under proper conditions and with proper care would eliminate many of our errors. This material, as far as tooth saving qualities are concerned, when properly used, is capable of giving a filling only excelled by gold foil. The failures of amalgam are very easily accounted for. The majority of dentists in this country are using alloys that even in the hands of the most skillful dentist cannot possibly be made into good fillings. The alloys are slow setting, will move about in the cavity at every touch, and will either expand or contract, or possibly both. It is a well-known fact that to properly make an alloy that will set

rapidly and will neither shrink nor expand, requires some expensive instruments and very careful manipulation. Only a very few of our alloy makers are so equipped, the rest of them preferring to market a cheap alloy that caters to the economical dentist. It is also true that some of the most expensive alloys are worthless. It is essential that the rubber dam be in place for the amalgan, just the same as for gold.

Many patients will tell you that they have never had a rubber dam placed when they had amalgan fillings put in. The patients have been educated into the belief that the rubber dam, separation of the teeth, etc., is unnecessary when amalgam is used. How many of these fillings are polished? Comparatively few.

The last of the important causes that I believe are responsible for our failures, is one in which we are all deeply interested. Down deep, and back of all of the failures and their causes, is a condition that we must recognize. I refer to the financial side of our calling. The public is not educated to appreciate the value of good dental service. The average price received for dental service does not permit of the work being well done. I believe that dentistry would be on a much higher plane and the public would be receiving much better dental service if more attention had been paid to the financial side. I am not advocating higher fees. I am holding that we must get a fee that will permit of doing work well.

Let us consider an example. The average price for amalgan fillings is not more than 75 cents. In fact, I believe this is too high. It is simply impossible to properly prepare cavities, using the rubber dam, carrying out the various steps to the completion of this filling, and later having the patient return for polishing, for anything like such a fee. In most cases, the matrix must be adjusted, the separator placed, and the teeth moved apart so as to restore the full mesio-distal breadth and permit of restoring the normal contact point. At a subsequent sitting the separator must again be used to permit of proper polishing. All of this demands skill on the part of the dentist coupled with no small amount of time. In fact, the polishing of such filling could not be properly done for the fee mentioned.

The average price paid for the removal of pulps and the subsequent treatments and root fillings is positively ridiculous. It is not at all uncommon for patients to expect to receive that part free when the same dentist places the filling. Not only does the patient expect it, but actually gets it. The dentist receiving practically nothing

for his treatments, feels that he must do this part of the operation in the quickest possible manner. Naturally, he is looking for the short cut, and he reaches the pulp as best he can in the limited time, places one of the many advertised "nerve" destroyers on the pulp, and, presto! the pulp is digested, mumified, or some other equally miraculous feat is accomplished. If you don't believe this possible, read some of the alluring ads published in some of our best dental journals. I have had some confidential talks with a number of the supply houses, and I have learned that they sell great quantities of these nostrums. Is it any wonder that we are having so many failures from pulp treatments?

I want to make this suggestion in reference to fees for treatment. I do not see how it is possible for any dentist to state definitely in advance the fees for treatments. The removal of a pulp may be completed in a few moments, or it may consume an hour or more. The only equitable basis of charges is a time basis. Every operator should estimate the value of his services on an hourly basis, and then make his charges for services in conformity with that basis. We make a serious mistake when we place a definite estimate for the completion of the work in a mouth. Cavities that look innocent may involve a large portion of the crown or involve the pulp. Cavities may later be found on the proximal surfaces that escaped our attention in the preliminary examination.

A great many crowns are placed because the dentist believes the patient would refuse to pay what a large amalgan filling would be worth. There are many patients who would probably pay from seven to ten dollars for a gold crown, but would not think of paying the same amount for an amalgan or even a gold filling. Is it not because the average fee that is paid for such an operation is absurd? It is quite common for dentists to place fillings and dismiss their patients as finished without any reference to cleaning the teeth when this should have been the first thing done.

I believe that the patching of fillings is done very largely because the operator feels that the patient will pay a reasonable fee for a patch but would refuse to pay what a complete refilling would cost.

The failures caused by an incorrect diagnosis can be accounted for from the financial view. Most dentists will examine a patient's mouth, sometimes make an estimate for the work without thought of

And she herself is fair in form and face;
Her glance is modesty, her motion grace,
Her smile, a moonbeam on the garden bower,
Her blush, a rainbow on the summer shower,
And she is gentler than the fearful fawn,
That drinks the glittering dew drops on the lawn.

"When first I saw her eyes' celestial blue,
Her cheeks' vermilion, and charming hue,
That melted on her lips;—her auburn hair
That floated playful on the yielding air;
And then that neck within those gracious curls,
Molten from Cleopatra's liquid pearls;
I whispered to my heart—'We'll fondly speak;
For sure such language from those lips must flow,
As none but pure and seraph natures know.'

" 'Twas said—'twas done—the fit occasion came,
As if to quench betimes the kindling flame
Of love and admiration—for she spoke,
And lo, the heavenly spell forever broke
The fancied angel vanished into air,
And left unfortunate Urilla there;
For when her parted lips disclosed to view,
Those ruined arches, veiled in ebon hue,
Where love had thought to feast the ravished sight
On orient gems reflecting snowy light,
Hope, disappointed, silently returned,
Disgust triumphant came, and love expired.

"Let every fair one shun Urilla's fate,
And awake to action, ere it be too late;
Let each successive day unfailing bring
The brush, the dentifrice, and from the spring,
The cleansing flood—the labor will be small
And blooming health will soon reward it all.
Or, if her past neglect preclude relief,
By gentle means like these, assuage her grief;
The dental art can remedy the ill,
Restore her hopes, and make her lovely still."

This poem was followed in 1838, by another in blank verse, entitled "Dental Hygeia"—a poem on the health and preservation of the teeth. He also contributed to the "New York Mirror," and during the rebellion published a series of "War Lyrics" to William Cullen Bryant's "New York Evening Post." He wrote many valuable essays on dentistry and published a book, "A Treatise on Mechanical Dentistry," the first of its kind, to freely give to the profession various methods of practice, which heretofore had been secrets with the majority of practitioners. He was active in organizing *The American Journal of Dental Science,* and when Dr. Parmly retired after the first year of its existence, Dr. Brown became co-editor with Dr. Harris. Solyman Brown painted in oil and modeled in clay. His work in modeling, Dr. Norman W. Kingsley informs me, was the incentive that induced Dr. Kingsley to practice and become famous in modeling and carving. Dr. Brown exemplified the definition of Watts-Dunton, which declares: "As one of those great primal human forces which go to the development of the race, poetry, in the wide sense, has played as important a part as science."

Amos Westcott, was a man of strong character and pronounced views on any subject he discussed. Beginning life as a poor farmer boy, he labored early and late to acquire an education, early evincing a liking for astronomy, botany and mineralogy. His fondness for the latter two studies continued through his life. He made a large collection of rare specimens. He earned the degree of Bachelor of Science, and afterwards graduated as a civil engineer, and in 1840 he received the degree of M. D. from the Albany Medical College. In 1846-49 he was Professor of Operative and Prosthetic Dentistry of the Baltimore College of Dental Surgery. March, 1852, he founded the New York College of Dental Surgery at Syracuse, N. Y. (the third dental college in the world), of which he was Dean and Professor of Theory and Practice of Dental Surgery and Dental Technology. This school continued three years until it was destroyed by fire.

Wescott was of an inventive turn and invented many dental instruments of merit, amongst them the Westcott jackscrew for regulating teeth, besides many agricultural implements of practical value. He was also an active politician and was first elected as an alderman and later mayor of Syracuse. He possessed a great store of general information on a variety of subjects and by his efforts secured an

abundant water supply for his city. His son, Edward Noyes, was the author of "David Harum."

Elisha Townsend, a Quaker by birth, and man of refinement and culture and a great ornament to our profession; a watchmaker in his early youth; then an actor and afterwards one of the profession's most brilliant orators and lecturers, and was an extraordinarily skillful dentist. He was president of the American Society of Dental Surgeons, originator and founder of the American Dental Convention, first Dean of the Philadelphia College of Dental Surgeons. He was a close friend of Hayden and Harris, and Robert Arthur, and imbibed much of their enthusiasm and talent.

John Roach Spooner, a native of Massachusetts, studied dentistry in 1815, practiced in Western New York, and in 1830 located in Montreal, Canada, the first man to really practice dentistry as a distinct profession in the Province of Quebec, one of the first to use porcelain teeth, instead of bone and ivory. He soon established a reputation along this line. He is credited as the first to use arsenous acid for the devitalization of the dental pulp, using this in preference to silver nitrate, nitric acid and actual cautery which were employed those days.

Shearjasbub Spooner, a native of Vermont, born in 1809, studied the classics and medicine with his brother, Dr. John Roach Spooner of Montreal, Canada. Dr. S. Spooner graduated from the College of Physicians and Surgeons of the University of New York, 1835, and immediately began the practice of dentistry. In 1836 he wrote a 208 page book, "Guide to Sound Teeth, or a Popular Treatise of the Teeth," in which he was the first to publish to the profession the use of arsenic for devitalizing the dental pulp, as discovered by his brother, John Roach. In 1838 he published "An Essay on the Art and Manufacture of Mineral, Porcelain or Incorruptible Teeth." In 1838 he published "A Treatise on Surgical, or Incorruptible Teeth." He was a great book lover and published the "American Edition of Boydell's Illustrations of Shakespeare," also a "Biographical and Critical Dictionary of Painters, Engravers, Sculptors, Architects and Curiosities of Art" (1853). He also published a superbly embellished edition of the "New Testament," illustrated by engravings after designs by the best Italian artists. The arduous duties of compiling these works undermined his health. He died a nervous wreck, literally worked to death.

Edward Maynard, a born mechanic, educated for an army career, a cadet at West Point. Delicate health compelled him to relinquish this ambition and to study civil engineering, drawing, architecture, law and anatomy, all of which developed him for his future career. He was very skillful, making his own instruments. He located in Washington, where he soon attained eminence as an operator, and in wood carving, wood engraving, modeling in clay, architectural drawing, and drawing and coloring, which for correctness of detail and finish ranked with the best efforts of the most accomplished experts. He spent many evenings at the Washington Sketch Club, sketching from the nude. By his knowledge of anatomy, he discovered the great diversity of form and situation of the maxillary sinus, which he made known to the faculty of the Baltimore College of Dental Surgery, 1846. He went to Europe and was dentist to the Czar of Russia, who honored him with gifts and medals. He operated for many crowned heads. The King of Prussia made him a "Chevalier of the Military Order of the Red Eagle," and the King of Sweden gave him "The Great Medal of Merit," an honor rarely given to a foreigner. He invented many firearms, amongst them the Maynard rifle, the first breech-loading rifle that proved equal to the best muzzle loader. He revolutionized the firearms of the civilized world. A man of rare genius was Maynard.

Simon P. Hullihen, pioneer and expert in oral surgery and philanthropist, was a son of very humble and poor parents, born in 1810 in Northcumberland County, Pa. By trade a silversmith, finally drifting into doing prosthetic work for dentists; a man of much skill who had a natural aptitude for surgery and soon developed such skill that he ranked as one of the most ingenious experts of his day; doing a great deal of charity work; the founder of a public hospital at his home, Wheeling, W. Va. This is a monument to his philanthropic and public spirited desire to benefit his fellow man. He was apparently a very gruff and rugged type of an uncut diamond, but of very sympathetic nature and extremely gentle with the poor and suffering and had a great fondness for pets; horses, dogs and birds found in him a devoted friend and admirer. His generosity was proverbial; as a humanitarian, he had few equals. On the marble shaft, erected by the citizens of Wheeling that marks his resting place in Mount Wood Cemetery is skilfully carved, that appropriate scriptural scene of the good Samaritan binding the wound

of the hapless traveler, and these words that epitomize his career: "Eminent as a surgeon, the wide fame of his bold, original genius was everywhere blended with the gratitude for his benefactors."

J. DeHaven White, for many years editor of *The Dental News Letter* and *The Dental Cosmos,* was a man of pronounced literary tastes, contributing much to dental literature, and also, was a poet of no mean ability. He was the leading spirit in the organization of the Pennsylvania College of Dental Surgery, and for a number of years its Professor of Anatomy and Physiology. He was a lover of blooded horses. He wrote a volume of poems, "Mary Blain and Hazel Dell," and "Miscellaneous Poems," published by King & Cairo (1870), Philadelphia, and was an ardent lover of music and sang well, and an expert rifle shot.

Robert Arthur, the first on whom the dental doctorate degree was ever conferred by a dental college, and first to make known the cohesive properties of gold, was a native of Calverton, Maryland; a diligent student, a master of Greek, Latin, French and German, a poor boy and a "printer's devil," apprentice to his brother. He received the first diploma of the Baltimore College of Dental Surgery, and was Dean of the Philadelphia College of Dental Surgery, which later became the Pennsylvania College of Dental Surgery of which he was also Dean Organizer and First President of the Maryland State Dental Association, and author of many contributions to our literature, amongst which was his "Treatise on the Use of Adhesive Foil," makes him stand out pre-eminent as one of the progressive intellectual giants of his day.

Sanford Christie Barnum, the profession's benefactor, the originator of the rubber dam, a native of Sullivan County, New York, born 1838, studied dentistry with an uncle, Dr. Joseph Clowes, New York City, for four years, attended two courses at the New York College of Dentistry from which he graduated 1868. He soon acquired an enviable reputation both as operative and prosthetic operator. While practicing at Monticello in New York in 1862, he conceived the idea and made practical the application of the rubber dam in dental operations. Possessed with high professional ideas and of a generous nature, he decided to forego the opportunity of making a fortune, which this highly useful invention afforded, and presented it as a free gift to the profession, which was quick to recognize the value of the invention, and his donation gave him a world-wide reputation.

He was presented with many testimonials, medals, resolutions, gifts, etc., as tokens of the profession's esteem. He deserves the everlasting gratitude of the profession, for it was he who made it possible "to govern the tide and command it to go hence that we may approach the wreck on the beach and repair the breaks in the hull that the ship may continue to sail on its mission of usefulness."

Walter Webb Allport, was a tailor's apprentice and a close student. He studied medicine and later dentistry with Dr. Amos Westcott, and become one of the experts of his day, ranking with Varney, Atkinson, Corydon Palmer and McKellops. He located in Chicago in 1854, and enjoyed a most lucrative practice. He was a microscopical investigator and instrumental in organizing the Chicago Microscopical Club. He was editor of the *People's Dental Journal,* promoter and organizer of many dental societies and originator of the *World's Columbian Dental Congress.*

Henry James Byron McKellops, whom all knew and respected for his superiority as an operator; and he had few, if any, equals when it came to the manipulation of heavy foils, especially gold and platinum foil, with which he wrought wonders. He gathered a most complete dental library, the best selected of its kind in existence, at the time of his death. Dr. McKellops loved the beautiful and artistic, and he filled his home with many pieces of rare bric-a-brac and choice works of art. His complete and beautiful office furniture and the instruments he was so proud of were sold after his death for a song at public auction. He liked fancy dress and had a great fad for collecting beautiful neckties. He, like Atkinson, was a conspicuous figure at all dental gatherings far and near. He was a pronounced character and greatly admired by those who really knew him. He was a great ornament to American dentistry.

Marshall Hickman Webb. "This hand was made to handle naught but gold." The son of a poor carpenter and cabinet maker, whose ingenuity he inherited, Young Webb made ten violins, carving the bodies, making his own strings and stringing the bows, before he was sixteen years old. The manufacture of waterwheels and mechanical toys, ingeniously wrought, were his boyhood hobbies. An assiduous student, he soon became an expert in dental operations, and gave much study to dental pathology and histology. He soon attempted to fill all classes of cavities with gold, no matter how difficult or inaccessible.

His was an inventive genius rarely equaled. His improvement on the Bonwill electric mallet made him prominent, and the magnificent monuments he built of cohesive gold reached the highest excellence. "Contour" was his watchword, and as a clinician he had few, if any, equals. In the preface of his excellent book, *"Notes on Operative Dentistry,"* the keynote of which is cohesive gold, he beautifully expresses his ideals when he says "That in literature, sculpture, painting and music, and in operations, such as dentists ought to perform, it is not the aim of a Dryden, a Michael Angelo, a Raphael, a Beethoven, or a Varney to write, carve, paint, bring forth in "concord of sweet sounds," or to produce in gold that which requires but little time and skill, and is simply cheap and inartistic; it is the endeavor of the *artist* whatever the sphere of his efforts, to produce the perfect and the beautiful.

W. G. A. Bonwill, another inventive genius, one of the greatest operators, both in operative and prosthetic dentistry, the world has ever known. A well posted-man on all scientific questions and a writer on "Evolution," and great authority and a writer on dental subjects. He was a great inventor. The profession owes him much for his mechanical mallet and many other ingenious devices.

John Joseph Ravenscroft Patrick. Young Patrick came to St. Louis and took one course in McDowell's Medical College. Being of a mechanical turn of mind and possessing wonderful ingenuity, which had been developed by an apprenticeship to a jeweler and diamondsetter, he took up the study of dentistry with his brother, Dr. Hugh Patrick, a dentist, and Dr. Henry J. McKellops, and commenced practice in St. Louis in 1850.

In 1853 he removed to Belleville, Ill., and practiced until the fall of 1862 when he enlisted in the 130th Illinois Infantry, of which he became a captain in 1865. His health failed and he returned to Belleville and continued practice until his death.

Dr. Patrick was a tireless worker and one of the notable figures in the history of dentistry of his day. Besides being one of the most skillful manipulators of gold as a filling material, he was an adept in regulating teeth and perfected a system of appliances that were a valuable contribution to orthodontia. He also invented a system for crown work, and a swaging press. He was an expert with the use of the blow pipe. He lectured on comparative anatomy at the Missouri Dental College and the Iowa State University Dental Depart-

ment. His work in anthropology and comparative anatomy will be his enduring monument. By this painstaking examination of thousands of prehistoric skulls which he dug from the mounds and hills surrounding Belleville, he dispelled the myth that dental caries were of modern origin. He showed that the dentures of ancient races were affiliated with dental decay as are the modern races. So conspicuous was his work that the American Dental Association made him curator of the great investigation that society set on foot in tabulating many thousands of dentures of available prehistoric crania.

The completed record of Dr. Patrick's works are published in the Transactions of the American Dental Association for 1895. His work in the departments of archæology and ethnology made him known to the scientific men of the world.

He surveyed the great Cahokia Mounds in Illinois, and made models of them, which are now in the collections of the Smithsonian Institute and similar collections in Europe. He made several archælogical collections, the most important known as the "Patrick Collection," now in the possession of the Missouri Historical Society of St. Louis.

He was a prominent member of the American Ethmological Society of New York, and the Anthropological Society of Washington, D. C., and correspondent to many European Societies and a member of many dental societies. He was a ready speaker, skilled conversationalist and prolific writer, and a tireless seeker after scientific truths.

Charles Andrew Kingsbury, of Philadelphia, was an early experimenter with electricity as a dental therapeutic agent to relieve aching teeth. He was also a noted traveler in foreign lands, examining the historical antiquities, arts and sciences of various countries, which he reported, and published in the Philadelphia newspapers. He was an ardent disciple of Isaak Walton, and possessed a fund of knowledge of fish and game, and took a keen interest in the efforts to stock our rivers with food fish, and was a member of the Pennsylvania Fish and Game Protective Association.

William Henry Dwinell was a versatile genius, a lover and collector of books and rare paintings, and expert wood engraver and a friend to struggling dental students, artists and writers.

Joshua Tucker, of Boston, was a most accomplished penman and did excellent work in pen and ink drawings.

Asa Hill, the inventor of "Hills Stopping," a Godly man of pronounced religious views, was of a poetic turn, and wrote good verse, as well as good prose. He perfected a marble staining process done with chemicals that penetrated the highly polished marble, remaining ever after.

Wm. W. H. Thakston, known as "the Chesterfield of the dental profession," graduated in the second class (1841), Baltimore College of Dental Surgery, the inventor of the Thakston drill, which was preceded by the Merry drill, invented by Chas. Merry, a dentist of St. Louis.

Prof. J. Foster Flagg, a talented writer and investigator, and one of the three, i. e., J. F. Flagg, Henry S. Chase, of St. Louis, and S. B. Palmer, of Syracuse, N. Y., who were the first to take the stand and declare that amalgam was a fit material for the filling of teeth. This brought down the condemnation of the entire profession, who at that period were all gold advocates. This controversy brought about what is known as "The Amalgam War." All of these men lived to see their theories adopted, and amalgam used as a filling material.

J. H. McQuillen, a talented writer, speaker, teacher and practitioner of Philadelphia, was for a number of years editor of *The Dental Cosmos,* a collector of rare books and prints.

James E. Garretson. Born in Wilmington, Delaware, October 18, 1828. Began study of dentistry when quite young, and practiced for a time in the neighborhood of Woodbury, N. J. Graduated 1856 at the original Philadelphia College of Dental Surgery, the predecessor of the present Pennsylvania College of Dental Surgery. Shortly after graduating he entered the University of Pennsylvania, and graduated as doctor of medicine. Practiced for some time subsequent to this, but his taste ran more to medicine and surgery, and he joined Dr. D. Hayes Agnew in his work in the Philadelphia School of Anatomy. It was in this connection and his special studies that lead him directly into surgical practice, which continued for the remainder of his life. It was through his efforts that a special branch of surgery was organized and became recognized as "Oral Surgery," the first specialty evolved from dental surgery, orthodontia being the second specialty. Criticism and prejudice both developed against this specialty, but by his skill and individuality in this work, this special branch was later adopted as part of the curriculum of the leading dental schools in the United States. He was the first of

the surgeons to use the Bonwill dental engine in surgical operations. His best literary work, "A System of Oral Surgery," is a monument of labor, and was the first book on oral surgery ever written. He found sufficient leisure in his busy life to write other books under the *nom de plume* of John Darby. These include "Odd Hours of a Physician," "Brushland," "Nineteen Century Sense," and "A Man and His World." These added to his reputation as a thinker and philosophical writer. His lectures on philosophical subjects contain some of the deepest thoughts conveyed in a most entertaining manner. His love of the philosophy of all ages was deep and profound. His studies in these directions entered into all of his writings and addresses.

John M. Riggs introduced a method of treating diseases of the teeth and gums, which afterwards the profession designated as Riggs' disease. He was "a book worm."

Horace Wells, a student of Dr. Riggs, a naturalist by habit and taste, and the one who first discovered that great boon to humanity—anesthesis by inhalation by nitrous oxide gas, December 11, 1844. The whole world acknowledges its appreciation and debt of gratitude they owe Wells for his discovery. After he died, honor, praise and thanks were given him for his discovery. A monument and a memorial tablet were erected in his honor at Hartford, Conn., and also a bust of bronze contributed by the dentists of the country, now in the army museum at Washington.

Edwin James Dunning. of New York City, co-editor with Chapin A. Harris of the *American Journal of Dental Science,* a student of art and nature, and Shakespearean delineator. An intimate friend of many noted writers and artists. At the age of 53 he became blind, and took up literature. He dictated a book of 336 pages, entitled *"The Genesis of Shakespeare's Art—A Study of His Sonnets and Poems,"* which is a most important library reference book. He committed to memory the entire poems of Wordsworth, Tennyson, Browning, Shelly and others. It is said he memorized 154 pages of Shakespeare's sonnets, and he had them at his tongue's end.

Norman W. Kingsley, noted as an orthodontist and for his invention of a cleft palate obturator. Kingsley likely is the most versatile dentist the profession has ever had. His bust of Christ is a masterpiece, as is his bust of Whitelaw Reid. He was the virtual inventor of pyographical work. He produced all of Rembrandt's

masterpieces with his laboratory bench blow pipe. He also was an artist of rare distinction in oil colors, silk embroidery work, and in beating copper and bronze. His book on *"Cleft Palate"* and *"The Voice"* are standard works today. His contributions to orthodontia both in writings and appliances are invaluable. He is *"the father of orthodontia."*

James Taylor, born 1809 in Ross County, Ohio. The boyhood chum and fellow student in medicine and dentistry of Chapin A. Harris. Their careers in after life run almost parallel, possibly one was an inspiration to the other. Both of humble parentage, residents of obscure inland towns, beginning their career under the same auspices, and each developed his talents along the same line and leave a brilliant record as dental educator, journalist, society worker, organizer and practitioner in a way to bring credit and renown to dentistry. Taylor located in Cincinnati and organized the Ohio College of Dental Surgery, the second college ever organized, of which he was dean for eighteen years. He was the editor of *The Dental Register of the West,* and originator of the Mississippi Valley Society of Dental Surgeons, of which he was president 1849-50. He had a great taste for horticulture, and his love for flowers was intense. When I think of this beautiful characteristic of his I always think of the utterance of he who says: "If I had two loaves of bread, I would sell one and buy white hyacinths to feed my soul."

George Watt, born 1820, Greene County, Ohio. A poor boy, but early mastered mathematics, English and Latin, and became a school teacher. Studied medicine and graduated in 1848 at the Medical College of Ohio. Practiced until 1852. Began study of dentistry with Dr. Jonathan Taft at Xenia, Ohio. Later became the partner of Dr. Taft. Dr. Watt was interested in chemistry, and in this branch of study became famous in dentistry. Dr. Watt graduated as a D. D. S. from the Ohio College of Dental Surgery. In 1855 was elected Professor of Chemistry and Metallurgy, and dean of the faculty in 1857. He was active as a worker and officer in the Mississippi Valley Association of Dental Surgeons, the American Dental Convention and the American Dental Association, of which he was president 1862. He was one of the organizers, and for the first two years of its existance president of the Ohio State Dental Society. He was twice president of the Mad River Dental Society. October, 1855, *The Dental Register of the West* was organized with Drs. Watt

and Taft as owners and editors. To this journal he contributed many papers of vital interest at that time. These later (in 1868) were republished in book form by Dr. Watt, as "Register Papers, a Collection of Chemical Essays in Reference to Dental Surgery." Among these were his masterpieces, "Lord Oxygen" and "Lady Hydrogen." He was a brilliant scholar of English literature, and familiar with all the classics. His remarkably retentive memory enabled him to draw from these at will in writing or speaking, in which he was very fluent and impressive. In 1881, Dr. Watt became editor of *The Ohio Journal of Dental Science.* This he continued until his death in 1893.

Jonathan Taft, he of gentle and blessed memory, whose friendship to we, who knew him, was indeed a benediction. One of the most prominent dentists in the United States. Highly respected as a practitioner, writer, teacher and active dental society attendant. Few men held the respect and confidence as did he, and few men have had such a large following, and exerted such a marked influence as did Jonathan Taft. He was one of the editors of *The Dental Register of the West* with Dr. Watt, and after Dr. Watt's retirement Dr. Taft continued to edit this journal for many years. He was author of "Operative Dentistry," a text-book of much merit. A teacher in the Ohio College of Dental Surgery, from which he graduated, later a dean of the dental department of the University of Michigan. He had all of the honors that dentistry as a profession could bestow.

John Allen, a native of Broome County, N. Y., emigrated to Ohio when a boy, and became interested in dentistry. He studied with Dr. John Harris, of Chillicothe, who also was a preceptor of Chapin A. Harris and James Taylor. John Allen graduated in medicine at the Ohio Medical College. Here he became interested and prosecuted his studies on characteristics and anatomy of the human teeth and face, and prosthetic dentistry. He experimented in the manufacture of mineral teeth, the work at which he became expert. He wrote many papers regarding the restoring the contour of the face and on porcelain. He received many honors, medals, etc., for his skillful production in porcelain and prosthetic work. He was one of the organizers of the Ohio College of Dental Surgery, and its first Professor of Operative and Mechanical Dentistry. He removed to New York in 1854 and became a teacher in the New York College of Dentistry, and became prominent in dental society

work. President in 1861 of the American Dental Convention, and he and Dr. J. G. Ambler were mainly instrumental in the formation of the American Dental Association. He was one of the organizers of the Dental Society of the State of New York, and has been denominated "The perfector of porcelain dental art," for he gave the profession continuous gum work, the only method in dentistry that has not been materially improved upon since its introduction.

Wm. M. Hunter, a teacher and demonstrator in the Ohio College of Dental Surgery. Experimented along the same line with porcelain as did Dr. Taylor. Claimed to be the originator of the continuous gum work. A long and furious legal and journalistic contest followed. This was the first patent in which the dental profession was interested. Dr. Hunter was noted as a skilled and prosthetic operator and metallurgist.

William Henry Atkinson, leader, "teacher of teachers," prophet and past grand master, dental enthusiast.

"The flash of wit, the bright intelligence,
The beam of song, the blaze of eloquence,
Set with their sun, but they left behind
The product of an immortal mind."

A native of Pennsylvania, of poor parentage, studied medicine in 1840 and graduated from Willoughby University, Willoughby, Ohio, where he became interested in dentistry, a profession which he studied. Removed to Cleveland, 1850, and formed a partnership with Dr. Frank S. Slawson. Soon after Dr. Chas. R. Butler of Cleveland became his first student, and subsequently his partner. Dr. Atkinson became an ardent student of the natural sciences and microscopy. His research along this line in the new field of dental therapeutics, pathology and histology, in which he was a profound student and investigator, which soon gave him prominence in the dental profession. He was an expert operator in all departments of dentistry, and advocated and was first in Cleveland to claim a high standard of fees for dental operations, and the first to place his services on time basis, believing his service of a quality not to be estimated in money. In 1861 he removed to New York where he made a great success. His home was an "open house" and a rallying point in New York for the profession from all over the world. He opened wide the doors of his operating room and laboratory, and all were welcome to his demon-

strations. His income was large and his charges to the wealthy were fabulous, yet he did much for charity, and spent much of his time and money traveling about the country to dental meetings, and died penniless. He was one of the first dental clinicians. He was instrumental in organizing the New York College of Dentistry. Through his influence the New York School of Microscopy under the management of Professor Carl Heitzman was organized. He was familiarly and affectionately called "Father" or "Pop" Atkinson, and referred to by many as "The grand old man." He was eccentrive, aggressive, progressive, enthusiastic, magnetic and oratorical. His brilliant flights of oratory he said were inspired by "the angels," for he was a spiritualist, and a follower of Swedenborg.

Royal William Varney, native of Brecksville, Ohio, a dental student of Drs. Atkinson and Chas. R. Butler, an apt and earnest scholar, graduated in medicine in 1863. Later a student of Dr. Corydon Palmer at Warren, Ohio. He was an especial favorite and pet student of Atkinson. He practiced in New York City, and developed a marvelous skill as an operator. His special forte was the manipulation of heavy gold foil, with which he wrought wonders.

As an operator he was in the same class as Webb, Allport, Atkinson, McKellops and Corydon Palmer. He was an enthusiastic, microscopic investigator, a student of nature, an idealist, and had a pronounced musical taste, and was a skilled performer on the violin.

Corydon Palmer (two slides), born in 1820 at Warren, Ohio, where he has practiced his profession continuously to the present time. He "picked up" dentistry and by preserverance and natural ingenuity, developed a most superior skill. In early life he was an apprentice to a jeweler, whose trade he mastered. It is claimed he invented the first complete set of cohesive gold instruments. Many forms patterned after his designs are in use today. For a number of years he was an advisory expert to examine and perfect the new instruments placed on the market by The S. S. White Dental Manufacturing Company. His work in steel is "as fine as silk." There is a fine collection of his work in oil, illustrating prosthetics, at the Baltimore College of Dental Surgery. He has been a wonderful mechanician, and one of the great genuises of American dentistry.

Willoughby Dayton Miller, likely the greatest scientist our profession has yet produced, born Aug. 1, 1853, at Alexandria, Licking County, Ohio. At the age of twelve he removed to Newark, Ohio,

where he graduated from the public schools 1877. From there he went to the University of Michigan, where he took the A. B. degree 1875. He decided to adopt mathematical physics as his profession. He went to Scotland to study at the University of Edinburgh under Sir William Thomas, where he stayed one year. Thence to Berlin. Here his health gave way and while convalescent he met Dr. E. P. Abbot, an American practitioner in that city. His acquaintance with Dr. Abbot led him to adopt dentistry as a profession. He graduated as D. D. S. at the University of Pennsylvania, 1879, returned to Berlin, took up practice and began the study of Bacteriology with the famous Professor Koch. In 1884 he was made professor of dentistry in the University of Berlin. This was a high honor, and the first time ever conferred upon a foreigner. In 1887 he took the "Rigorosum" examination for a medical degree in the Berlin University, gaining the highest honor, i. e., "Magna cum Laude." The University of Michigan, in consideration of his high scientific and professional attainment, conferred upon him the degree of Doctor of Philosophy, the University of Pennsylvania the degree of Doctor of Science, the German Emperor, recognizing his great worth as a teacher and scientist, made him "Privy Medical Councellor" to the Emperor. The Fourth International Dental Congress of St. Louis, 1904, bestowed upon him a gold medal for his paper, "A Study of Certain Questions Relating to Pathology of the Teeth." He was an honory member of some forty different professional organizations at the time of his death, and president of the *Federation Dentaire Internationale*. He had just resigned his position as Dean of the Berlin Dental Department and President of the National Dental Society of Germany, and had returned to America to assume the deanship of a dental department of the University of Michigan, when his untimely death occurred, July 27, 1907. He was a tireless worker, a constant contributor to the literary and scientific side of dentistry, and without doubt the greatest scientist our profession has produced.

Robert Robbins Andrews of Boston, a great authority in Dental Histology and Embryology and Miscroscopical investigator. His most important research work was on "The Enamel and the Minute Process Taking Place During Its Development." His paintings in oil are of rare merit. He also is a collector of oil, Japanese ivory carvings and rare pieces of Satsuma, as well as a play writer and author of poems.

Eugene S. Talbot of Chicago, of *interstitial gingivitis*, "ortho-

dontia," "evolution" and "degeneracy" fame. He is one of the most noted investigators the profession has yet produced.

Green Vardiman Black of Illinois, another great scientist, chemist,bacterioligist pathologist, metallurgist, operative dentist, teacher, and author artist inventor. He has had all the honors possible that his profession could confer.

Edward C. Kirk, editor of the *Dental Cosmos,* a noted dental author and authority, whose clinical researches have materially benefited each practitioner.

J. Leon Williams, an American dentist who has acquired a great reputation as a practitioner in London and as an authority as a microcopist and dental histologist. He is a talented artist in oil painting and photography. He has illustrated the "Home and Haunts of Shakespeare" for Chas. Scribner & Co. and Irving's "Legend of Sleepy Hollow" for Putnam & Sons. He now is working on a large book, "Sicily, Land of Departed Gods and Old Romance," which is to be illustrated by himself.

J. P. Michaels, Biologist, Chemist, Microscopist and Prosthetist, whose motto is "know they saliva—to know thyself." His researches in biological chemistry is determining the causes and cures for buccal and dental diseases have made him famous as a great authority. Universities have conferred degrees upon him and many crowned heads have conferred various orders in recognition of his contributions.

Alton Howard Thompson, Comparative Anatomist, Archaelogist and Anthropologist, one of our most prolific and noted authors. His study of the Mound Builders and prehistoric races alone entitles him to the recognition of scientists. Others worthy of mention are:

A. H. Angle, orthodontist.

A. W. Harlan, literary genius.

W. C. Barrett, editor, author and teacher.

Sir John Tomes, English scientist.

G. H. Cushing, expert operator.

T. S. Hitchcock, carver and engraver.

W. H. Taggart, inventor of the casting method and

D. O. M. LeCron.

Iowa Dentists.

Henry Seymour Chase, first president of the Iowa State Dental Association, organized with five members at Muscatine, July, 1863.

J. Hartman, vice-president.

W. O. Kulp, corresponding secretary.

A. J. McGarvy, recording secretary and treasurer.

W. P. Dickinson, first president original State Board of Dental Examiners, organized 1882.

J. F. Sanborn, of Tabor.

L. J. Walter, Cedar Rapids.

V. H. Tullis, Iowa City.

Prescott E. White, Davenport.

L. C. Ingersoll, Keokuk, teacher in University of Iowa and authority on Dental Histology.

J. F. Abbott, Manchester.

P. Wilson, Burlington.

W. H. DeFord, Des Moines, whose book on "General Anesthetics in Dentistry" is probably the best treatise yet written for the dental surgeon.

There are many others who have added luster not only to dentistry but to other lines of art and science. Time will not permit their mention.

In the whole they were a versatile lot, whose fingers and brains were attuned to produce the beautiful and artistic, whose good deeds have left a halo of beneficient to their memory that will live many years after your bones and mine are mouldering in the dust of death.

Their lives are a glorious example of the *Gospel of Work,* which is the *real recompense* for a man's endeavor in this life. They are worthy for us to emulate. Shall we not say of them as did old Adam in *"As You Like It,"* when gray with age, bent with toil and tottering after his youthful master, whose sire and grandsire he also had faithfully served, he exclaimed: "Master! Lead on and I will follow Thee to the last gasp, with love and loyalty."

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, FORTY-FIFTH MEETING AT DANVILLE, MAY 11-14, 1909.

DISCUSSION OF DR. BRYANT'S PAPER, "PORCELAIN INLAYS."

DR. F. E. CHEESEMAN, Chicago:

I wish to compliment Dr. Bryant upon his excellent paper, which indicates that a great deal of time and study have been devoted to its preparation, and that he writes from a practical understanding of the technique of the subject.

I agree with Dr. Bryant in the belief that a large percentage of the failures following the use of porcelain inlays are due to lack of judgment used in placing them in exposed positions without properly safeguarding the margins both of the inlay and the tooth by proper extension of the cavity, or to a lack of experience or ability in cavity preparation in general, and also to a lack of knowledge of the handling and fusing of porcelains.

Judging from my experience the first two years after adopting the inlay method, it would have indicated that porcelain was a failure in my practice. Inlays were constantly becoming dislodged, a large percentage lost altogether, necessitating the replacing of them free of charge, and what was often more difficult, that of soothing ruffled feelings and attempting to restore confidence in the method, and oftentimes even in a loss of the patient's patronage altogether, due to a loss of confidence on his part in my ability as a dentist. There were many times when it was very discouraging and when it seemed that it would be better to go back to the old methods with which I had been fairly successful; but I had a feeling that it would in reality be a case of "going back," and I decided to persevere, and realized from the experience of men who were successful at that time that it was a lack on my part and not a defect of the method.

I believe most of the criticism of porcelain inlays comes from men who have only had a desultory experience with their use, and who, because the results have not been satisfactory, have condemned the method, notwithstanding the fact that the men who are successful in the practice today are those who were more or less unsuccessful during the first few years of practice, but who have gone on and finally mastered the method. I trust that it will be understood that my re-

marks imply no criticism on the ability of these dentists in general practice.

Personally, I realize that I cannot today handle gold foil as I could eight or ten years ago, as a result of lack of practice in this method; but I have no regrets, as I should certainly feel like abandoning the practice of dentistry were it the drudgery and hard work of the old days. Today, I thoroughly enjoy my work, and believe that I please patients a great deal more than formerly. So that, in my opinion, if I had abandoned this method, I should not only have gone back, but would have gone way back.

At the present time at least 99 per cent of my operative work is devoted to the inlay method, and this has been the experience of several years, and I devote no more, nor as much, time to the replacing of inlays than I formerly did to replacing gold foil fillings.

After I had in a degree mastered the technique of making porcelain inlays it became my practice to place them in cavities of large size, such as mesio- and disto-occlusal cavities in bicuspids and molars, and at the present time I often see in the mouths of my patients inlays of this description which are rendering excellent service. Of course, there has been a percentage of failures, varying from those with badly chipped margins, which were saving the teeth, but were removed and replaced with gold, to those that were dislodged and lost. But, as I have said, a fair percentage have been successful and I believe that a large portion of these failures were due to some lack in my work.

After the advent of the gold inlay, which became a part of my practice subsequent to that of porcelain, it seemed unnecessary to resort to the use of porcelain inlays in posterior teeth, though I have not hesitated to place them in bicuspids and molars if the cosmetic effect to be produced seemed to warrant me in so doing. However, the combination and porcelain inlay has solved the problem nicely. So that in molars, which would necessitate a large display of gold, I am making use of this method of Dr. Taggart's, which, if properly used, is a source of great satisfaction both to the patient and operator.

As to cavity preparation, Dr. Bryant's models show for themselves. He has always been sound in every detail of this work. I do not agree with him, however, when he states that the impression method of obtaining matrices is more accurate than the burnishing method either in buccal, labial, or any other form of cavity. I do

not believe it possible to make a more perfect matrix than can be obtained by burnishing directly to the natural tooth. Furthermore, this matrix can be completed in the average buccal or labial cavity, and be made ready to receive porcelain in from five to ten minutes' time.

As to the selection and the handling of colors, I have been using a method the past two years, which has been very satisfactory to me, and one that has produced more accurate results than any other method I have ever used. I have abandoned the use of the shade guide, and make use of three colors, white, gray and yellow; very occasionally, brown and blue are needed. These colors all fuse at a given temperature, 2360°. In cavities not involving the incisal angle, two colors, yellow and white, are all that are needed in 95 per cent of all the inlays that are made.

The graduations of colors are obtained by sandwiching the yellow between the white layers, the yellow forming the center and the white the outer surface. The deepness of the color of the inlay varies with the thickness of the yellow layer.

Since I began the use of combination inlays, I have been experimenting with low fusing porcelain, something I have never used before, and the results have been astonishing to me. By the use of Brewster's gold matrix porcelain (which, by the way, stands up as well as the high fusing porcelain, a quality not possessed by at least one of the most popular of the low fusing bodies), I have been able to make inlays that were more like tooth substances than those made from any high fusing porcelain I have ever used, and it seems that their colors is not affected by cement as much as the high fusing variety. For buccal and labial and proximal cavities not involving the incisal angle, I believe it to be the porcelain indicated.

It probably is too opaque for incisal restorations, although I am not certain of that, not having tried it.

Dr. Bryant speaks of using white cement for all cases, which I believe to be the best method. However, several years ago, Dr. Ames recommended to me a modification of this by the use of the gold inlay powder (brown), the size of a pin head, introduced into the white powder, which to a large extent has overcome the distressing occurrence of having a yellow inlay which is made for a yellow tooth turn as blue as indigo after being cemented to place. Another thing to be taken into consideration is the locating of inlays. For instance, in

making inlays for the mesial and distal surfaces of an upper central incisor, I should make the inlay for the distal cavity from one to two shades lighter, depending upon the amount visible to the eye, than I would for the mesial cavity. An observance of this simple rule will help the beginner greatly.

One more observation and I shall have finished. It is an astonishing fact that we occasionally hear from some of the believers in the Black and Wedelstaedt method of cavity preparation that it is necessary to resort to extreme extension for inlays, although their method stands for extension for prevention, and I am a firm believer in this method and always have been.

A cavity involving the proximal surface properly prepared should be wide enough at the occlusal to allow for the withdrawal of a solid piece of wax, and even should the patient be one who is immune to decay, so that it would not be necessary to extend the margins buccally and lingually, I contend that the extra extension will not be injurious to the tooth.

DR. H. N. ORR, of Chicago:

I agree so thoroughly with the essayist that the only thing I can do is to take up a few points in connection with the detail of inlay construction.

It is generally conceded that it is impossible to work porcelain by artificial light, which was true until about two years ago, when the Tungsten lamp was put on the market. This lamp gives a perfectly white light, which does not absorb the color rays.

Here is a suggestion for keeping the shrinkage of the body from distorting the margins of an inlay matrix, or the floor of a bandless crown—paint the margins with quite thick shellac varnish, then build the porcelain over it. The shellac will burn out, leaving a space which may be filled in on the next bake. I always use a lower fusing body or enamel for the last bake on my porcelain inlay or crown, as the fine edges of porcelain that have been fused more than twice are liable to be over-fused in the final baking, which accounts for the bubbles along the margins of some inlays.

There are times in making an inlay when we have all the contour we need and yet the color is not good, the matrix is full and will stand no more body. Here the oil colors Dr. Roach has given us will save us much time and trouble. The white wavy lines in enamel, which run transversely across the labial of centrals and laterals, may

be carried out on the inlay surface by a delicate touch of opaque white. The translucent gray of a contour may be obtained by applying a slight line of gray from cervical to cutting edge.

Dr. C. B. Rohland, of Alton:

I do not know just why I was called on to discuss this paper, unless to bring comfort to some of you who have not made a success of this inlay work, because, verily, "there are others!" (Laughter.) One of the first impressions made on me by this paper was how little after all we know about porcelain. There is so much still to be learned, especially in the manipulation of colors. There is where, it seems to me, I have fallen down more than in any other point of the work. Of course, the point of greatest importance is to get a good fit, and that depends entirely on getting a perfect matrix and handling it properly afterwards, so that it be not distorted. It is in this color problem, though, that I have found my greatest discouragement, and if it were not that occasionally I do find some cases that have been marvelously successful, I think I should have abandoned the work long ago. I have just had enough successes to make me hang on, and I hope some way may be found some time or other of controlling results better. I confess I cannot yet tell to a certainty what I am going to get out of the furnace. I am in the position of one who has been doing soldering on porcelain, who always looks with a good deal of anxiety after he gets his case out of his investment to see whether there isn't a crack there. It is the same way with the inlay. I feel uncertain about it. I feel I may have to do the work over when I come to try it in the mouth—and very often I do. I cannot add anything in the way of information on this subject to what has been given us by the essayist. The work he has exhibited shows that he is a past master in the art.

So far as the inlay method itself is concerned, as to whether "cemented" fillings in ordinary cavities are more durable than "stuffed" fillings in the same cavities, I am still a huge interrogation point. I am on the fence with a slight inclination in favor, but I confess I am ready to back down at any moment. That cemented fillings will sometimes preserve teeth indefinitely, I know. I had one under observation that stood seventeen years, and would have stayed there seventeen years longer had I not been asked to change it on account of the color. It was not a fused porcelain inlay, but a piece of porcelain worked into shape and made to fit the cavity just as

accurately as I could by grinding, and yet crude as the fit must have been, that stood for years, and in this case the only reason I removed it was because the tooth had changed so much in color and the porcelain had not followed suit, and the patient, being rather finicky, requested it. I told him I would try. I removed the filling and found the cavity absolutely as it was when I put it in. No change at all.

As to working from impressions, I believe with the essayist there are cases where you can do better by getting a good impression of the cavity and making the inlay from that. Of course, the farther away you get removed from the original cavity, the more likely you are to have discrepancies. But in some labial cavities far up under the gum, I find it difficult sometimes to satisfy myself as to the accuracy of the matrix made direct in the mouth. With such a case I feel as though I could do better and surer work by working from an impression.

One thing I have sometimes found to follow, after an inlay has been in some years, is a roughened surface. I have asked others whether they found that trouble. Some said they had, and others had not. At any rate, I have found this trouble, but whether it was due to not having a proper fuse, I am not prepared to say. The disintegration seemed to be very similar to that which used to take place in the old glass inlay. Those of you who experimented with the glass inlay when it was in vogue will remember that while the fuse seemed to be good when you put it in, it would not be long before the surface would disintegrate, and you would have a very unsightly filling. The filling seemed to be good, but the shade was absolutely off. The gloss had disappeared and it became unsightly and dirty.

If, as I imagine, there is still too much guess work required in fusing for the average workman with the average furnace and appliances, I am inclined to think, from what I have seen and heard of Dr. Matteson's pyrometric cones, that the Doctor may have given us a very near solution of many of these troubles. Any method that will tell us definitely just when the exact proper fusing point may have been reached will be a distinct advance, and give us better control of results.

Dr. A. E. Matteson, of Chicago:

Dr. Bryant has furnished one of the most interesting and instructive papers on the subjects which he treated that I have ever listened to.

I will not attempt to discuss the technic of the preparation of

cavities for inlays—the method of forming matrices or the structural frame work for crowns and bridges.

The color problem which Dr. Bryant elucidates in his paper and exemplifies in his clinics is a joy to witness. There is but one expression that I would take exception to in his paper. It is very commonly used, however, and was introduced by dental manufacturers. I allude to the terms "Porcelain that fuses at 2200°-2300°," or at any number of degrees.

Such terms are misleading; as a matter of fact, there is no stated temperature test which alone will furnish sufficient evidence to judge correctly of the vitrification of porcelain products. The term is used as a matter of convenience; as an approximate nearness.

The firmness of the grain, and the rate the heat is applied, has a very great influence. The variation of voltage—where the electric furnace is used—would be a factor, governing the *rate* of heating.

I believe that fully 75 per cent of the failures of porcelain work are due to faulty baking. No matter if the technic has been of the highest order of excellence, and the color scheme without a fault, an imperfect baking will produce a dire failure, and this is especially true with an over-bake. The delicate shading is bleached out, small bubbles appear next the platinum matrix, many so minute that they are mere specks at the margins, and if not punctured by the escaping gas, soon become so by wear, allowing the secretions to penetrate, producing the dark lines, for which the cement becomes the "scapegoat."

I have been called upon to say something regarding the use of Pyrometric Cones used as a comparative test for fusing Porcelain.

Pyrometric cones were first introduced by Dr. Seger of Berlin in 1886, and were adopted and are now used by principal porcelain and clay workers in Europe and the United States.

It may not be amiss to give a brief account of their manufacture:

The clay or body of these cones is formed of Silica-Feldspar. Clay and Metalic Oxides, finely ground; a mixture is made which will vitrify at an established high temperature point, the heat being advanced in a stated time.

Another mixture is made which will vitrify at a low temperature. Repeated mixtures of these, in aliquot proportions, will produce relative fusing points, until one is obtained which will correspond to that of the Porcelain body used.

These mixtures are then pressed in elongated conical forms, and as they are made of a texture which will change *form,* when the heat is raised sufficiently and being set in an upright position, the point will begin to curve as the porcelain body reaches a "biscuit," nearly forming a loop, at a "glaze."

Each porcelain body requires cones made especially for that body.

It is an established fact that the cone system is a thoroughly reliable method of noting the vitrification of porcelain and clays because it measures *heat work*, not temperature alone—they are of like material and are subjected to the same conditions and are influenced in a like manner—which is indicated by a change of *form*—and no matter what the actual temperature may be, maintain the same relation to each other and to the ware with which they are placed, furnishing all the requirement of a definite and reliable standard for comparison.

In using, place the cone in the firing pan as near the article as possible, slightly inclined in the direction it is desired to fall, covering the base with the silex enclosed to prevent falling and fusing to the pan, and in line of vision through the peep-hole of the furnace.

The best results in baking porcelain are obtained by raising the temperature in the furnace in a uniform manner—timing each step until one is reached that will require one and one-half minutes to melt a cylinder of gold—advance the step no further—the cone will commence to change its form in from one minute—in the *lowest* of the high fusing bodies—to 10 minutes—in the *very* high fusing bodies.

Dr. H. C. Snyder, of Chicago:

I like Dr. Bryant's method very much, but, as Dr. Rohland states, I have not the complete confidence in the inlay that Dr. Bryant has. I have had the same difficulties in the shading and building of my inlays, and it drove me to the shell crown, and I can get better results than I can with the inlay. While it may be because of my inefficient handling of porcelain, I cannot do work with the inlay alone where I can in the larger work with the shell crown.

Dr. F. H. Skinner, of Chicago:

I wish to join those who have taken part in this discussion in complimenting the essayist on the hard work and beneficial suggestions he has given the profession in this most interesting paper. The remarks of Dr. Rohland also brought out a few ideas which will help

us a great deal in burnishing matrices in the mouth. Frequently we are limited for space in removing matrices which have been carefully burnished; the platinum has been stretched to the limit, if not actually torn or broken, and in removing it, these little, thin, delicate parts or edges, coming in contact with any of the adjacent teeth or the one being filled, are very easily bent out of shape. I have attributed the majority of the misfits I have had to bending my matrices in this way. Since the cast inlays have become so generally used, I have been using the same wax that is used for the cast inlay in assisting with the porcelain inlays as well. I take one of the more mouldable waxes, warmed, and press it firmly into the matrix in the cavity, burnishing out the excess wax, leaving it concave rather than convex opposite the contact point; should the cavity happen to be an approximal, I then throw cold water on to set wax hard. In this way I am able to remove the matrix and wax together, preserving the original shape of the cavity in every detail, very much better than I did formerly. After burning the wax out, the margins are varnished, and I have had more universally good fitting inlays since adopting this method than I had before.

Dr. C. B. Rohland, of Alton:

May I ask Dr. Matteson whether he has found in his experiments any difference in the fusing points of the same make of porcelain in the different colors? That is, whether a yellow color, a blue color, or a white will have exactly the same fusing point in the same make of porcelain.

Dr. A. M. Matteson, of Chicago:

That is one point I meant to have alluded to when I was on the floor. Change of color is brought about by over-fusing. The different shades depend on the degree of heat.

Dr. Rohland: And they all fuse at exactly the same point?

Dr. Matteson: I do not like to mention the names of manufacturers, but I ought to do so. I have had variations in the fusing points of porcelain made by the same manufacturer. I have had the same report made by others. These manufacturers make a small amount of their material, and they are unable to repeat it in the next mix of their body, and their results do not agree with their previous work. I have had that occur in my own office. Many porcelains recently furnished do not fuse the same as that furnished when similar bodies were first introduced.

Dr. E. M. S. Fernandez, of Chicago:

I do not think I can add anything of value to this paper, which is so practical and so beautifully written. Dr. Bryant has certainly described a valuable and practical method for this work.

I believe hydrofluoric acid is responsible for many failures in porcelain inlay work and I think it is the main cause of those discolorations at the margins of porcelain inlays. The use of small garnet disks or small carborundum stones I have found safer and best for the purpose of roughening the cavity side of the inlays. Many of the inlays that I have roughened with hydrofluoric acid have loosened soon after being cemented, but few of those otherwise roughened have ever loosened under my care.

I will say, the method that Dr. Bryant described of producing color in a porcelain inlay, is a new one to me. The old teaching for some time past has been to produce colors by placing a darker or yellower hue towards the margin of the gum, and a lighter tint towards the incisal edge. Dr. Bryant's method is, to place an opaque white layer of porcelain on the bottom of the inlay and thereupon build with a darker shade over which he places lighter tints to produce the proper color.

I would suggest one method to those of you who have not had experience enough to get the color you wish. This method will help you to learn, namely: Supposing you are going to make an inlay for an upper central incisor, say a mesio-incisal cavity. Form your matrix, then spread the first layer of opaque porcelain on your matrix, as Dr. Bryant has said, and, at the same time, take another piece of flat platinum and lay on it a similar layer of the same opaque porcelain and bake the two at the same time.

You have then the work on your matrix and also a second or test piece. Next, you lay the layer of porcelain that matches the dentine, on your matrix, putting the same on your test piece, and bake both at the same time. The next, or third layer of porcelain, you lay only on your test piece, bake it and compare, and if the color is correct, you may finish your work on the matrix. If the color is not correct, grind off and try again until you get the proper color; then finish your inlay, being guided by your test piece.

This method will help you materially and save you disappointment.

Dr. John P. Buckley, of Chicago:

In regard to the penetrating action of hydrofluoric acid on porcelain, mentioned by Dr. Fernandez, I will say that because this acid will not penetrate flesh, if accidentally applied to the hand, is no reason why its action is not neutralized when applied to inorganic substances.

Dr. Waltz mentioned a statement made by Dr. Head, of Philadelphia, that an inlay etched with hydrofluoric acid can be anchored more securely, and we can accept Head's statement in regard to this as a fact. The inorganic compounds in porcelain will absolutely neutralize the hydrofluoric acid and its action will not penetrate the entire inlay, although its action will penetrate soft tissue.

Dr. J. F. F. Waltz, of Decatur:

One feature in regard to porcelain inlays that has done more to discourage me from using them than any other has not been touched on at all. I refere to the gathering of a line of dark stain in the crevice left by the dissolution of the cement. I do not know of any work I do which is more of a chagrin to me than to have an inlay which was satisfactory at the time it was set return in the course of a year with this dark stain. Explanations have been advanced to account for this, one of them being that in the mixing of the cement some material is incorporated with it which subsequently has to do with the formation of this dark line, and perhaps a metal spatula has something to do with it. I have always used a bone spatula, so that a metal spatula can play no part in the formation of these stains in my work. Again, as regards the mouths in which this stain is apt to occur, there seems to be no indications by which one can judge them. Apparently, there is no way to tell if it will form or not. It seemingly is more apt to occur in those mouths in which we observe a thin, threadlike line of stain, following the festoons of the gum, more or less on all the teeth, but more prevalently on the lingual surface, and which is difficult to remove in polishing the teeth. This one feature, the gathering of this stain, has done more to lessen my use of porcelain inlays than any other.

The discouragement of having inlays drop out of cavities is one I have not experienced enough to cause me much chagrin. Where it has occurred in a few instances I expected it, perhaps because of something having affected my nerves at the time the inlay was set. It would not have occurred if I had used better judgment in setting it.

Then I have observed a few of my inlays go to ruin from fracture of the porcelain. I was a little too liberal with my undercut for retention and weakened the inlay, so that fracture took place; but the strength with which an inlay is retained was evident from the fact that in every case of that kind the real porcelain inlay was still there, while the other had broken off and was brought to me by the patient wrapped up in a bit of tissue paper.

One other matter, the combination gold and porcelain inlay, or the high alloy-platinum and gold inlay that Dr. Bryant spoke of with porcelain, has been to me a disappointment. I do not fuse porcelain in these cavities without much trouble from checking. In one case of a large restoration of a central incisor, I thought I had a beautiful result, but in a month it returned, with checks showing and a small bit of the porcelain out. Whether my technique was faulty or not, I do not know. I have felt the method was not right. The technique of making a porcelain inlay in a gold inlay is so elaborate that I have not attempted to use it very much.

If I criticised anything in the admirable paper, it would be the cavity preparation as shown by the models which were so beautifully prepared and only after much painstaking labor. In this one particular I would want more retention in a number of cavity preparations than he seems to think necessary.

Dr, Bryant (closing the discussion):

Dr. Cheeseman spoke of putting inlays in molars and bicuspids. I must say, I cannot agree with him, as I have had all I want of that. Another thing: How he can get indigo blue out of yellow and white, I do not know. Dr. Roach's shades are going to be a wonderful help to us. It is going to be one of the greatest helps we have ever had in porcelain work. If any of you have trouble with colors and wish to make a study of them, it would be a great help to you to look up the work of Ogden N. Rood, professor of physics in Columbia University. The teachings in his work on physics can be applied to our work in an advantageous manner. The book is entitled "Practical Chromatics."

Regarding the shell crown Dr. Snyder spoke of, while it is a beautiful piece of work, I cannot make up my mind that it is good practice to take all the enamel off a good tooth when there is a mesial cavity. We do not need to remove the tooth enamel when we have got good enamel all the way around it.

Dr. Skinner's wax idea is all right. With regard to the black line Dr. Waltz spoke of, my experience has been that it is seen in mouths of patients whose saliva is thick and ropy rather than thin. That has been a great bugbear to me. It is the bane of porcelain workers, and according to my observations, a thick, ropy saliva is more prone to make a black line than thin saliva, and all we can do is to hope that we will be able to get a cement that will not produce it.

DISCUSSION ON THE PAPER OF DR. GETHRO, "SOME MISTAKES IN OPERATIVE DENTISTRY."

DR. C. P. PRUYN, of Chicago:

Mr. President: When the orator of the evening began his dissertation upon the subject to which you have just listened, it seemed as though he was like the weeping prophet, Jeremiah, lamenting over the sins of the dental Jerusalem. When he made his first statement that from sixty to seventy-five per cent of failures of fillings in adults were caused by imperfect manipulation, it impressed me as being rash, but toward the latter part of his discourse, when he showed the pictures, we then began to see that his statements were not so rash after all. If it is a fact that from sixty to seventy-five per cent of failures of fillings in adults come from faulty work, it is a deplorable condition of things. Is it really so? If it is, what is the cause of it, and is it possible to remedy this defect? If it is a fact, gentlemen, we are not doing our duty. Where is the trouble? Is it because of faulty manipulation? Is it because we have not good judgment? Is it because we do not get enough compensation for our work? These are queries we should consider carefully.

The average life of a gold filling has been said to be five years. Is that all? If that is so, are we doing our duty to the people we serve? If that is so, are we not really getting money for services that are improperly performed? I hope the statement is not true. However, I am glad he made the statement because it sets us to thinking. The paper is full of suggestions; but the essayist has found so many faults that he seems to be a pessimist of the pessimists. There is nothing optimistic about his teaching. Is it because, as a professor of dental anatomy, he sees these defects? There is something wrong somewhere.

He spoke of the use of the separator for making examinations. I remember one gentleman who said it was not necessary to use a separator, as he was able to find plenty of defects without using one, and

that statement came from the lips of one of our able, respected members, one who has been a member of this society for forty-five years, a charter member of this organization. How about these conflicting statements? Where does the truth lie? Who is doing right and who is doing wrong? These are questions to consider.

There are so many points one could discuss that I can only touch here and there on some of them. He spoke of the injudicious patching of fillings, improper judgment used in the patching of fillings, and said it was not the proper thing to do at all. I will agree with him in some instances, but I will cite a case or two where it is proper to patch fillings and do better work for our patients and ourselves. Take, for instance, proximo-occlusal cavities in biscuspids, where the work has been done well, gold fillings have been put in and stood well for years, but at the cervical margins decay has progressed. In such places I have been in the habit of patching with amalgam, and I have felt in doing so I was doing my patients the best service possible for mortal man to give them, because when we put together in complete opposition these two metals, gold and amalgam, we have a new condition of things we did not have before. We have a short circuiting of the two metals; the gold will be maintained bright and clean, the bare metal will oxidize, and as a consequence, a peculiar something results that is inimical to microbic growth, so that decay does not go on as fast about teeth filled in that way as it does when teeth are filled with gold or with amalgam alone. I make this statement boldly, feeling every word of it, because I have tested it for many years in my own practice, and have observed it in the practice of other dentists. Furthermore, that style of practice carried on a little further, which is against the present method of inlays, will stand when the inlay craze will have been forgotten; that is, in cases of extensive decay in bicuspids and molars, upon the proximal surfaces, filled with amalgam, capped over with gold at a subsequent sitting, so that the amalgam will not show. Here you have two metals with which you can contour teeth nicely and save them. I see patients in my practice for whom such fillings have been put in and have lasted ten, twenty and thirty years, fillings that were put in by myself. I see these cases not only in my own practice, but other dentists report the same thing. Do not decry amalgam. It has filled a want in the dental profession that nothing else has ever done. If the average life of a gold filling is only five years, what can possibly be the life of an amalgam filling and of

other types of fillings? I believe that teeth can be saved with amalgam fillings and the average life of such fillings be just as good as with gold, and we should in our teaching institutions teach the proper use of amalgam. The fault has been that we have not taught amalgam and its proper use. It has been my custom for a number of years to give a peculiar sort of clinic; I have given it so many times that I am tired of giving it, but I think I possibly have done more good in giving that style of clinic than any other I have ever given. I take a piece of slate or a piece of board, and with gum shellac fasten little pieces of glass tubing, half an inch long, onto the board or slate, and fill these tubes with amalgam. My method is to have different men use their own alloy with which they are familiar, and put a little piece of paper around the tube, so that they cannot see what they are doing. The men would fill these tubes in the usual way, then remove the piece of paper hiding their work, and see the defects; and it is astonishing how air spaces will show between the amalgam and sides of the glass tube, showing how difficult it is to make a first-class amalgam filling. You cannot do it by taking a packing instrument, nearly the size of the cavity, and with one or two pushes fill the cavity. It cannot be done in that way. It takes time to put in a good amalgam filling. You must take small quantities of the material at a time and use small instruments, and by rotary movements and direct thrusts get the amalgam in complete apposition with the walls of the cavity. You cannot afford to do that for fifty cents or for seventy-five cents. You must charge for time. This leads to the subject of fees. The old system of charging particular fees for inserting fillings is wrong. There is nothing right about it. If we are doctors, we should charge as doctors would charge, and not as tradesmen would charge. We cannot charge for a filling as a man would charge for a pair of shoes or a yard of cloth; but, if we are doctors, we want to charge for professional services. As an illustration, I remember some years ago to have charged a gentleman ten dollars for an amalgam filling. He was a lawyer. He complained that I had charged him too much. He was a professional man, and I am a professional man. I said to him, as a lawyer, when a client comes to you and asks for your opinion and you write that opinion on a piece of paper, does the client pay for that piece of paper? He said, no. And on the same principle I told him that I did not charge for the amalgam, but for my skill and ability to render a particular service. I told him that I was educated in

And she herself is fair in form and face;
Her glance is modesty, her motion grace,
Her smile, a moonbeam on the garden bower,
Her blush, a rainbow on the summer shower,
And she is gentler than the fearful fawn,
That drinks the glittering dew drops on the lawn.

"When first I saw her eyes' celestial blue,
Her cheeks' vermilion, and charming hue,
That melted on her lips;—her auburn hair
That floated playful on the yielding air;
And then that neck within those gracious curls,
Molten from Cleopatra's liquid pearls;
I whispered to my heart—'We'll fondly speak;
For sure such language from those lips must flow,
As none but pure and seraph natures know.'

" 'Twas said—'twas done—the fit occasion came,
As if to quench betimes the kindling flame
Of love and admiration—for she spoke,
And lo, the heavenly spell forever broke
The fancied angel vanished into air,
And left unfortunate Urilla there;
For when her parted lips disclosed to view,
Those ruined arches, veiled in ebon hue,
Where love had thought to feast the ravished sight
On orient gems reflecting snowy light,
Hope, disappointed, silently returned,
Disgust triumphant came, and love expired.

"Let every fair one shun Urilla's fate,
And awake to action, ere it be too late;
Let each successive day unfailing bring
The brush, the dentifrice, and from the spring,
The cleansing flood—the labor will be small
And blooming health will soon reward it all.
Or, if her past neglect preclude relief,
By gentle means like these, assuage her grief;
The dental art can remedy the ill,
Restore her hopes, and make her lovely still."

This poem was followed in 1838, by another in blank verse, entitled "Dental Hygeia"—a poem on the health and preservation of the teeth. He also contributed to the "New York Mirror," and during the rebellion published a series of "War Lyrics" to William Cullen Bryant's "New York Evening Post." He wrote many valuable essays on dentistry and published a book, "A Treatise on Mechanical Dentistry," the first of its kind, to freely give to the profession various methods of practice, which heretofore had been secrets with the majority of practitioners. He was active in organizing *The American Journal of Dental Science,* and when Dr. Parmly retired after the first year of its existence, Dr. Brown became co-editor with Dr. Harris. Solyman Brown painted in oil and modeled in clay. His work in modeling, Dr. Norman W. Kingsley informs me, was the incentive that induced Dr. Kingsley to practice and become famous in modeling and carving. Dr. Brown exemplified the definition of Watts-Dunton, which declares: "As one of those great primal human forces which go to the development of the race, poetry, in the wide sense, has played as important a part as science."

Amos Westcott, was a man of strong character and pronounced views on any subject he discussed. Beginning life as a poor farmer boy, he labored early and late to acquire an education, early evincing a liking for astronomy, botany and mineralogy. His fondness for the latter two studies continued through his life. He made a large collection of rare specimens. He earned the degree of Bachelor of Science, and afterwards graduated as a civil engineer, and in 1840 he received the degree of M. D. from the Albany Medical College. In 1846-49 he was Professor of Operative and Prosthetic Dentistry of the Baltimore College of Dental Surgery. March, 1852, he founded the New York College of Dental Surgery at Syracuse, N. Y. (the third dental college in the world), of which he was Dean and Professor of Theory and Practice of Dental Surgery and Dental Technology. This school continued three years until it was destroyed by fire.

Wescott was of an inventive turn and invented many dental instruments of merit, amongst them the Westcott jackscrew for regulating teeth, besides many agricultural implements of practical value. He was also an active politician and was first elected as an alderman and later mayor of Syracuse. He possessed a great store of general information on a variety of subjects and by his efforts secured an

abundant water supply for his city. His son, Edward Noyes, was the author of "David Harum."

Elisha Townsend, a Quaker by birth, and man of refinement and culture and a great ornament to our profession; a watchmaker in his early youth; then an actor and afterwards one of the profession's most brilliant orators and lecturers, and was an extraordinarily skillful dentist. He was president of the American Society of Dental Surgeons, originator and founder of the American Dental Convention, first Dean of the Philadelphia College of Dental Surgeons. He was a close friend of Hayden and Harris, and Robert Arthur, and imbibed much of their enthusiasm and talent.

John Roach Spooner, a native of Massachusetts, studied dentistry in 1815, practiced in Western New York, and in 1830 located in Montreal, Canada, the first man to really practice dentistry as a distinct profession in the Province of Quebec, one of the first to use porcelain teeth, instead of bone and ivory. He soon established a reputation along this line. He is credited as the first to use arsenous acid for the devitalization of the dental pulp, using this in preference to silver nitrate, nitric acid and actual cautery which were employed those days.

Shearjasbub Spooner, a native of Vermont, born in 1809, studied the classics and medicine with his brother, Dr. John Roach Spooner of Montreal, Canada. Dr. S. Spooner graduated from the College of Physicians and Surgeons of the University of New York, 1835, and immediately began the practice of dentistry. In 1836 he wrote a 208 page book, "Guide to Sound Teeth, or a Popular Treatise of the Teeth," in which he was the first to publish to the profession the use of arsenic for devitalizing the dental pulp, as discovered by his brother, John Roach. In 1838 he published "An Essay on the Art and Manufacture of Mineral, Porcelain or Incorruptible Teeth." In 1838 he published "A Treatise on Surgical, or Incorruptible Teeth." He was a great book lover and published the "American Edition of Boydell's Illustrations of Shakespeare," also a "Biographical and Critical Dictionary of Painters, Engravers, Sculptors, Architects and Curiosities of Art" (1853). He also published a superbly embellished edition of the "New Testament," illustrated by engravings after designs by the best Italian artists. The arduous duties of compiling these works undermined his health. He died a nervous wreck, literally worked to death.

Edward Maynard, a born mechanic, educated for an army career, a cadet at West Point. Delicate health compelled him to relinquish this ambition and to study civil engineering, drawing, architecture, law and anatomy, all of which developed him for his future career. He was very skillful, making his own instruments. He located in Washington, where he soon attained eminence as an operator, and in wood carving, wood engraving, modeling in clay, architectural drawing, and drawing and coloring, which for correctness of detail and finish ranked with the best efforts of the most accomplished experts. He spent many evenings at the Washington Sketch Club, sketching from the nude. By his knowledge of anatomy, he discovered the great diversity of form and situation of the maxillary sinus, which he made known to the faculty of the Baltimore College of Dental Surgery, 1846. He went to Europe and was dentist to the Czar of Russia, who honored him with gifts and medals. He operated for many crowned heads. The King of Prussia made him a "Chevalier of the Military Order of the Red Eagle," and the King of Sweden gave him "The Great Medal of Merit," an honor rarely given to a foreigner. He invented many firearms, amongst them the Maynard rifle, the first breech-loading rifle that proved equal to the best muzzle loader. He revolutionized the firearms of the civilized world. A man of rare genius was Maynard.

Simon P. Hullihen, pioneer and expert in oral surgery and philanthropist, was a son of very humble and poor parents, born in 1810 in Northcumberland County, Pa. By trade a silversmith, finally drifting into doing prosthetic work for dentists; a man of much skill who had a natural aptitude for surgery and soon developed such skill that he ranked as one of the most ingenious experts of his day; doing a great deal of charity work; the founder of a public hospital at his home, Wheeling, W. Va. This is a monument to his philanthropic and public spirited desire to benefit his fellow man. He was apparently a very gruff and rugged type of an uncut diamond, but of very sympathetic nature and extremely gentle with the poor and suffering and had a great fondness for pets; horses, dogs and birds found in him a devoted friend and admirer. His generosity was proverbial; as a humanitarian, he had few equals. On the marble shaft, erected by the citizens of Wheeling that marks his resting place in Mount Wood Cemetery is skilfully carved, that appropriate scriptural scene of the good Samaritan binding the wound

of the hapless traveler, and these words that epitomize his career: "Eminent as a surgeon, the wide fame of his bold, original genius was everywhere blended with the gratitude for his benefactors."

J. DeHaven White, for many years editor of *The Dental News Letter* and *The Dental Cosmos,* was a man of pronounced literary tastes, contributing much to dental literature, and also, was a poet of no mean ability. He was the leading spirit in the organization of the Pennsylvania College of Dental Surgery, and for a number of years its Professor of Anatomy and Physiology. He was a lover of blooded horses. He wrote a volume of poems, "Mary Blain and Hazel Dell," and "Miscellaneous Poems," published by King & Cairo (1870), Philadelphia, and was an ardent lover of music and sang well, and an expert rifle shot.

Robert Arthur, the first on whom the dental doctorate degree was ever conferred by a dental college, and first to make known the cohesive properties of gold, was a native of Calverton, Maryland; a diligent student, a master of Greek, Latin, French and German, a poor boy and a "printer's devil," apprentice to his brother. He received the first diploma of the Baltimore College of Dental Surgery, and was Dean of the Philadelphia College of Dental Surgery, which later became the Pennsylvania College of Dental Surgery of which he was also Dean Organizer and First President of the Maryland State Dental Association, and author of many contributions to our literature, amongst which was his "Treatise on the Use of Adhesive Foil," makes him stand out pre-eminent as one of the progressive intellectual giants of his day.

Sanford Christie Barnum, the profession's benefactor, the originator of the rubber dam, a native of Sullivan County, New York, born 1838, studied dentistry with an uncle, Dr. Joseph Clowes, New York City, for four years, attended two courses at the New York College of Dentistry from which he graduated 1868. He soon acquired an enviable reputation both as operative and prosthetic operator. While practicing at Monticello in New York in 1862, he conceived the idea and made practical the application of the rubber dam in dental operations. Possessed with high professional ideas and of a generous nature, he decided to forego the opportunity of making a fortune, which this highly useful invention afforded, and presented it as a free gift to the profession, which was quick to recognize the value of the invention, and his donation gave him a world-wide reputation.

He was presented with many testimonials, medals, resolutions, gifts, etc., as tokens of the profession's esteem. He deserves the everlasting gratitude of the profession, for it was he who made it possible "to govern the tide and command it to go hence that we may approach the wreck on the beach and repair the breaks in the hull that the ship may continue to sail on its mission of usefulness."

Walter Webb Allport, was a tailor's apprentice and a close student. He studied medicine and later dentistry with Dr. Amos Wescott, and become one of the experts of his day, ranking with Varney, Atkinson, Corydon Palmer and McKellops. He located in Chicago in 1854, and enjoyed a most lucrative practice. He was a microscopical investigator and instrumental in organizing the Chicago Microscopical Club. He was editor of the *People's Dental Journal,* promoter and organizer of many dental societies and originator of the *World's Columbian Dental Congress.*

Henry James Byron McKellops, whom all knew and respected for his superiority as an operator; and he had few, if any, equals when it came to the manipulation of heavy foils, especially gold and platinum foil, with which he wrought wonders. He gathered a most complete dental library, the best selected of its kind in existence, at the time of his death. Dr. McKellops loved the beautiful and artistic, and he filled his home with many pieces of rare bric-a-brac and choice works of art. His complete and beautiful office furniture and the instruments he was so proud of were sold after his death for a song at public auction. He liked fancy dress and had a great fad for collecting beautiful neckties. He, like Atkinson, was a conspicuous figure at all dental gatherings far and near. He was a pronounced character and greatly admired by those who really knew him. He was a great ornament to American dentistry.

Marshall Hickman Webb. "This hand was made to handle naught but gold." The son of a poor carpenter and cabinet maker, whose ingenuity he inherited, Young Webb made ten violins, carving the bodies, making his own strings and stringing the bows, before he was sixteen years old. The manufacture of waterwheels and mechanical toys, ingeniously wrought, were his boyhood hobbies. An assiduous student, he soon became an expert in dental operations, and gave much study to dental pathology and histology. He soon attempted to fill all classes of cavities with gold, no matter how difficult or inaccessible.

His was an inventive genius rarely equaled. His improvement on the Bonwill electric mallet made him prominent, and the magnificent monuments he built of cohesive gold reached the highest excellence. "Contour" was his watchword, and as a clinician he had few, if any, equals. In the preface of his excellent book, *"Notes on Operative Dentistry,"* the keynote of which is cohesive gold, he beautifully expresses his ideals when he says "That in literature, sculpture, painting and music, and in operations, such as dentists ought to perform, it is not the aim of a Dryden, a Michael Angelo, a Raphael, a Beethoven, or a Varney to write, carve, paint, bring forth in "concord of sweet sounds," or to produce in gold that which requires but little time and skill, and is simply cheap and inartistic; it is the endeavor of the *artist* whatever the sphere of his efforts, to produce the perfect and the beautiful.

W. G. A. Bonwill, another inventive genius, one of the greatest operators, both in operative and prosthetic dentistry, the world has ever known. A well posted-man on all scientific questions and a writer on "Evolution," and great authority and a writer on dental subjects. He was a great inventor. The profession owes him much for his mechanical mallet and many other ingenious devices.

John Joseph Ravenscroft Patrick. Young Patrick came to St. Louis and took one course in McDowell's Medical College. Being of a mechanical turn of mind and possessing wonderful ingenuity, which had been developed by an apprenticeship to a jeweler and diamondsetter, he took up the study of dentistry with his brother, Dr. Hugh Patrick, a dentist, and Dr. Henry J. McKellops, and commenced practice in St. Louis in 1850.

In 1853 he removed to Belleville, Ill., and practiced until the fall of 1862 when he enlisted in the 130th Illinois Infantry, of which he became a captain in 1865. His health failed and he returned to Belleville and continued practice until his death.

Dr. Patrick was a tireless worker and one of the notable figures in the history of dentistry of his day. Besides being one of the most skillful manipulators of gold as a filling material, he was an adept in regulating teeth and perfected a system of appliances that were a valuable contribution to orthodontia. He also invented a system for crown work, and a swaging press. He was an expert with the use of the blow pipe. He lectured on comparative anatomy at the Missouri Dental College and the Iowa State University Dental Depart-

ment. His work in anthropology and comparative anatomy will be his enduring monument. By this painstaking examination of thousands of prehistoric skulls which he dug from the mounds and hills surrounding Belleville, he dispelled the myth that dental caries were of modern origin. He showed that the dentures of ancient races were affiliated with dental decay as are the modern races. So conspicuous was his work that the American Dental Association made him curator of the great investigation that society set on foot in tabulating many thousands of dentures of available prehistoric crania.

The completed record of Dr. Patrick's works are published in the Transactions of the American Dental Association for 1895. His work in the departments of archæology and ethnology made him known to the scientific men of the world.

He surveyed the great Cahokia Mounds in Illinois, and made models of them, which are now in the collections of the Smithsonian Institute and similar collections in Europe. He made several archæological collections, the most important known as the "Patrick Collection," now in the possession of the Missouri Historical Society of St. Louis.

He was a prominent member of the American Ethmological Society of New York, and the Anthropological Society of Washington, D. C., and correspondent to many European Societies and a member of many dental societies. He was a ready speaker, skilled conversationalist and prolific writer, and a tireless seeker after scientific truths.

Charles Andrew Kingsbury, of Philadelphia, was an early experimenter with electricity as a dental therapeutic agent to relieve aching teeth. He was also a noted traveler in foreign lands, examining the historical antiquities, arts and sciences of various countries, which he reported, and published in the Philadelphia newspapers. He was an ardent disciple of Isaak Walton, and possessed a fund of knowledge of fish and game, and took a keen interest in the efforts to stock our rivers with food fish, and was a member of the Pennsylvania Fish and Game Protective Association.

William Henry Dwinell was a versatile genius, a lover and collector of books and rare paintings, and expert wood engraver and a friend to struggling dental students, artists and writers.

Joshua Tucker, of Boston, was a most accomplished penman and did excellent work in pen and ink drawings.

Asa Hill, the inventor of "Hills Stopping," a Godly man of pronounced religious views, was of a poetic turn, and wrote good verse, as well as good prose. He perfected a marble staining process done with chemicals that penetrated the highly polished marble, remaining ever after.

Wm. W. H. Thakston, known as "the Chesterfield of the dental profession," graduated in the second class (1841), Baltimore College of Dental Surgery, the inventor of the Thakston drill, which was preceded by the Merry drill, invented by Chas. Merry, a dentist of St. Louis.

Prof. J. Foster Flagg, a talented writer and investigator, and one of the three, i. e., J. F. Flagg, Henry S. Chase, of St. Louis, and S. B. Palmer, of Syracuse, N. Y., who were the first to take the stand and declare that amalgam was a fit material for the filling of teeth. This brought down the condemnation of the entire profession, who at that period were all gold advocates. This controversy brought about what is known as "The Amalgam War." All of these men lived to see their theories adopted, and amalgam used as a filling material.

J. H. McQuillen, a talented writer, speaker, teacher and practitioner of Philadelphia, was for a number of years editor of *The Dental Cosmos,* a collector of rare books and prints.

James E. Garretson. Born in Wilmington, Delaware, October 18, 1828. Began study of dentistry when quite young, and practiced for a time in the neighborhood of Woodbury, N. J. Graduated 1856 at the original Philadelphia College of Dental Surgery, the predecessor of the present Pennsylvania College of Dental Surgery. Shortly after graduating he entered the University of Pennsylvania, and graduated as doctor of medicine. Practiced for some time subsequent to this, but his taste ran more to medicine and surgery, and he joined Dr. D. Hayes Agnew in his work in the Philadelphia School of Anatomy. It was in this connection and his special studies that lead him directly into surgical practice, which continued for the remainder of his life. It was through his efforts that a special branch of surgery was organized and became recognized as "Oral Surgery," the first specialty evolved from dental surgery, orthodontia being the second specialty. Criticism and prejudice both developed against this specialty, but by his skill and individuality in this work, this special branch was later adopted as part of the curriculum of the leading dental schools in the United States. He was the first of

the surgeons to use the Bonwill dental engine in surgical operations. His best literary work, "A System of Oral Surgery," is a monument of labor, and was the first book on oral surgery ever written. He found sufficient leisure in his busy life to write other books under the *nom de plume* of John Darby. These include "Odd Hours of a Physician," "Brushland," "Nineteen Century Sense," and "A Man and His World." These added to his reputation as a thinker and philosophical writer. His lectures on philosophical subjects contain some of the deepest thoughts conveyed in a most entertaining manner. His love of the philosophy of all ages was deep and profound. His studies in these directions entered into all of his writings and addresses.

John M. Riggs introduced a method of treating diseases of the teeth and gums, which afterwards the profession designated as Riggs' disease. He was "a book worm."

Horace Wells, a student of Dr. Riggs, a naturalist by habit and taste, and the one who first discovered that great boon to humanity—anesthesis by inhalation by nitrous oxide gas, December 11, 1844. The whole world acknowledges its appreciation and debt of gratitude they owe Wells for his discovery. After he died, honor, praise and thanks were given him for his discovery. A monument and a memorial tablet were erected in his honor at Hartford, Conn., and also a bust of bronze contributed by the dentists of the country, now in the army museum at Washington.

Edwin James Dunning, of New York City, co-editor with Chapin A. Harris of the *American Journal of Dental Science,* a student of art and nature, and Shakespearean delineator. An intimate friend of many noted writers and artists. At the age of 53 he became blind, and took up literature. He dictated a book of 336 pages, entitled *"The Genesis of Shakespeare's Art—A Study of His Sonnets and Poems,"* which is a most important library reference book. He committed to memory the entire poems of Wordsworth, Tennyson, Browning, Shelly and others. It is said he memorized 154 pages of Shakespeare's sonnets, and he had them at his tongue's end.

Norman W. Kingsley, noted as an orthodontist and for his invention of a cleft palate obturator. Kingsley likely is the most versatile dentist the profession has ever had. His bust of Christ is a masterpiece, as is his bust of Whitelaw Reid. He was the virtual inventor of pyographical work. He produced all of Rembrandt's

masterpieces with his laboratory bench blow pipe. He also was an artist of rare distinction in oil colors, silk embroidery work, and in beating copper and bronze. His book on *"Cleft Palate"* and *"The Voice"* are standard works today. His contributions to orthodontia both in writings and appliances are invaluable. He is *"the father of orthodontia."*

James Taylor, born 1809 in Ross County, Ohio. The boyhood chum and fellow student in medicine and dentistry of Chapin A. Harris. Their careers in after life run almost parallel, possibly one was an inspiration to the other. Both of humble parentage, residents of obscure inland towns, beginning their career under the same auspices, and each developed his talents along the same line and leave a brilliant record as dental educator, journalist, society worker, organizer and practitioner in a way to bring credit and renown to dentistry. Taylor located in Cincinnati and organized the Ohio College of Dental Surgery, the second college ever organized, of which he was dean for eighteen years. He was the editor of *The Dental Register of the West,* and originator of the Mississippi Valley Society of Dental Surgeons, of which he was president 1849-50. He had a great taste for horticulture, and his love for flowers was intense. When I think of this beautiful characteristic of his I always think of the utterance of he who says: "If I had two loaves of bread, I would sell one and buy white hyacinths to feed my soul."

George Watt, born 1820, Greene County, Ohio. A poor boy, but early mastered mathematics, English and Latin, and became a school teacher. Studied medicine and graduated in 1848 at the Medical College of Ohio. Practiced until 1852. Began study of dentistry with Dr. Jonathan Taft at Xenia, Ohio. Later became the partner of Dr. Taft. Dr. Watt was interested in chemistry, and in this branch of study became famous in dentistry. Dr. Watt graduated as a D. D. S. from the Ohio College of Dental Surgery. In 1855 was elected Professor of Chemistry and Metallurgy, and dean of the faculty in 1857. He was active as a worker and officer in the Mississippi Valley Association of Dental Surgeons, the American Dental Convention and the American Dental Association, of which he was president 1862. He was one of the organizers, and for the first two years of its existance president of the Ohio State Dental Society. He was twice president of the Mad River Dental Society. October, 1855, *The Dental Register of the West* was organized with Drs. Watt

and Taft as owners and editors. To this journal he contributed many papers of vital interest at that time. These later (in 1868) were republished in book form by Dr. Watt, as "Register Papers, a Collection of Chemical Essays in Reference to Dental Surgery." Among these were his masterpieces, "Lord Oxygen" and "Lady Hydrogen." He was a brilliant scholar of English literature, and familiar with all the classics. His remarkably retentive memory enabled him to draw from these at will in writing or speaking, in which he was very fluent and impressive. In 1881, Dr. Watt became editor of *The Ohio Journal of Dental Science.* This he continued until his death in 1893.

Jonathan Taft, he of gentle and blessed memory, whose friendship to we, who knew him, was indeed a benediction. One of the most prominent dentists in the United States. Highly respected as a practitioner, writer, teacher and active dental society attendant. Few men held the respect and confidence as did he, and few men have had such a large following, and exerted such a marked influence as did Jonathan Taft. He was one of the editors of *The Dental Register of the West* with Dr. Watt, and after Dr. Watt's retirement Dr. Taft continued to edit this journal for many years. He was author of "Operative Dentistry," a text-book of much merit. A teacher in the Ohio College of Dental Surgery, from which he graduated, later a dean of the dental department of the University of Michigan. He had all of the honors that dentistry as a profession could bestow.

John Allen, a native of Broome County, N. Y., emigrated to Ohio when a boy, and became interested in dentistry. He studied with Dr. John Harris, of Chillicothe, who also was a preceptor of Chapin A. Harris and James Taylor. John Allen graduated in medicine at the Ohio Medical College. Here he became interested and prosecuted his studies on characteristics and anatomy of the human teeth and face, and prosthetic dentistry. He experimented in the manufacture of mineral teeth, the work at which he became expert. He wrote many papers regarding the restoring the contour of the face and on porcelain. He received many honors, medals, etc., for his skillful production in porcelain and prosthetic work. He was one of the organizers of the Ohio College of Dental Surgery, and its first Professor of Operative and Mechanical Dentistry. He removed to New York in 1854 and became a teacher in the New York College of Dentistry, and became prominent in dental society

work. President in 1861 of the American Dental Convention, and he and Dr. J. G. Ambler were mainly instrumental in the formation of the American Dental Association. He was one of the organizers of the Dental Society of the State of New York, and has been denominated "The perfector of porcelain dental art," for he gave the profession continuous gum work, the only method in dentistry that has not been materially improved upon since its introduction.

Wm. M. Hunter, a teacher and demonstrator in the Ohio College of Dental Surgery. Experimented along the same line with porcelain as did Dr. Taylor. Claimed to be the originator of the continuous gum work. A long and furious legal and journalistic contest followed. This was the first patent in which the dental profession was interested. Dr. Hunter was noted as a skilled and prosthetic operator and metallurgist.

William Henry Atkinson, leader, "teacher of teachers," prophet and past grand master, dental enthusiast.

"The flash of wit, the bright intelligence,
The beam of song, the blaze of eloquence,
Set with their sun, but they left behind
The product of an immortal mind."

A native of Pennsylvania, of poor parentage, studied medicine in 1840 and graduated from Willoughby University, Willoughby, Ohio, where he became interested in dentistry, a profession which he studied. Removed to Cleveland, 1850, and formed a partnership with Dr. Frank S. Slawson. Soon after Dr. Chas. R. Butler of Cleveland became his first student, and subsequently his partner. Dr. Atkinson became an ardent student of the natural sciences and microscopy. His research along this line in the new field of dental therapeutics, pathology and histology, in which he was a profound student and investigator, which soon gave him prominence in the dental profession. He was an expert operator in all departments of dentistry, and advocated and was first in Cleveland to claim a high standard of fees for dental operations, and the first to place his services on time basis, believing his service of a quality not to be estimated in money. In 1861 he removed to New York where he made a great success. His home was an "open house" and a rallying point in New York for the profession from all over the world. He opened wide the doors of his operating room and laboratory, and all were welcome to his demon-

strations. His income was large and his charges to the wealthy were fabulous, yet he did much for charity, and spent much of his time and money traveling about the country to dental meetings, and died penniless. He was one of the first dental clinicians. He was instrumental in organizing the New York College of Dentistry. Through his influence the New York School of Microscopy under the management of Professor Carl Heitzman was organized. He was familiarly and affectionately called "Father" or "Pop" Atkinson, and referred to by many as "The grand old man." He was eccentrive, aggressive, progressive, enthusiastic, magnetic and oratorical. His brilliant flights of oratory he said were inspired by "the angels," for he was a spiritualist, and a follower of Swedenborg.

Royal William Varney, native of Brecksville, Ohio, a dental student of Drs. Atkinson and Chas. R. Butler, an apt and earnest scholar, graduated in medicine in 1863. Later a student of Dr. Corydon Palmer at Warren, Ohio. He was an especial favorite and pet student of Atkinson. He practiced in New York City, and developed a marvelous skill as an operator. His special forte was the manipulation of heavy gold foil, with which he wrought wonders.

As an operator he was in the same class as Webb, Allport, Atkinson, McKellops and Corydon Palmer. He was an enthusiastic, microscopic investigator, a student of nature, an idealist, and had a pronounced musical taste, and was a skilled performer on the violin.

Corydon Palmer (two slides), born in 1820 at Warren, Ohio, where he has practiced his profession continuously to the present time. He "picked up" dentistry and by preserverance and natural ingenuity, developed a most superior skill. In early life he was an apprentice to a jeweler, whose trade he mastered. It is claimed he invented the first complete set of cohesive gold instruments. Many forms patterned after his designs are in use today. For a number of years he was an advisory expert to examine and perfect the new instruments placed on the market by The S. S. White Dental Manufacturing Company. His work in steel is "as fine as silk." There is a fine collection of his work in oil, illustrating prosthetics, at the Baltimore College of Dental Surgery. He has been a wonderful mechanician, and one of the great genuises of American dentistry.

Willoughby Dayton Miller, likely the greatest scientist our profession has yet produced, born Aug. 1, 1853, at Alexandria, Licking County, Ohio. At the age of twelve he removed to Newark, Ohio,

where he graduated from the public schools 1877. From there he went to the University of Michigan, where he took the A. B. degree 1875. He decided to adopt mathematical physics as his profession. He went to Scotland to study at the University of Edinburgh under Sir William Thomas, where he stayed one year. Thence to Berlin. Here his health gave way and while convalescent he met Dr. E. P. Abbot, an American practitioner in that city. His acquaintance with Dr. Abbot led him to adopt dentistry as a profession. He graduated as D. D. S. at the University of Pennsylvania, 1879, returned to Berlin, took up practice and began the study of Bacteriology with the famous Professor Koch. In 1884 he was made professor of dentistry in the University of Berlin. This was a high honor, and the first time ever conferred upon a foreigner. In 1887 he took the "Rigorosum" examination for a medical degree in the Berlin University, gaining the highest honor, i. e., "Magna cum Laude." The University of Michigan, in consideration of his high scientific and professional attainment, conferred upon him the degree of Doctor of Philosophy, the University of Pennsylvania the degree of Doctor of Science, the German Emperor, recognizing his great worth as a teacher and scientist, made him "Privy Medical Councellor" to the Emperor. The Fourth International Dental Congress of St. Louis, 1904, bestowed upon him a gold medal for his paper, "A Study of Certain Questions Relating to Pathology of the Teeth." He was an honory member of some forty different professional organizations at the time of his death, and president of the *Federation Dentaire Internationale.* He had just resigned his position as Dean of the Berlin Dental Department and President of the National Dental Society of Germany, and had returned to America to assume the deanship of a dental department of the University of Michigan, when his untimely death occurred, July 27, 1907. He was a tirelss worker, a constant contributor to the literary and scientific side of dentistry, and without doubt the greatest scientist our profession has produced.

Robert Robbins Andrews of Boston, a great authority in Dental Histology and Embryology and Miscroscopical investigator. His most important research work was on "The Enamel and the Minute Process Taking Place During Its Development." His paintings in oil are of rare merit. He also is a collector of oil, Japanese ivory carvings and rare pieces of Satsuma, as well as a play writer and author of poems.

Eugene S. Talbot of Chicago, of *interstitial gingivitis,* "ortho-

dontia," "evolution" and "degeneracy" fame. He is one of the most noted investigators the profession has yet produced.

Green Vardiman Black of Illinois, another great scientist, chemist,bacterioligist pathologist, metallurgist, operative dentist, teacher, and author artist inventor. He has had all the honors possible that his profession could confer.

Edward C. Kirk, editor of the *Dental Cosmos,* a noted dental author and authority, whose clinical researches have materially benefited each practitioner.

J. Leon Williams, an American dentist who has acquired a great reputation as a practitioner in London and as an authority as a microcopist and dental histologist. He is a talented artist in oil painting and photography. He has illustrated the "Home and Haunts of Shakespeare" for Chas. Scribner & Co. and Irving's "Legend of Sleepy Hollow" for Putnam & Sons. He now is working on a large book, "Sicily, Land of Departed Gods and Old Romance," which is to be illustrated by himself.

J. P. Michaels, Biologist, Chemist, Microscopist and Prosthetist, whose motto is "know they saliva—to know thyself." His researches in biological chemistry is determining the causes and cures for buccal and dental diseases have made him famous as a great authority. Universities have conferred degrees upon him and many crowned heads have conferred various orders in recognition of his contributions.

Alton Howard Thompson, Comparative Anatomist, Archaelogist and Anthropologist, one of our most prolific and noted authors. His study of the Mound Builders and prehistoric races alone entitles him to the recognition of scientists. Others worthy of mention are:

A. H. Angle, orthodontist.

A. W. Harlan, literary genius.

W. C. Barrett, editor, author and teacher.

Sir John Tomes, English scientist.

G. H. Cushing, expert operator.

T. S. Hitchcock, carver and engraver.

W. H. Taggart, inventor of the casting method and

D. O. M. LeCron.

Iowa Dentists.

Henry Seymour Chase, first president of the Iowa State Dental Association, organized with five members at Muscatine, July, 1863.

J. Hartman, vice-president.

W. O. Kulp, corresponding secretary.

A. J. McGarvy, recording secretary and treasurer.

W. P. Dickinson, first president original State Board of Dental Examiners, organized 1882.

J. F. Sanborn, of Tabor.

L. J. Walter, Cedar Rapids.

V. H. Tullis, Iowa City.

Prescott E. White, Davenport.

L. C. Ingersoll, Keokuk, teacher in University of Iowa and authority on Dental Histology.

J. F. Abbott, Manchester.

P. Wilson, Burlington.

W. H. DeFord, Des Moines, whose book on "General Anesthetics in Dentistry" is probably the best treatise yet written for the dental surgeon.

There are many others who have added luster not only to dentistry but to other lines of art and science. Time will not permit their mention.

In the whole they were a versatile lot, whose fingers and brains were attuned to produce the beautiful and artistic, whose good deeds have left a halo of beneficient to their memory that will live many years after your bones and mine are mouldering in the dust of death.

Their lives are a glorious example of the *Gospel of Work,* which is the *real recompense* for a man's endeavor in this life. They are worthy for us to emulate. Shall we not say of them as did old Adam in *"As You Like It,"* when gray with age, bent with toil and tottering after his youthful master, whose sire and grandsire he also had faithfully served, he exclaimed: "Master! Lead on and I will follow Thee to the last gasp, with love and loyalty."

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, FORTY-FIFTH MEETING AT DANVILLE, MAY 11-14, 1909.

DISCUSSION OF DR. BRYANT'S PAPER, "PORCELAIN INLAYS."

DR. F. E. CHEESEMAN, Chicago:

I wish to compliment Dr. Bryant upon his excellent paper, which indicates that a great deal of time and study have been devoted to its preparation, and that he writes from a practical understanding of the technique of the subject.

I agree with Dr. Bryant in the belief that a large percentage of the failures following the use of porcelain inlays are due to lack of judgment used in placing them in exposed positions without properly safeguarding the margins both of the inlay and the tooth by proper extension of the cavity, or to a lack of experience or ability in cavity preparation in general, and also to a lack of knowledge of the handling and fusing of porcelains.

Judging from my experience the first two years after adopting the inlay method, it would have indicated that porcelain was a failure in my practice. Inlays were constantly becoming dislodged, a large percentage lost altogether, necessitating the replacing of them free of charge, and what was often more difficult, that of soothing ruffled feelings and attempting to restore confidence in the method, and oftentimes even in a loss of the patient's patronage altogether, due to a loss of confidence on his part in my ability as a dentist. There were many times when it was very discouraging and when it seemed that it would be better to go back to the old methods with which I had been fairly successful; but I had a feeling that it would in reality be a case of "going back," and I decided to persevere, and realized from the experience of men who were successful at that time that it was a lack on my part and not a defect of the method.

I believe most of the criticism of porcelain inlays comes from men who have only had a desultory experience with their use, and who, because the results have not been satisfactory, have condemned the method, notwithstanding the fact that the men who are successful in the practice today are those who were more or less unsuccessful during the first few years of practice, but who have gone on and finally mastered the method. I trust that it will be understood that my re-

marks imply no criticism on the ability of these dentists in general practice.

Personally, I realize that I cannot today handle gold foil as I could eight or ten years ago, as a result of lack of practice in this method; but I have no regrets, as I should certainly feel like abandoning the practice of dentistry were it the drudgery and hard work of the old days. Today, I thoroughly enjoy my work, and believe that I please patients a great deal more than formerly. So that, in my opinion, if I had abandoned this method, I should not only have gone back, but would have gone way back.

At the present time at least 99 per cent of my operative work is devoted to the inlay method, and this has been the experience of several years, and I devote no more, nor as much, time to the replacing of inlays than I formerly did to replacing gold foil fillings.

After I had in a degree mastered the technique of making porcelain inlays it became my practice to place them in cavities of large size, such as mesio- and disto-occlusal cavities in bicuspids and molars, and at the present time I often see in the mouths of my patients inlays of this description which are rendering excellent service. Of course, there has been a percentage of failures, varying from those with badly chipped margins, which were saving the teeth, but were removed and replaced with gold, to those that were dislodged and lost. But, as I have said, a fair percentage have been successful and I believe that a large portion of these failures were due to some lack in my work.

After the advent of the gold inlay, which became a part of my practice subsequent to that of porcelain, it seemed unnecessary to resort to the use of porcelain inlays in posterior teeth, though I have not hesitated to place them in bicuspids and molars if the cosmetic effect to be produced seemed to warrant me in so doing. However, the combination and porcelain inlay has solved the problem nicely. So that in molars, which would necessitate a large display of gold, I am making use of this method of Dr. Taggart's, which, if properly used, is a source of great satisfaction both to the patient and operator.

As to cavity preparation, Dr. Bryant's models show for themselves. He has always been sound in every detail of this work. I do not agree with him, however, when he states that the impression method of obtaining matrices is more accurate than the burnishing method either in buccal, labial, or any other form of cavity. I do

not believe it possible to make a more perfect matrix than can be obtained by burnishing directly to the natural tooth. Furthermore, this matrix can be completed in the average buccal or labial cavity, and be made ready to receive porcelain in from five to ten minutes' time.

As to the selection and the handling of colors, I have been using a method the past two years, which has been very satisfactory to me, and one that has produced more accurate results than any other method I have ever used. I have abandoned the use of the shade guide, and make use of three colors, white, gray and yellow; very occasionally, brown and blue are needed. These colors all fuse at a given temperature, 2360°. In cavities not involving the incisal angle, two colors, yellow and white, are all that are needed in 95 per cent of all the inlays that are made.

The graduations of colors are obtained by sandwiching the yellow between the white layers, the yellow forming the center and the white the outer surface. The deepness of the color of the inlay varies with the thickness of the yellow layer.

Since I began the use of combination inlays, I have been experimenting with low fusing porcelain, something I have never used before, and the results have been astonishing to me. By the use of Brewster's gold matrix porcelain (which, by the way, stands up as well as the high fusing porcelain, a quality not possessed by at least one of the most popular of the low fusing bodies), I have been able to make inlays that were more like tooth substances than those made from any high fusing porcelain I have ever used, and it seems that their colors is not affected by cement as much as the high fusing variety. For buccal and labial and proximal cavities not involving the incisal angle, I believe it to be the porcelain indicated.

It probably is too opaque for incisal restorations, although I am not certain of that, not having tried it.

Dr. Bryant speaks of using white cement for all cases, which I believe to be the best method. However, several years ago, Dr. Ames recommended to me a modification of this by the use of the gold inlay powder (brown), the size of a pin head, introduced into the white powder, which to a large extent has overcome the distressing occurrence of having a yellow inlay which is made for a yellow tooth turn as blue as indigo after being cemented to place. Another thing to be taken into consideration is the locating of inlays. For instance, in

making inlays for the mesial and distal surfaces of an upper central incisor, I should make the inlay for the distal cavity from one to two shades lighter, depending upon the amount visible to the eye, than I would for the mesial cavity. An observance of this simple rule will help the beginner greatly.

One more observation and I shall have finished. It is an astonishing fact that we occasionally hear from some of the believers in the Black and Wedelstaedt method of cavity preparation that it is necessary to resort to extreme extension for inlays, although their method stands for extension for prevention, and I am a firm believer in this method and always have been.

A cavity involving the proximal surface properly prepared should be wide enough at the occlusal to allow for the withdrawal of a solid piece of wax, and even should the patient be one who is immune to decay, so that it would not be necessary to extend the margins buccally and lingually, I contend that the extra extension will not be injurious to the tooth.

Dr. H. N. Orr, of Chicago:

I agree so thoroughly with the essayist that the only thing I can do is to take up a few points in connection with the detail of inlay construction.

It is generally conceded that it is impossible to work porcelain by artificial light, which was true until about two years ago, when the Tungsten lamp was put on the market. This lamp gives a perfectly white light, which does not absorb the color rays.

Here is a suggestion for keeping the shrinkage of the body from distorting the margins of an inlay matrix, or the floor of a bandless crown—paint the margins with quite thick shellac varnish, then build the porcelain over it. The shellac will burn out, leaving a space which may be filled in on the next bake. I always use a lower fusing body or enamel for the last bake on my porcelain inlay or crown, as the fine edges of porcelain that have been fused more than twice are liable to be over-fused in the final baking, which accounts for the bubbles along the margins of some inlays.

There are times in making an inlay when we have all the contour we need and yet the color is not good, the matrix is full and will stand no more body. Here the oil colors Dr. Roach has given us will save us much time and trouble. The white wavy lines in enamel, which run transversely across the labial of centrals and laterals, may

be carried out on the inlay surface by a delicate touch of opaque white. The translucent gray of a contour may be obtained by applying a slight line of gray from cervical to cutting edge.

Dr. C. B. Rohland, of Alton:

I do not know just why I was called on to discuss this paper, unless to bring comfort to some of you who have not made a success of this inlay work, because, verily, "there are others!" (Laughter.) One of the first impressions made on me by this paper was how little after all we know about porcelain. There is so much still to be learned, especially in the manipulation of colors. There is where, it seems to me, I have fallen down more than in any other point of the work. Of course, the point of greatest importance is to get a good fit, and that depends entirely on getting a perfect matrix and handling it properly afterwards, so that it be not distorted. It is in this color problem, though, that I have found my greatest discouragement, and if it were not that occasionally I do find some cases that have been marvelously successful, I think I should have abandoned the work long ago. I have just had enough successes to make me hang on, and I hope some way may be found some time or other of controlling results better. I confess I cannot yet tell to a certainty what I am going to get out of the furnace. I am in the position of one who has been doing soldering on porcelain, who always looks with a good deal of anxiety after he gets his case out of his investment to see whether there isn't a crack there. It is the same way with the inlay. I feel uncertain about it. I feel I may have to do the work over when I come to try it in the mouth—and very often I do. I cannot add anything in the way of information on this subject to what has been given us by the essayist. The work he has exhibited shows that he is a past master in the art.

So far as the inlay method itself is concerned, as to whether "cemented" fillings in ordinary cavities are more durable than "stuffed" fillings in the same cavities, I am still a huge interrogation point. I am on the fence with a slight inclination in favor, but I confess I am ready to back down at any moment. That cemented fillings will sometimes preserve teeth indefinitely, I know. I had one under observation that stood seventeen years, and would have stayed there seventeen years longer had I not been asked to change it on account of the color. It was not a fused porcelain inlay, but a piece of porcelain worked into shape and made to fit the cavity just as

accurately as I could by grinding, and yet crude as the fit must have been, that stood for years, and in this case the only reason I removed it was because the tooth had changed so much in color and the porcelain had not followed suit, and the patient, being rather finicky, requested it. I told him I would try. I removed the filling and found the cavity absolutely as it was when I put it in. No change at all.

As to working from impressions, I believe with the essayist there are cases where you can do better by getting a good impression of the cavity and making the inlay from that. Of course, the farther away you get removed from the original cavity, the more likely you are to have discrepancies. But in some labial cavities far up under the gum, I find it difficult sometimes to satisfy myself as to the accuracy of the matrix made direct in the mouth. With such a case I feel as though I could do better and surer work by working from an impression.

One thing I have sometimes found to follow, after an inlay has been in some years, is a roughened surface. I have asked others whether they found that trouble. Some said they had, and others had not. At any rate, I have found this trouble, but whether it was due to not having a proper fuse, I am not prepared to say. The disintegration seemed to be very similar to that which used to take place in the old glass inlay. Those of you who experimented with the glass inlay when it was in vogue will remember that while the fuse seemed to be good when you put it in, it would not be long before the surface would disintegrate, and you would have a very unsightly filling. The filling seemed to be good, but the shade was absolutely off. The gloss had disappeared and it became unsightly and dirty.

If, as I imagine, there is still too much guess work required in fusing for the average workman with the average furnace and appliances, I am inclined to think, from what I have seen and heard of Dr. Matteson's pyrometric cones, that the Doctor may have given us a very near solution of many of these troubles. Any method that will tell us definitely just when the exact proper fusing point may have been reached will be a distinct advance, and give us better control of results.

Dr. A. E. Matteson, of Chicago:

Dr. Bryant has furnished one of the most interesting and instructive papers on the subjects which he treated that I have ever listened to.

I will not attempt to discuss the technic of the preparation of

cavities for inlays—the method of forming matrices or the structural frame work for crowns and bridges.

The color problem which Dr. Bryant elucidates in his paper and exemplifies in his clinics is a joy to witness. There is but one expression that I would take exception to in his paper. It is very commonly used, however, and was introduced by dental manufacturers. I allude to the terms "Porcelain that fuses at 2200°-2300°," or at any number of degrees.

Such terms are misleading; as a matter of fact, there is no stated temperature test which alone will furnish sufficient evidence to judge correctly of the vitrification of porcelain products. The term is used as a matter of convenience; as an approximate nearness.

The firmness of the grain, and the rate the heat is applied, has a very great influence. The variation of voltage—where the electric furnace is used—would be a factor, governing the *rate* of heating.

I believe that fully 75 per cent of the failures of porcelain work are due to faulty baking. No matter if the technic has been of the highest order of excellence, and the color scheme without a fault, an imperfect baking will produce a dire failure, and this is especially true with an over-bake. The delicate shading is bleached out, small bubbles appear next the platinum matrix, many so minute that they are mere specks at the margins, and if not punctured by the escaping gas, soon become so by wear, allowing the secretions to penetrate, producing the dark lines, for which the cement becomes the "scapegoat."

I have been called upon to say something regarding the use of Pyrometric Cones used as a comparative test for fusing Porcelain.

Pyrometric cones were first introduced by Dr. Seger of Berlin in 1886, and were adopted and are now used by principal porcelain and clay workers in Europe and the United States.

It may not be amiss to give a brief account of their manufacture:

The clay or body of these cones is formed of Silica-Feldspar. Clay and Metalic Oxides, finely ground; a mixture is made which will vitrify at an established high temperature point, the heat being advanced in a stated time.

Another mixture is made which will vitrify at a low temperature. Repeated mixtures of these, in aliquot proportions, will produce relative fusing points, until one is obtained which will correspond to that of the Porcelain body used.

These mixtures are then pressed in elongated conical forms, and as they are made of a texture which will change *form,* when the heat is raised sufficiently and being set in an upright position, the point will begin to curve as the porcelain body reaches a "biscuit," nearly forming a loop, at a "glaze."

Each porcelain body requires cones made especially for that body.

It is an established fact that the cone system is a thoroughly reliable method of noting the vitrification of porcelain and clays because it measures *heat work*, not temperature alone—they are of like material and are subjected to the same conditions and are influenced in a like manner—which is indicated by a change of *form*—and no matter what the actual temperature may be, maintain the same relation to each other and to the ware with which they are placed, furnishing all the requirement of a definite and reliable standard for comparison.

In using, place the cone in the firing pan as near the article as possible, slightly inclined in the direction it is desired to fall, covering the base with the silex enclosed to prevent falling and fusing to the pan, and in line of vision through the peep-hole of the furnace.

The best results in baking porcelain are obtained by raising the temperature in the furnace in a uniform manner—timing each step until one is reached that will require one and one-half minutes to melt a cylinder of gold—advance the step no further—the cone will commence to change its form in from one minute—in the *lowest* of the high fusing bodies—to 10 minutes—in the *very* high fusing bodies.

Dr. H. C. Snyder, of Chicago:

I like Dr. Bryant's method very much, but, as Dr. Rohland states, I have not the complete confidence in the inlay that Dr. Bryant has. I have had the same difficulties in the shading and building of my inlays, and it drove me to the shell crown, and I can get better results than I can with the inlay. While it may be because of my inefficient handling of porcelain, I cannot do work with the inlay alone where I can in the larger work with the shell crown.

Dr. F. H. Skinner, of Chicago:

I wish to join those who have taken part in this discussion in complimenting the essayist on the hard work and beneficial suggestions he has given the profession in this most interesting paper. The remarks of Dr. Rohland also brought out a few ideas which will help

us a great deal in burnishing matrices in the mouth. Frequently we are limited for space in removing matrices which have been carefully burnished; the platinum has been stretched to the limit, if not actually torn or broken, and in removing it, these little, thin, delicate parts or edges, coming in contact with any of the adjacent teeth or the one being filled, are very easily bent out of shape. I have attributed the majority of the misfits I have had to bending my matrices in this way. Since the cast inlays have become so generally used, I have been using the same wax that is used for the cast inlay in assisting with the porcelain inlays as well. I take one of the more mouldable waxes, warmed, and press it firmly into the matrix in the cavity, burnishing out the excess wax, leaving it concave rather than convex opposite the contact point; should the cavity happen to be an approximal, I then throw cold water on to set wax hard. In this way I am able to remove the matrix and wax together, preserving the original shape of the cavity in every detail, very much better than I did formerly. After burning the wax out, the margins are varnished, and I have had more universally good fitting inlays since adopting this method than I had before.

DR. C. B. ROHLAND, of Alton:

May I ask Dr. Matteson whether he has found in his experiments any difference in the fusing points of the same make of porcelain in the different colors? That is, whether a yellow color, a blue color, or a white will have exactly the same fusing point in the same make of porcelain.

DR. A. M. MATTESON, of Chicago:

That is one point I meant to have alluded to when I was on the floor. Change of color is brought about by over-fusing. The different shades depend on the degree of heat.

DR. ROHLAND: And they all fuse at exactly the same point?

DR. MATTESON: I do not like to mention the names of manufacturers, but I ought to do so. I have had variations in the fusing points of porcelain made by the same manufacturer. I have had the same report made by others. These manufacturers make a small amount of their material, and they are unable to repeat it in the next mix of their body, and their results do not agree with their previous work. I have had that occur in my own office. Many porcelains recently furnished do not fuse the same as that furnished when similar bodies were first introduced.

Dr. E. M. S. Fernandez, of Chicago:

I do not think I can add anything of value to this paper, which is so practical and so beautifully written. Dr. Bryant has certainly described a valuable and practical method for this work.

I believe hydrofluoric acid is responsible for many failures in porcelain inlay work and I think it is the main cause of those discolorations at the margins of porcelain inlays. The use of small garnet disks or small carborundum stones I have found safer and best for the purpose of roughening the cavity side of the inlays. Many of the inlays that I have roughened with hydrofluoric acid have loosened soon after being cemented, but few of those otherwise roughened have ever loosened under my care.

I will say, the method that Dr. Bryant described of producing color in a porcelain inlay, is a new one to me. The old teaching for some time past has been to produce colors by placing a darker or yellower hue towards the margin of the gum, and a lighter tint towards the incisal edge. Dr. Bryant's method is, to place an opaque white layer of porcelain on the bottom of the inlay and therenpon build with a darker shade over which he places lighter tints to produce the proper color.

I would suggest one method to those of you who have not had experience enough to get the color you wish. This method will help you to learn, namely: Supposing you are going to make an inlay for an upper central incisor, say a mesio-incisal cavity. Form your matrix, then spread the first layer of opaque porcelain on your matrix, as Dr. Bryant has said, and, at the same time, take another piece of flat platinum and lay on it a similar layer of the same opaque porcelain and bake the two at the same time.

You have then the work on your matrix and also a second or test piece. Next, you lay the layer of porcelain that matches the dentine, on your matrix, putting the same on your test piece, and bake both at the same time. The next, or third layer of porcelain, you lay only on your test piece, bake it and compare, and if the color is correct, you may finish your work on the matrix. If the color is not correct, grind off and try again until you get the proper color; then finish your inlay, being guided by your test piece.

This method will help you materially and save you disappointment.

Dr. John P. Buckley, of Chicago:

In regard to the penetrating action of hydrofluoric acid on porcelain, mentioned by Dr. Fernandez, I will say that because this acid will not penetrate flesh, if accidentally applied to the hand, is no reason why its action is not neutralized when applied to inorganic substances.

Dr. Waltz mentioned a statement made by Dr. Head, of Philadelphia, that an inlay etched with hydrofluoric acid can be anchored more securely, and we can accept Head's statement in regard to this as a fact. The inorganic compounds in porcelain will absolutely neutralize the hydrofluoric acid and its action will not penetrate the entire inlay, although its action will penetrate soft tissue.

Dr. J. F. F. Waltz, of Decatur:

One feature in regard to porcelain inlays that has done more to discourage me from using them than any other has not been touched on at all. I refere to the gathering of a line of dark stain in the crevice left by the dissolution of the cement. I do not know of any work I do which is more of a chagrin to me than to have an inlay which was satisfactory at the time it was set return in the course of a year with this dark stain. Explanations have been advanced to account for this, one of them being that in the mixing of the cement some material is incorporated with it which subsequently has to do with the formation of this dark line, and perhaps a metal spatula has something to do with it. I have always used a bone spatula, so that a metal spatula can play no part in the formation of these stains in my work. Again, as regards the mouths in which this stain is apt to occur, there seems to be no indications by which one can judge them. Apparently, there is no way to tell if it will form or not. It seemingly is more apt to occur in those mouths in which we observe a thin, threadlike line of stain, following the festoons of the gum, more or less on all the teeth, but more prevalently on the lingual surface, and which is difficult to remove in polishing the teeth. This one feature, the gathering of this stain, has done more to lessen my use of porcelain inlays than any other.

The discouragement of having inlays drop out of cavities is one I have not experienced enough to cause me much chagrin. Where it has occurred in a few instances I expected it, perhaps because of something having affected my nerves at the time the inlay was set. It would not have occurred if I had used better judgment in setting it.

Then I have observed a few of my inlays go to ruin from fracture of the porcelain. I was a little too liberal with my undercut for retention and weakened the inlay, so that fracture took place; but the strength with which an inlay is retained was evident from the fact that in every case of that kind the real porcelain inlay was still there, while the other had broken off and was brought to me by the patient wrapped up in a bit of tissue paper.

One other matter, the combination gold and porcelain inlay, or the high alloy-platinum and gold inlay that Dr. Bryant spoke of with porcelain, has been to me a disappointment. I do not fuse porcelain in these cavities without much trouble from checking. In one case of a large restoration of a central incisor, I thought I had a beautiful result, but in a month it returned, with checks showing and a small bit of the porcelain out. Whether my technique was faulty or not, I do not know. I have felt the method was not right. The technique of making a porcelain inlay in a gold inlay is so elaborate that I have not attempted to use it very much.

If I criticised anything in the admirable paper, it would be the cavity preparation as shown by the models which were so beautifully prepared and only after much painstaking labor. In this one particular I would want more retention in a number of cavity preparations than he seems to think necessary.

Dr. Bryant (closing the discussion):

Dr. Cheeseman spoke of putting inlays in molars and bicuspids. I must say, I cannot agree with him, as I have had all I want of that. Another thing: How he can get indigo blue out of yellow and white, I do not know. Dr. Roach's shades are going to be a wonderful help to us. It is going to be one of the greatest helps we have ever had in porcelain work. If any of you have trouble with colors and wish to make a study of them, it would be a great help to you to look up the work of Ogden N. Rood, professor of physics in Columbia University. The teachings in his work on physics can be applied to our work in an advantageous manner. The book is entitled "Practical Chromatics."

Regarding the shell crown Dr. Snyder spoke of, while it is a beautiful piece of work, I cannot make up my mind that it is good practice to take all the enamel off a good tooth when there is a mesial cavity. We do not need to remove the tooth enamel when we have got good enamel all the way around it.

Dr. Skinner's wax idea is all right. With regard to the black line Dr. Waltz spoke of, my experience has been that it is seen in mouths of patients whose saliva is thick and ropy rather than thin. That has been a great bugbear to me. It is the bane of porcelain workers, and according to my observations, a thick, ropy saliva is more prone to make a black line than thin saliva, and all we can do is to hope that we will be able to get a cement that will not produce it.

DISCUSSION ON THE PAPER OF DR. GETHRO, "SOME MISTAKES IN OPERATIVE DENTISTRY."

DR. C. P. PRUYN, of Chicago:

Mr. President: When the orator of the evening began his dissertation upon the subject to which you have just listened, it seemed as though he was like the weeping prophet, Jeremiah, lamenting over the sins of the dental Jerusalem. When he made his first statement that from sixty to seventy-five per cent of failures of fillings in adults were caused by imperfect manipulation, it impressed me as being rash, but toward the latter part of his discourse, when he showed the pictures, we then began to see that his statements were not so rash after all. If it is a fact that from sixty to seventy-five per cent of failures of fillings in adults come from faulty work, it is a deplorable condition of things. Is it really so? If it is, what is the cause of it, and is it possible to remedy this defect? If it is a fact, gentlemen, we are not doing our duty. Where is the trouble? Is it because of faulty manipulation? Is it because we have not good judgment? Is it because we do not get enough compensation for our work? These are queries we should consider carefully.

The average life of a gold filling has been said to be five years. Is that all? If that is so, are we doing our duty to the people we serve? If that is so, are we not really getting money for services that are improperly performed? I hope the statement is not true. However, I am glad he made the statement because it sets us to thinking. The paper is full of suggestions; but the essayist has found so many faults that he seems to be a pessimist of the pessimists. There is nothing optimistic about his teaching. Is it because, as a professor of dental anatomy, he sees these defects? There is something wrong somewhere.

He spoke of the use of the separator for making examinations. I remember one gentleman who said it was not necessary to use a separator, as he was able to find plenty of defects without using one, and

that statement came from the lips of one of our able, respected members, one who has been a member of this society for forty-five years, a charter member of this organization. How about these conflicting statements? Where does the truth lie? Who is doing right and who is doing wrong? These are questions to consider.

There are so many points one could discuss that I can only touch here and there on some of them. He spoke of the injudicious patching of fillings, improper judgment used in the patching of fillings, and said it was not the proper thing to do at all. I will agree with him in some instances, but I will cite a case or two where it is proper to patch fillings and do better work for our patients and ourselves. Take, for instance, proximo-occlusal cavities in biscuspids, where the work has been done well, gold fillings have been put in and stood well for years, but at the cervical margins decay has progressed. In such places I have been in the habit of patching with amalgam, and I have felt in doing so I was doing my patients the best service possible for mortal man to give them, because when we put together in complete opposition these two metals, gold and amalgam, we have a new condition of things we did not have before. We have a short circuiting of the two metals; the gold will be maintained bright and clean, the bare metal will oxidize, and as a consequence, a peculiar something results that is inimical to microbic growth, so that decay does not go on as fast about teeth filled in that way as it does when teeth are filled with gold or with amalgam alone. I make this statement boldly, feeling every word of it, because I have tested it for many years in my own practice, and have observed it in the practice of other dentists. Furthermore, that style of practice carried on a little further, which is against the present method of inlays, will stand when the inlay craze will have been forgotten; that is, in cases of extensive decay in bicuspids and molars, upon the proximal surfaces, filled with amalgam, capped over with gold at a subsequent sitting, so that the amalgam will not show. Here you have two metals with which you can contour teeth nicely and save them. I see patients in my practice for whom such fillings have been put in and have lasted ten, twenty and thirty years, fillings that were put in by myself. I see these cases not only in my own practice, but other dentists report the same thing. Do not decry amalgam. It has filled a want in the dental profession that nothing else has ever done. If the average life of a gold filling is only five years, what can possibly be the life of an amalgam filling and of

other types of fillings? I believe that teeth can be saved with amalgam fillings and the average life of such fillings be just as good as with gold, and we should in our teaching institutions teach the proper use of amalgam. The fault has been that we have not taught amalgam and its proper use. It has been my custom for a number of years to give a peculiar sort of clinic; I have given it so many times that I am tired of giving it, but I think I possibly have done more good in giving that style of clinic than any other I have ever given. I take a piece of slate or a piece of board, and with gum shellac fasten little pieces of glass tubing, half an inch long, onto the board or slate, and fill these tubes with amalgam. My method is to have different men use their own alloy with which they are familiar, and put a little piece of paper around the tube, so that they cannot see what they are doing. The men would fill these tubes in the usual way, then remove the piece of paper hiding their work, and see the defects; and it is astonishing how air spaces will show between the amalgam and sides of the glass tube, showing how difficult it is to make a first-class amalgam filling. You cannot do it by taking a packing instrument, nearly the size of the cavity, and with one or two pushes fill the cavity. It cannot be done in that way. It takes time to put in a good amalgam filling. You must take small quantities of the material at a time and use small instruments, and by rotary movements and direct thrusts get the amalgam in complete apposition with the walls of the cavity. You cannot afford to do that for fifty cents or for seventy-five cents. You must charge for time. This leads to the subject of fees. The old system of charging particular fees for inserting fillings is wrong. There is nothing right about it. If we are doctors, we should charge as doctors would charge, and not as tradesmen would charge. We cannot charge for a filling as a man would charge for a pair of shoes or a yard of cloth; but, if we are doctors, we want to charge for professional services. As an illustration, I remember some years ago to have charged a gentleman ten dollars for an amalgam filling. He was a lawyer. He complained that I had charged him too much. He was a professional man, and I am a professional man. I said to him, as a lawyer, when a client comes to you and asks for your opinion and you write that opinion on a piece of paper, does the client pay for that piece of paper? He said, no. And on the same principle I told him that I did not charge for the amalgam, but for my skill and ability to render a particular service. I told him that I was educated in

professional lines, and that he came to me to have a professional service performed, and in so doing I gave him the best I could, and charged him what I considered a proper fee for the work. He saw the point at once. We can make people appreciate our services if we wish to do so. It is our duty to our patients, it is our duty to our fellow practitioners, to educate people in this line, for we cannot work for fees that are inadequate. We must get enough out of our work to pay for our services. We can no more set a definite figure for the services we are to render than a physician can set a price for the cure of a case of scarlet fever, diphtheria, or typhoid fever. If we are professional men we should charge for our services. Patients expect to pay us. You should charge for every service you perform. If you extract a tooth you should expect to be paid for it. If you stop a toothache you have rendered that patient a service for which you should be paid. Every treatment which you give you should charge for. It is the only way to carry on one's professional work. Most of our men today do that.

How many of us have suffered, and how many patients have suffered from destruction of the normal interproximal space. We can teach patients and show them the benefits to be derived from our painstaking efforts to restore these spaces. It takes time and skill to do this. It is much easier to fill teeth without restoring the interproximal space; you can do it cheaper and quicker, but what would be the result? You can easily demonstrate to your patients the results of such neglect.

Our orator spoke of the subject of dental anatomy because he knows so much about it. A great deal of that we can learn today. Men as old as I am can learn something about dental anatomy, so as to know how to make the proper entrance into a pulp chamber. You cannot enter the canals without a proper opening. I have seen cases where men would try to get into the roots of an upper or lower molar through an opening as small as the lead in an ordinary leadpencil, expecting to remove the pulp and fill the canals. It is very essential to have space enough to work.

I will not consume any more of your time in elaborating further upon the points set forth in the paper.

DR. G. W. DITTMAR, of Chicago:

I very much enjoyed the paper presented by Dr. Gethro this evening. All things considered, we have had an excellent array of pa-

pers at this meeting, and through them all there was a central thought, I take it, one carried out by the Program Committee, namely, that we should not be satisfied with our present accomplishments. In other words, we should apply ourselves so that we will have both information and knowledge, become more cultured, attain greater skill, and receive as a reward more substantial compensation. It seems to me that is the gist of the whole meeting.

Dr. Gethro spoke of the difference between the average and the skillful operator, and said that the average operator's gold fillings lasted about five years. I believe to a considerable extent that statement is true, for I have a chance to see a great many very poor gold fillings put in by average men and students. It is a fact that a great deal of very bad dentistry is done, entirely too much, and we should try to improve. Dr. Gethro and also Dr. Pruyn have asked the question, "What causes this?" Undoubtedly, it is a lack of knowledge of the physiological, histological, and pathological conditions we have to contend with. Unless we know these three things we cannot intelligently do work as it should be done. If there is coupled with this lack of knowledge a lack of skill on the part of the operator, the results will naturally be much worse, and, if coupled with a lack of skill and lack of knowledge, there is carelessness or indifference, the results will be still worse; some or all of these things undoubtedly account for the short life of the average gold filling.

Regarding the gold foil filling and the inlay. Personally, I place a good many foil fillings, and I do think that a well-made foil filling where it is indicated in the anterior portion of the mouth is the very best thing that can be placed there. But in the positions where the cast gold inlay is indicated, I feel there is no filling we can place that will do as good service as a well-made cast gold inlay.

I have made some inquiry regarding fees. I talk to the students every year on this subject, consequently, I have gotten some information regarding it. I sent blanks containing a number of questions to a large number of different operators, men of average, and better, ability, practicing in different parts of our State and in other States, to find out what their fee list is. There is this about these fee lists, no matter where they come from, marked uniformity exists among them. For instance, for the so-called cleaning of teeth most of these men charge $1.00. For an amalgam filling it is usually $1.00, and plates range in price from $8.00 to $12.50; gold fillings at from $1.50

to $3.50, and in rare instances more; crowns, from $5.00 to $7.00 or $8.00, and a few charged $10.00 for molars (this included the treating and filling of the roots when necessary); 50 cents per tooth for extracting usually with local anesthetic, etc., etc. This is a sample of the average country practitioner's fees, namely, a fixed price for an operation, regardless of the conditions. As Dr. Pruyn aptly put it, "we are professional men." If you think for a moment about the expense, the labor, the midnight oil that you burned and the energy you expend in getting your dental education, as well as the amount of money you spent for your entire education, you will see the importance of making reasonable charges for your work. Usually the average dental student is in debt when he graduates, and is probably about twenty-five years of age. I think likely the average useful life of a dentist is somewhere about twenty-five years. Possibly it is a little more than that. During these 25 to 28 years he has to make enough money to pay all his debts and to take care of his family, and he should make enough for the future "rainy day." He has only a few years and only two hands with which to accomplish all this. When we take into consideration these things, a man is entitled to get more than these ordinary fees. There are a number of things that enter into this fee question. For instance, for some patients it is a pleasure to work. They are appreciative. They are not nervous, and you have their confidence to begin with. You can place a filling into the cavity of a tooth for such a patient with ease and feel when you are through that you have done a good operation. You are satisfied, the patient is satisfied. It has been done easily. Here comes another patient with the conditions absolutely different. The patient is nervous. He has not much confidence in you. He is antagonistic. He has a small mouth and rigid muscles. The cavity is located in a bad position. Is it right to place a filling in the cavity of a tooth under such conditions, possibly taking three or four or five times as long to do it as in the other case, and charge no more for your services than you would in the other case? Yet dentists do this all the time. The illustration Dr. Pruyn gave was very appropriate in connection with treating teeth. I know that the average country dentist charges one dollar for treating and filling the root of an anterior tooth, and $1.50 for treating a molar and filling the roots, regardless of whether it is devitalization of the pulp, regardless of whether or not there is secondary dentine or pulp nodules, and regardless of whether there are abscesses

or not. He may have to treat such cases many times, and yet he will only charge two dollars and fifty cents when he gets through, namely, has filled the roots and has placed an amalgam filling. Dr. Pruyn has told us very emphatically that we should charge for our time. That is one important element in this question of fees. I believe, also, that we as dentists must resort to the methods of business men to a certain extent. Patients are very much the same as we are, and we are very often "from Missouri" until we are shown. You have to *show* the patient. How is a patient to know whether your work is going to be better than that of the advertising dentist, unless you demonstrate it to him? Or how do they know the class of work you do is different from the work that somebody else does? You do not have to "knock" the other fellow, but, as was said, if you have some models and specimens, and can show patients the difference between one class of work and another, and particularly in the matter of proper cavity preparation, also in the construction of well made crowns, bridges and plates, and explain to them why these differences exist and why it is necessary to do good work, they will see that you are spending more time and more energy in working for them, as well as more skill, and when they understand these things, they will pay cheerfully for your service and pay you well. Let me site an illustration. A short time ago a gentleman came to my office to have some work done. He had been recommended to me. He did not ask me anything about what it was going to cost until I was half through with the work, and then he said, "What is it going to cost, Doctor?" I replied, "I cannot tell exactly, as it will depend on how long it is going to take; I regulate my fees according to the amount of time it takes." It was inlay work that was being done. I also put in several hours in scaling and polishing the teeth. When the work was done it amounted to forty-seven dollars. I told him, and I could see by the expression on his face that it was more than he had expected. He said to me, "Do you know what one dentist wanted, to fix my teeth?" He said, "he offered to fix my teeth for ten dollars." He said "that is a big difference." I said it could not be done as I had done it for that price—he agreed. I explained things to him, showed him some specimens I had, gave him a lecture on dental anatomy, and modern dentistry, etc., and showed him the difference between skilled dentistry and rotten dentistry, and he appreciated it. He said, "These are things I never heard or thought of," and he paid me very cheer-

fully and I feel I will get his future work and influence. We must show these people the difference between good and bad dentistry before they can fully appreciate it. In doing that, we are enabled to get better fees. I would not say anything against any men who by his skill as a good operator is enabled to get a handsome fee, but you must deliver the goods; you must show your patients that you do good work, then make a reasonable charge which should depend upon your location, your skill and reputation, your experience, the time and energy expended, the difficulty of the operation, to an extent, the material used, and of course the patient's ability to pay.

Dr. Don M. Gallie, of Chicago:

I want to say that one cause of many failures in operative work is the fact that the operator has not had the finished work mapped out in his mind before he starts to do it with his fingers. If a dentist has an idea how the work will look, or how it is to be done before he commences it, his fingers will respond to the dictates of his brain, and I think all of us should first study the conditions and map out in our minds what we are going to do before we begin. In our college work we see this difference manifested in the work of students. One student knows what he is going to do, and never seems to make a mistake, while another is uncertain what he has in mind, and is working in the dark, feeling his way as he goes along, and the result is that sooner or later he gets into trouble or in the end the result is not what it should be. The same thing is true of practitioners of dentistry.

Dr. Edmund Noyes, of Chicago.

I want to say a word suggestively rather than dogmatically, in regard to the statement of the essayist and some of the speakers, that fees should be regulated accurately and only in accordance with the amount of time consumed. I do not think we know the difference well enough between wages and fees. Plumbers, gasfitters, and housepainters charge by the hour, and they earn wages. Doctors and lawyers make fees, and there are many other things besides the time consumed that may properly be considered in determining the amount of a fee. Physicians, surgeons, and lawyers usually have a standard of fees, which is also usually a sliding scale and varies with the skill required, the difficulties to be overcome, the time consumed, the probable benefit to patient or client and his wealth or poverty. It is usually conceded that professional men are under greater obligations to do

charity work than are mechanics or tradesmen, and the duty to "consider the poor" ought to imply the privilege or the right to "consider" also the rich. We must all admit that time is one of the important elements which go to determine the fee, but, however much account you may make of the time element yourselves, do not magnify it to your patients.

Dr. Clarence W. Meade, of Carmi:

I am like Rip Van Winkle in that I have been asleep for three days at this meeting, so far as being heard is concerned. But this subject and these discussions certainly would arouse any man from a deep sleep who has practiced dentistry in White County, Illinois, for fourteen years.

Dr. Pruyn has referred to the fee question, and Dr. Dittmar told a story about dollar amalgam fillings. I will go him one better by saying that in White County, Illinois, and in many other counties in southern Illinois the average price for amalgam fillings is fifty cents.

In White County, Illinois, and several adjoining counties, the average price for devitalizing, treating (one or fifty times), filling canals and finishing with amalgam or cement, is one dollar and fifty cents to two dollars. All crowns, individual or bridge teeth, five dollars each; double sets of vulcanite teeth, twenty dollars (if not made to suit made over until they do suit or the patient disgusted and teeth returned and half money refunded); double sets of temporary vulcanite teeth, ten dollars, made same agreement as above; teeth extracted at residence or office, fifty cents.

The question certainly comes to the mind of an honest dentist, Are all the dentists in this part of Illinois wrong? Are we educating the people as they should be, and lifting them up to the plane in life that our professional duty demands that we should? Are we rendering the public the skill and service that we should, and are we receiving the remuneration we should? I say, no, emphatically, no. And I hang my head in sorrow and shame when I hear a dentist or layman say, yes.

Dentistry in White County and many adjoining counties has from its beginning had this millstone of low fees hung to its neck, and its progress has been according. So long as the profession tolerates this condition we may expect our future progress to remain in keeping with our standard.

Dr. T. W. Pritchett, of Whitehall:

I want to know if a patient has not the right to have some kind of estimate given him before the work is done; whether his supposed bank account is "ten thousand dollars five hundred dollars," or ten dollars and fifty cents?

Dr. Edmund Noyes:

They certainly have that right.

Dr. L. H. Arnold, of Chicago:

There are five elements that legitimately enter into fee determination.

First—The time consumed.

Second—The material and expense consumed.

Third—The patient's ability to pay. If he has a million dollars, his tooth is worth—*actually worth*—more money to him than if he had only ten dollars. The value of his money *decreases* in exact ratio as his possessions *increase.*

Fourth—The patient's attitude. A disagreeable, exacting patient should pay much more than an agreeable one, for a given operation, for he consumes much more of the operator's life force—*actually shortens his life*—much more than the agreeable patient does.

Fifth—The patient's appreciation of his needs and what is being done for him.

It seems to me that these five considerations enter very necessarily into every legitimate fee determination.

AMERICAN DENTAL SOCIETY OF EUROPE, APRIL, 1909.

DISCUSSION OF DR. SPRING'S PAPER, "GOLD FILLINGS VERSUS GOLD INLAYS."

Dr. W. M. Griswold, of Hamburg:

In opening the discussion said he did not agree with some of Dr. Spring's points with regard to the preparation of the cavities and using the inlay lines. He thought most of the cavities could be prepared more upon the lines of immunity to decay. The decay at the cervical margin very rarely extended beyond the line of immunity and the cavity lines should be so arranged that there was no overhanging tooth structure. With regard to frail gingival margins, he did not believe in having any, and was of opinion that the inlay could be used where there was extensive decay, leaving an enamel wall unsupported

by dentine, and protecting it by gold, so that the gold would receive the stress at right angles to the line of strain. Very often it was impossible to preserve any appearance by reason of the large portion of thin enamel supported by cement. To prepare cavities according to the line of immunity it was very seldom necessary to cut down beyond the point of contact of neighboring teeth. In the gold inlay a larger body of cement could be used which did not necessarily need to come so close to the margin if the margin was well protected by gold.

He believed the gold inlay could be made as close as any gold foil filling. There was no capillary attraction between a gold foil filling such as there was between cement and a gold inlay and the walls of the tooth. He did not think very many dentists thought of putting in an inlay in occlusal cavities because one could put a filling in while getting the other ready. It was mostly used where there was extensive decay. It seemed to him that the title of the paper ought to be "Tin and Gold" rather than "Gold Fillings Versus Gold Inlays."

Dr. V. de Trey, of Basel:

Agreed with Dr. Spring and advised very strongly the use of tin and gold. When he started about fifteen years ago he used gold alone, but two years later started using tin and gold, and he thought it was one of the best materials to use in teeth. During that time he had gone through all the different filling materials and he had used a great deal of porcelain, but had never used porcelain on masticating surfaces in molars, although he had used it in proximal fillings. He could never bear to see a tooth with too much cut away, and he had seen some teeth cut down to such a degree that the tooth was suffering from the effects. A few years ago he used to take for large proximal fillings from an hour to an hour and a half, but since he had used tin and gold he could make fillings so rapidly that he very seldom took more than forty minutes or half an hour, and he was surprised to see how the materials held under the gum. He had seen gold fillings come away on the top while the tin fillings remained. He was using tin and gold, 4 to 20, making many gold and tin fillings a year and contouring them, and he was very pleased with the process.

Dr. H. G. Fisher, of Cologne:

Said in his idea the success of inlay work lay in the preparation of the cavity. He believed that a well-placed inlay in a well-prepared cavity, along scientific lines, was more permanent than or as permanent as any gold foil or tin and gold filling, because the capillary at-

traction was eliminated by cementing in the filling. He believed there was less destruction of tooth tissue in gold inlay work than with gold foil work. It was impossible to put gold against a frail margin unsupported by dentin, but with an inlay the margin could be built over and supported. It seemed to him that wax could be adapted much easier than gold in the preparation of the inlay. In the cavity Dr. Spring had alluded to he had extended the cavity where he could not easily reach it, and it was difficult to mallet the gold against the margins. Every cavity, and indeed every mouth, was a law unto itself, and environment had much to do with the judgment in the preparation of a cavity. Dr. Davenport had spoken of his fillings lasting twenty years, but he had taken good care of his teeth and had reached the stage of immunity. It was not necessary to extend cavities in such a case. But in most cases patients did not take great care of their mouth and there extension for prevention was necessary. He believed the margins of the cavities should be so prepared that they could be kept clean by the toothbrush and the action of the lips and tongue, otherwise the operation was not permanent and a future filling would be necessary when extension for prevention would be required. Therefore if it could be done at once it seemed to him to be much better than in two operations. The cavity should be so prepared that the filling was mechanically strong without paying special attention to cement. It should be prepared with a flat gingival base with the buccal and lingual walls nearly vertical, and with a small step. Where there was great force cement would not stand the strain. He believed in extending the cavity with a small step and mechanically retaining the filling, which would never come out as long as the patient lived.

Dr. J. H. Spaulding, of Paris:

Said that with regard to the use of tin and gold he could confirm by his experience what Dr. Spring and Dr. de Trey had said. Ever since Dr. Spring showed his method of using tin and gold at the meeting in Cologne, he had used it more or less, in the proportion of 4 of tin to 20 of gold. In years gone by he used to fill half or two-thirds of the cavity in that way and finish with gold, but for the last six or seven years he had not used gold, but made the entire filling of tin and gold. It was not unsightly in most mouths. During the last three or four years he had arrived at sufficient skill to be able to contour it and he had never found a filling of that kind to slough or

break off in any way; the texture of the filling became harder in the mouth and the filling would hold its original shape. Whenever it had been necessary owing to encroachment of decay to take the filling out it was exceedingly difficult to do so; it seemed to form a part of the tooth itself. The other day he had a filling that was absolutely surrounded by a space with the exception of the cervical margin, and he could hardly prize the filling off, so intimately was it associated with the tooth. With regard to the question of gold inlays, he used them a great deal and found many cases where nothing else seemed to do. He was quite of the opinion of Dr. Fisher that in using tin and gold the cutting out of fissures was almost the best system of anchorage. He did not like cutting a dovetail on the side, because it weakened the side of the cavity, whereas by reaching over into a fissure and carrying it behind the cusp a little, an anchorage could be obtained which was perfectly safe and presented no danger of weakening the root.

Dr. N. S. Jenkins, of Paris:

Said the paper of Dr. Spring was characterized by that quality which he always displayed when he wrote upon any subject, namely, sweet reasonableness. He did not advocate any extremity, but pointed out the advantages of different systems in a clear and logical manner. He was very glad that Dr. Spring again testified to one of the most valuable adjuncts in the treatment of diseases of the mouth, namely, tin and gold. Its history was plainly more favorable than that of any other material ever used in filling decayed teeth, and he wanted to make that statement as strong as he could possibly make it. When he first came to Europe in 1866 he found, to his astonishment, in Berlin, the first man using tin and gold to fill all difficult cavities. Abbott was the especial advocate of that method of treatment and showed him in his practice fillings that had been made under water ten or fifteen years previously and had kept the tooth in a state of wonderful preservation, and many of those fillings were preserving teeth today. Was there an instance of anything which had ever been done, either in non-cohesive or cohesive gold or both combined, comparable to such results as those? It had to be remembered that that work was done before the invention of the rubber dam, before the invention of the dental engine, when everything had to be done by the hand, and the operations were performed in practices represented by people scattered all over Europe, patients who could only appear for treatment sometimes at an interval of several years, people living on the utmost

confines of Russia and the East, where at that time no dental service was to be obtained. Those fillings made, as they frequently were, under water, and with the inferior instruments at the disposal of the operators of that day, accomplished marvelous results. Dr. Spring had to be credited with the greater interest taken in esthetics in that he had shown that quite good results could be obtained by a minimum of tin, the same results and in a less unesthetic way. The objection to the original tin and gold fillings was that they turned black upon the surface in most instances, but they did not discolor the tooth itself. If a thin layer of pure gold was brought against any thin margin, that margin would not discolor. The great reason why the fillings under all circumstances had been practically of such great value was that which Dr. Fisher had referred to as the great safeguard in the case of a cemented filling, namely, that it put a stop to capillary action and did so in a way that Dr. Miller had shown. Miller was greatly impressed by the preservative quality of tin and gold and sought to find out the reason, and found that the reason was that the two metals placed in the mouth under the influence of acid formed a battery and developed in a very short time a certain portion of oxide of tin, and in developing that oxide of tin the filling increased in size so that the particles of the metal were brought in such intimate contact with the walls of the cavity that infiltration became practically impossible. While he entirely agreed with Dr. Spring's position in almost every particular, there were certain little tricks in the preparation of a cavity for an inlay—the advantages for which he did not need again personally to mention and which he was profoundly convinced of—which enabled the dentist to avoid destruction of the walls in making an inlay. Supposing, for instance, that there was a cavity with a deep portion of decay beneath the enamel, and it was desirable for many reasons, but especially for esthetic reasons, to preserve just that piece of enamel so that it could not be seen that the tooth had been filled. That was easily accomplished in two ways, first by cutting it out and then by filling with cement in order to get a proper matrix or impression of the cavity, or it might be ignored in forming that cavity. If the enamel was made with a slightly flaring line and one utterly disregarded the existence of the decay, then after the inlay had been finished one might cut out the decay and put in an inlay with the certainty that the support of the cement beneath the overhanging wall would be great and render the filling as secure as if that

portion had been originally sound. That was only one of the many little tricks at the disposal of anyone whose object it was to use a cemented filling. Another point with regard to tin and gold was that one of the possible objections to the use of gold inlays was to be found in the fact that such a mass of gold, even though there was an intervening layer of cement, was sometimes the occasion of thermal shock. Tin and gold, as they were accustomed to be used in great masses in the old days before inlays were thought of, had the great advantage over pure gold fillings in being much less good conductors of caloric.

Dr. Kirk A. Davenport, of London:

Said it was always a pleasure to receive any instructions from Dr. Spring because it was listening to a master who could make a filling with any material. It was not that Dr. Spring's gold inlays would not be absolutely in the first rank of gold inlays, but Dr. Spring wished to teach caution. It brought to his mind one very important thing, namely, the danger which was likely to come about with a gold inlay. Extensive gold fillings or tin and gold fillings could not be put in without the rubber dam, or at least it was not practicable to risk putting them in; while in putting in inlays of all sorts there was a tendency to say that it was unnecessary to use the rubber dam. That was true to a certain extent, but by not using the rubber dam there was always a fear that just at the psychological moment a bit of moisture might creep in without the knowledge of the operator and the filling might be cemented into a place that was not dry. A leak in a rubber dam with gold or tin and gold filling was not so serious. Dr. Jenkins had pointed out a most valuable thing, namely, that tin and gold could be worked under water and still produce hermetically sealed fillings. Such a thing with an inlay would be impossible. His own idea was to make an absolute appeal that gold inlays and porcelain inlays should be only put in with the absolute certainty that the cavity was dry.

Dr. H. G. Fisher:

Said that in the cements on the market for cementing inlays the hydraulic property was a necessary qualification and moisture was necessary for the cements properly to crystallize.

Dr. W. A. Spring:

In reply, thought the apparent difference of opinion between himself and Dr. Griswold arose from a misconception of the premises. He had referred to extensive lateral caries only and to a part ex-

tremely badly broken down and he referred in a diagram to an absolutely perfect part of the tooth, not an overhanging frail wall. In filling such a tooth with an inlay it was sacrificing an absolutely strong wall. It would seem to him absolute slaughter to cut down the strong cusp and then cut down again in order to put in a massive block of gold. He practiced extension for prevention to a careful extent, and by working on conservative lines he attained the result required. In answer to Dr. Fisher's remark with regard to the malletting of gold, it would be a very difficult cavity to mallet gold into the corners, and it was for that reason he recommended tin and gold. By using a matrix the pieces of tin and gold could be tucked into the corner and forced to one side and the whole thing packed down, and in a very few moments a third of the cavity was filled without malletting into the corner, the malletting being done on the mass after it was well pressed in. The mallet never reached anywhere near the corners. Therefore a cavity with such extensive lateral caries was very simply filled. After deciding to write the paper he spent considerable time in studying the cavities he was about to fill, and it appeared to him that the amount of tooth substance sacrificed in preparing a cavity for a filling was in many cases very great, and that there was really a very large amount of tooth saved by filling instead of using an inlay.

DISCUSSION OF THE PAPER "CLEFT PALATES AND ORTURATORS," BY G. A. STOPPANY, OF ZURICH.

[Professor Stoppany illustrated his paper with two practical cases. The first was a young lady patient of twenty-one, who, speaking without the obturator, was absolutely unintelligible, but with the obturator read with perfectly clear enunciation and sang in a most delightful manner. The second case, a boy of about thirteen, although not completely restored, had his articulation very greatly improved.]

Dr. N. S. Jenkins, of Paris:

Thought it would be difficult to express the thanks of the Society to Professor Stoppany for the remarkable exhibition he had given of the success obtained with his obturator. The case of the young lady was especially remarkable, having regard to the undeveloped condition of her incisors. He was particularly impressed with her extraordinarily clear enunciation both in speaking and in singing, a quality rare in normal people. He wished to ask whether the obturator acted in her case as a sort of sounding board to increase the force and carrying power of the voice. He also wished to know whether he understood

Dr. Stoppany correctly when he said, what seemed almost incredible, that the use of properly constructed obturators could actually in time result in causing such hypertrophy of the muscles that the obturator might eventually be dispensed with. If so, it would belong to the class of modern miracles.

Dr. O. T. Wayne, of Zurich:

Confirmed Professor Stoppany's statement with regard to the practical value of the modern obturator. During his long association with Professor Stoppany he had good uniform results in about sixty cases. In one case the lady was married and he did not think her husband knew that she had an obturator in her mouth. Great thanks were due to Professor Stoppany for undertaking the work, because most dental surgeons had shirked it for some reason or other. It could be easily seen that it was not on account of the difficulty of the work, because he did not think dental surgeons were afraid of any difficulty, but it seemed to be because the work was very unpleasant and in a majority of the cases did not pay. The majority of those who were unfortunately afflicted were of the poorer classes and he had seen Professor Stoppany treat many of such cases, taking in them the same active interest and applying the same energy to obtain the same results as for patients to whom he could send in a bill.

Dr. William Dunn, of Florence:

Asked Professor Stoppany what were the most difficult sounds to perfect in enunciation.

Dr. E. Rosenthal, of Brussels:

Said he had had some experience in the treatment of cleft palates and was not at all surprised at the beautiful results Professor Stoppany had arrived at, but he was surprised at the simplicity of his apparatus. The simplicity of the means by which Professor Stoppany had arrived at his results was most admirable. He himself had used an obturator which combined the system of soft and hard palate, the plate in the nasal cavity being made of soft rubber and that in the mouth of hard rubber, both united and fixed by a simple hinge. He had one of his patients capable of singing with the same perfection as the young lady Professor Stoppany had shown; the perfection of her singing was so great that the teacher did not know she had a cleft palate, and it was only on the occasion of showing the patient to the Odontological Society of Belgium that the teacher, who accompanied her, was aware that she used such an apparatus.

Dr. W. S. Davenport, of Paris:

Said the subject of obturators interested him probably more than any subject in dentistry and in listening to the young lady singing so beautifully he thought what a wonderful profession dentistry was. It was an instance of how a beautiful soul could be really taken from hell and placed in heaven, because the whole soul of the child had been changed by the remarkable work. Some years ago a Scotch boy of about sixteen consulted him with a fearful cleft palate. At that time he knew nothing about the malady, but he read everything he had ever heard of as being published. He tried a great many appliances with absolute failure. Finally an article appeared in New York by Dr. Norman W. Kingsley, he thought the doctor's last attempt in connection with the study of obturators. Professor Stoppany had said that Dr. Kingsley had used an artificial velum soft rubber, but Dr. Kingsley has some success with a similar appliance, the Delaire, which was well known; but at last, after spending a life on the work, he discovered that the best appliance he could ever use was a hard velum, exactly similar to the appliance shown by Dr. Stoppany, with nothing flexible about it, not even hollow in its construction. It was a thin, beautifully-formed plate, performing the function in exact relation to the soft parts as the wonderful appliance of Dr. Stoppany. He wished just to correct Professor Stoppany on that ont point, that Professor Kingsley came to the same conclusion. The case of the Scotch boy was similar to one spoken of by Dr. Rosenthal. The boy was sixteen, and although intelligent, was backward, because he was a highly sensitive young man, bashful and humiliated, hardly knowing how to read. Two years afterwards he returned to Paris, after he had furnished him with an appliance exactly similar to that shown, to express his thanks for what had been done for him. He told him he had done nothing except to copy a simple rubber appliance which had been the life work of one of the greatest men that ever lived. Two years later he had reproduced the appliance in case there should be a breakage. When he began to treat the boy he could not say Papa or Mamma, and he used to get him to dine with him and try and teach him to speak. That young man now had passed the highest examinations in the University of Edinburgh. He did not speak of course to belittle in any sense the paper, but just to bring out the idea that Dr. Kingsley recognized the importance of the hard velum. Experiments had been tried to make improvements by using soft palates,

springs, and various things, but he had finally returned to the Kingsley method, which was a delight. It was not difficult, and all dental surgeons should be able to practice it.

Dr. H. C. Merrill, of Cologne:

Said the thing that had interested him very much was the very small size of the velum. For many years amongst the many mistakes made was the mistake of having the aperture spread so wide as to annoy the membranes to such an extent that constant inflammation had been kept up. At Cologne for some years past they had been trying, with some success, to use pure gold for the velum. Dr. Jenkins has referred to the velum as a sounding board, but he thought that hard rubber in any form did not act as a sounding board, but to the contrary. A thin, absolutely airtight, gold velum, would act as a sounding board almost the same as a violin, and he believed that had the young lady had the velum made of gold the singing might have had more carrying power, though perhaps not have been more clear.

Dr. W. Mitchell, of London:

Believed that vulcanite had a tendency to absorb or not reflect certain sounds, whereas it was quite otherwise with metal, and of all metals silver was better than any. In fact, in regard to sound silver had the same effect as a bright light had on photographic plates as compared with the light of a dull day. The vocal actinic action, as he might term it, brought out as clear, sharp, crisp notes what was more or less muffled by vulcanite or any material lacking a fibre or metallic composition. In speaking to Dr. Royce about the possibilities of metals, it came out in conversation that Dr. Royce had been trying to develop a certain note for a noted singer who had some difficulty. He suggested to Dr. Royce plates of different metals to find out which would produce the best results, and the best results, practically perfect results, were obtained from a gold plate, a very low carat gold. The plate was composed mostly of silver, the gold being added to prevent discoloration taking place. The result was really surprising.

Dr. William C. Achard, of Zurich:

Agreed with Dr. Merrill about the rubber. He had a brother who had a hare lip and cleft palate, such a bad case that he was able to push his tongue into the nose so that it could be seen through the nostrils. He made an obturator for him of hard rubber with a long bow about seventeen years ago, and it was not very successful. A few

years later he made one with a short bow, also of hard rubber, and although not a perfect success, it was much more successful than with the long bow.

PROF. G. A. STOPPANY:

In answer to Dr. Jenkins, said that in treating a congenital fissure with an obturator in every case after about two years the fissure became smaller and a smaller obturator could be used. In many cases he had been treating it had been necessary after two years to make the obturator smaller and smaller, until the time was reached when no obturator was needed at all. In reply to Dr. Dunn, the hardest consonants to sound were especially g, h, s and f, because to sound them the obturator had to be closed by the muscles and the air passed through the nose.

DISCUSSION OF QUINTERO'S PAPER, "AN EXCEPTIONAL CASE."

[The paper was accompanied by a series of plaster casts, showing the gradual removal of the deformity until practically a normal condition was produced.]

THE PRESIDENT said the case looked almost like a miracle.

DR. W. MITCHELL, of London:

Thought it was another instance where congratulations should be tendered to the essayist because it was another illustration of the wonderful ramifications of the work of the dental surgeon. Dentistry required the capacity to set an example with regard to any science or handicraft, and the papers of the afternoon showed the possibilities of capacity when perseverance was backing it up. In the winter of 1877-8 Dr. Donald McLean, Professor of Surgery in Michigan University, had almost an identical case in his clinic, a young lady who had met with a very sever burn. The upper part of her clothing being much thicker than the lower part, it seemed as though the concentration of the burn was localized around the throat, and when he saw the case the chin was tacked to the sternum to such a degree that she had to be in a recumbent position in order to take food. It was impossible for her to close her mouth and the lower teeth were pointing forward, owing to there being no antagonism, while the tongue was hanging out of the mouth. She had to have a number of towels each day put around where the chin had been in order to take up the constant flow of saliva. It seemed to be a case where the best surgical operation would be one that ended the existence of the girl. With his usual resource, energy, and capacity, Dr. McLean attacked the case, though

not by the gentle means Dr. Quintero had shown. The operation consisted in gradually cutting through the cicatricial tissue and with pressure upon the chin gradually closing the mouth. The case was in its way as wonderful a success as Dr. Quintero's, but it was not so artistically done and there was additional cicatricial tissue from the results of the operation. While it was a success, therefore, in one way, it was not a success in another. However, having accomplished his object, Dr. McLean could be accorded a triumph, though not so great a triumph as could be accorded to Dr. Quintero.

Dr. Hirschfeld

Asked what the mask consisted of.

Dr. M. J. Quintero

Said, nothing but a piece of vulcanite rubber.

The President

Asked whether the pressure caused any sensitiveness or irritation on the delicate cicatricial tissue.

Dr. Quintero

Said, not at all; the patient only wore it at night.

The President

Asked whether a metal mask was used finally.

Dr. Quintero

Said not. He had used a metal mask for other cases and found it just as good, but he had never had such a bad case as the one he had shown.

Dr. George Northcroft

Had not quite gathered what kind of rubber was used, vulcanized rubber, rubber dam, or velum rubber.

Dr. M. J. Quintero

Said it was vulcanized rubber, prepared by a special vulcanizer.

The President

Thought the models were so perfectly self-explanatory that there was very little to be added except some detail of the methods that Dr. Quintero employed. He was sure the whole Society was very grateful for being shown so simple a method of handling so depressing a disfigurement. It was really remarkable that such a simple, painless method should produce such results.

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EDITORIAL.

A QUESTION OF ETHICS.

We are just in receipt of the following communication bearing on a certain section of the code of ethics recently adopted by the Illinois State Dental Society, and in force in all the component societies through the state.

"Dr. C. N. Johnson, Editor THE DENTAL REVIEW:

"Dear Doctor: Referring to Section 5, Code of Ethics, just issued by the Chicago-Odontographic Society, I would like to know if the dentist consulted by patient is entitled to a fee for services rendered? Please answer through THE DENTAL REVIEW.

"A DENTIST."

It is not customary for journals to notice anonymous communications, and yet this touches on a legitimate and perfectly natural point for consideration, connected with the new code, so we are pleased to publish it. The section referred to reads as follows:

"If a dentist is consulted in an emergency by the patient of another practitioner who is temporarily absent from his office, the duty of the dentist so consulted is to relieve the patient of any immediate disability by temporary services only, and then refer the patient back to the regular dentist."

The question raised by our correspondent regarding the propriety of charging for services thus rendered is very easily answered. It is perfectly legitimate to charge for services under the circumstances. A dentist's time is his capital and a patient should not expect to take his time without paying for it. Under certain circumstances it is deemed more courteous to have the bill rendered through

the regular dentist. That is, the man called upon in an emergency may with perfect propriety say to the patient that he does not care to render a bill himself, but that he will report the case to the family dentist and let the bill come through him. In some instances where the character of the service is extremely trifling, the dentist consulted may say to the patient that he is pleased to do it as an act of professional courtesy to his fellow practitioner, but the favor done should always be expressed as being for the practitioner instead of for the patient.

This question, as with all questions of ethics, resolves itself down to one of moral obligation. If a man treats everyone—patients and practitioners—as he would wish to be treated, he will not go far astray. But as to the concrete proposition of charging for service rendered under the conditions indicated, there can be no question as to its legitimacy.

THE EDITOR'S DESK.

MOLLIE AND LIT.

If you describe one you describe both—they are so nearly alike. And they are so exquisitely beautiful that no one can describe either of them. I saw them first at my summer home while on my vacation, and I see them ever since in my dreams. I am past the sentimental stage of life, and yet I confess to falling in love at first sight. And so would you if you could see them.

There is something about a pure-bred Jersey cow that appeals to every lover of animal life, and when you see two of them together —and two such perfect ones as Mollie and Lit—they are simply irresistible. Their great expressive soft brown eyes, which look at you as do no other eyes on earth unless it is those of the confiding fawn; their eyelashes, which would be the envy of the latest society belle of the season; their beautiful ears, thrown forward as if to catch the faintest word you have to utter to them; their nostrils, lifted in the air to scent the perfume of the dew-laden morning vapors from the meadow; their fawn coats, a mixture of cream and yellow, shading into black where the weather beats against their faces and forearms; their limbs, as slender as those of a deer—you can span them anywhere below the knee and hock with your thumb and finger;—

their tails, sweeping the ground with a wonderful reddish brown brush at the end; their flanks, thin and trimmed up to make room for the plenteous, oblong udder; their milk ducts, standing out like great veins on a thoroughbred; their noses, black but muzzle-bound with a band of delicate creamy white, their inner ears as yellow as the richest butter of June; their hoofs, rounded and clean cut, cleaving the earth like those of a race-horse; their countenance, open, with great breadth between the eyes, and an expression of the utmost docility—these are some of their characteristics, but the half has not been told. Every line is one of grace and beauty, and every movement as sprightly and sylphlike as the bounding fawn of the highlands.

Which reminds me that Mollie and Lit can bound some themselves on occasion. One of these occasions was when they were being transferred from the herd where they were raised to their new home. They didn't know what it meant, and Lit in particular wanted to know. When Lit wants to know anything she generally goes after the information without any hesitancy. One of the editors of THE DENTAL REVIEW was trying to lead her, but it wasn't long before she was leading him. It was soon discovered that she could run the faster, and when his foot turned on a rolling stone Lit took immediate advantage of it and dragged him merrily along through the dirt. When he recovered himself with a sprained ankle and a hand burned with running rope Lit was severing the wind some distance up the road. But she showed no resentment and allowed herself to be caught, and behaved beautifully after that. On one occasion subsequently she made a wild break for home and mother, but finally gave it up and settled down into her new environment as contentedly as if she had been "to the manor born."

Both cows show their early training by being most tame and unafraid. Anyone can walk up to them in the field and pet them to his heart's content, while they comfortably chew their cud and gaze at the visitor with those luminous eyes as if at peace with all the world. And that is the heritage of pure-bred stock, whether of cattle, horses, dogs or any other domestic animals, that they are more docile, more intelligent, and altogether more lovable than any of the mongrel class upon which humanity has been so long wasting its money and its energy. The saying is fundamentally true, whether in animals or men, that "blood will tell."

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

A Winter Month Electric Lathe:—Remove blades from a twelve or sixteen inch blade motor fan and key in place a small iron pulley. Then adjust your motor back of lathe head, connect with a small cord belt and you have all the power necessary for ordinary polishing. —*H. E. Latcham, Jefferson, Iowa.*

Cavities for Porcelain Inlays:—A cavity of any shape which does not give undercuts and which provides somewhere sufficient depth, and which has well defined and polished edges either for burnishing the matrix to the cavity or for taking a wax impression ,is suitable for a porcelain inlay.—*N. S. Jenkins, Paris, France.*

Be Composed During an Operation:—A weak vacillating character can never inspire confidence in a patient no matter how proficient otherwise a man may be. He who frets and fumes over an operation wears and worries his patient as much as he does himself, and thereby introduces a strong element toward failure by his lack of self control.—*W. Mitchell, London, England.*

Preparing and Filling Root Canals:—We can clean the canals with broaches and with the aid of sulphuric acid and patience, and a knowledge of tooth structure. By using a lubricant or oil that is best fitted for the purpose, I think I can pass a gutta percha point in the canal and after the point has been introduced with the aid of a little plugger I can force it far nearer the apex than the penetrating effect of so-called mummiline.—*Don M. Gallie, Chicago.*

Treatment for Tortuous Canals:—Mix with zinc oxide or precipitated calcium phosphate, about two per cent of thymol, and use that as a powder, and use any remedy that contains formaldehyde as your liquid, making a stiff paste, placing it over the fine tortuous

canals, working it down into the canals with a stiff smooth broach as best you can, and you can fill the cavity and give the patient hope that the tooth will not abscess.—*John P. Buckley, Chicago.*

The Rubber Dam:—I am inclined to think that any tissue that is injured never gets well. I have two or three places in my mouth in which the tissues are very sensitive. The least friction will cause great soreness. I sometimes think in these cases we will have to quit applying the rubber dam, because the peridental membrane is injured in putting it on. Undoubtedly, the peridental membrane is injured by those who are not skilled in putting on the rubber dam.—*J. N. Crouse, Chicago.*

Office Furnishings:—Each patient should take the operating chair in a mental attitude, so far as possible, favorable to the operation. To produce this condition I think the furnishing of the office plays its part. It should suggest restfulness and quiet comfort, good taste and radiant cleanliness, comfortable chairs and seats suited to the various temperaments of the patients, cheerful books, pleasing pictures. A few objects of rare interest will interest the observant.—*G. H. Watson, Berlin, Germany.*

The Home:—The home is the place to recuperate and where we should spend most of our evenings, and by so doing keep ourselves up to the highest state of efficiency, and even then, the man who stands up under a heavy practice for twenty-five years has reached a time in life when if he practices longer he should do so by working short hours and for the pleasure he gets out of his work rather than from the necessity of working to keep the wolf from the door.—*J. D. McMillan, Macomb, Ill.*

Caries of Enamel:—The study of the beginnings of caries of the enamel, as it occurs generally in the teeth, shows that it always begins in secluded places where it is most readily covered in by deposits that interfere with the free distribution in the saliva of the acids formed. Therefore conditions of the saliva which favor glutinous deposits which will act as coverings, are the chief factors in inducing susceptibility to dental caries. These propositions have

given great importance to the study of the saliva.—*G. V. Black, Chicago.*

Care of the Soft Interproximal Tissues—A slight injury to the gum tissues between the teeth in making a filling and in doing other operations is thought to be very trivial by some operators. The soft tissue is lacerated at the gingivae and we pay little attention to it in the great majority of instances, but it has been estimated that about 80 per cent, possibly, of the cases of pyorrhea alveolaris, so-called, have their origin or beginning from these troubles, so let us look more carefully to these injuries, although they seem slight at the time, and give them as thorough and as proper treatment as possible, so as to prevent the destruction of tissue through the working of this disease, which we term pyorrhea alveolaris.—*A. H. Peck, Chicago.*

Application of Zinc:—All incrustations of calculi must first be carefully and thoroughly removed. The pocket is then thoroughly irrigated with warm water and dioxygen or hydrogen peroxid. This is followed by adrenalin chlorid solution if the hemorrhage is profuse, and continued until hemorrhage ceases. Full strength deliquessed chlorid of zinc is then applied with a Sub Q syringe to the pocket. The pocket is then made as dry as possible and a paste of stearate of zinc 30 per cent, pure vaseline 60 per cent, white wax 4 per cent, spermaceti 6 per cent, as stiff as can be used in a syringe, and at a temperature that will be tolerated by the tissues, is then injected to the depth of the pocket. This is accomplished by introducing the tip of the syringe to the bottom of the pocket and slowly withdrawing as the pocket is filled.—*J. B. Pherrin, Des Moines, Iowa.*

Polishing the Proximal Surfaces of Fillings:—The problem of polishing the proximal surfaces of gold or other fillings is often difficult at the best. A plan that has afforded me a great deal of satisfaction where teeth were crowded, and when it was desirable to use the polishing strip, was to take the scissors and cut the end of a suitable strip to a point and then to make a hole about half an inch from the end for the insertion of dental floss. A convenient length of floss pulled through six or seven inches, the two ends laid together, the strip thus engaged can be readily drawn between the teeth by

first slipping the floss between in the usual way from the occlusal surface and then pulling the attached strip either towards the buccal or lingual side. When the point is in sight it can often be pulled far enough with the cotton carriers to enable the operator to grasp it with the fingers. It is always advisable to coat the strip on both sides with a lubricant, as vaseline.—*E. Ballard Lodge, Cleveland, Ohio.*

Treatment of Root Canals.—Pulps in the distal roots of lower and lingual roots of upper molars can usually be removed and the canals reasonably well filled. By the use of finger drills and sulphuric acid the minute canals in the mesial roots of lower and buccal roots of upper molars are opened as far as possible, acid in the canals neutralized and roots dried, dry cotton wicks packed in the canals, and over these a wad of cotton saturated with a 5 or 10 per cent solution of formalin is placed to remain three or four days. The cotton wicks will draw the formalin to the point where you want its effect. It will do its work and disappear and the tissues will not be subjected to the prolonged effect of the gas with detrimental results. The cotton wicks are removed and replaced with dry asbestos fibre—sterilized by passing through alcohol or gas flame—and over this a sterilized asbestos disk soaked with a saturated solution of thymol in ol. cinnamon, covering same with tin foil and then cement, completing the filling with any material you prefer.—*A. D. Kyner, Moweaqua, Ill.*

Filling Deciduous Teeth.—Some kind of plastic filling material is used, as a rule, for filling the deciduous teeth. In many instances a matrix can not be used, which is liable to result in some of the filling material being forced in between the free margin of the gum and the neck of the tooth in cases of approximal cavities, and most of the cavities in deciduous molars are approximal cavities. It is difficult sometimes to remove that excess from between the gum and the neck of the tooth without much discomfort to the young patient.

A simple method for avoiding the difficulty is as follows: After the cavity is prepared for the filling, take a piece of waxed dental floss and gently force it in between the gum and the neck of the tooth, then insert the filling and before it becomes hard take each

end of the floss between the thumb and finger of each hand and draw it back and forth and at the same time draw it out from between the teeth, or part way at least, and finish with a thin small spatula. This will remove all the excess from under the margin of the gum, which is necessary to avoid subsequent irritation.—*H. A. Cross, Chicago.*

BOOK REVIEWS.

Dental Materia Medica and Therapeutics. With Special Reference to the Rational Application of Remedial Measures to Dental Diseases. A Text Book for Students and Practitioners. By Hermann Prinz, M. D., D. D. S. Professor of Materia Medica, Therapeutics and Pathology, Washington University Dental School, St. Louis; Chairman of the Committee of Revision of the United States Pharmacopeia, Section of Stomatology, American Medical Association. Illustrated, 595 pages. Price, $5.00. Published by The C. V. Mosby Medical Book and Publishing Company, St. Louis, Mo., 1909.

The author says in his preface that "A systematic classification of drugs which shall answer all purposes has never been, and probably never will be, successfully arranged." And yet Dr. Prinz has given us one of the most comprehensive works of this kind that has ever appeared, and one whose permanent value cannot be questioned. It is divided into four parts, as follows: General Therapeutics, Pharmaco-Therapeutics, Physical Therapeutics, and Local Anesthesia. This is followed by an appendix consisting of such subjects as "Diagnosis of Diseases of the Pulp by the Electric Current," "Urine Analysis," "Immediate Treatment of Acute Poisoning," "Glossary of Therapeutic Terms," "Diagnostic Aids," "Thermometric Equivalents," "Dose Table," etc. There are one hundred and three illustrations, and the entire work reflects credit upon the distinguished author and the painstaking publisher.

Elements of Orthodontia. A Laboratory Note Book for Students and Beginners. Comprising a Series of Exercises in Orthodontia Technology. By B. E. Lischer, D. M. D. Professor of Orthodontia, Washington University Dental School. 95 pages. Price,

$1.00. Published by The C. V. Mosby Company, St. Louis, Mo., 1909.

This is a most excellent little work, designed to aid in the teaching of orthodontia technics in dental colleges. It is divided into the following subjects: "Instruments, Materials and Rules," "The Construction of Models," "Exercises in the Application of Appliances," "The Construction of Retention Appliances." There are thirty exercises altogether, and they constitute a very simple and effective guide both to the teacher and the student. Blank pages are left for Memoranda and the entire work is so arranged that it will prove a great aid in teaching this most important branch of our art.

MEMORANDA.

G. V. BLACK DENTAL CLUB.

The members of the G. V. Black Dental Club (Inc.) will hold their mid-winter clinic in St. Paul, Minn., February 24 and 25, 1910. For further particulars address R. B. Wilson, Secretary, 400-10 Am. Nat. Bank Bldg., St. Paul, Minn.

THE KANSAS STATE BOARD OF DENTAL EXAMINERS.

The Kansas State Board will hold a meeting for the examination of candidates for license to practice dentistry in Kansas, beginning December 7, 1909, at nine o'clock a. m. For blanks or other information, write to the secretary, F. O. Hetrick, Ottawa, Kans.

DR. GREENE VARDIMAN BLACK TO BE HONORED.

Chicago-Odontographic Society desires to inform the dental profession that this association is to give a testimonial banquet, in honor of Dr. Greene Vardiman Black, in the City of Chicago, during the last week of January, 1910. Wm. H. G. Logan, President; Frank H. Zinn, Secretary.

INDIANA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Indiana State Board of Dental Examiners will be held in the Capitol at Indianapolis, January 10 to 14, 1910. All applicants for registration in Indiana will be examined at this time. For further information address the secretary, F. R. Henshaw, 507-8 Pythian Building, Indianapolis, Ind.

IDAHO STATE DENTAL BOARD.

The Idaho State Dental Board will hold its regular winter meeting at Boise, on December 29 to 31, 1909. All applications, with the fee of $25, should be in the hands of the secretary not later than December 27.

For any information and blank application address J. B. Burns, Secretary, Payette, Idaho.

INSTITUTE DENTAL PEDAGOGICS.

The sixteenth annual meeting of the Institute of Dental Pedagogics

will convene in Toronto, Canada, December 28, 29 and 30, 1909. It is the first meeting held north of the Great Lakes and our Canadian friends are preparing a most excellent program.

All dental college teachers are cordially invited to attend. B. E. Lischer, Secretary-Treasurer.

PATENTS OF INTEREST TO DENTISTS, RECENTLY GRANTED.

932,133. Machine for contouring crown-matrices, F. O. Jaques, Jr., Cranston, R. I.

932,875. Automatic dental advertising device, A. Lavallee and G. J. Constantineau, Lowell, Mass.

932,508. Dentist's casting appliance, N. H. Smith, Seattle, Wash.

932,833. Attachment for tooth-powder receptacles, J. M. Tobin, New York.

933,718. Dental tool, T. Mahoney, Los Angeles, Cal.

934,958. Tooth-regulating device, C. S. Case, Chicago, Ill.

934,536. Forming tooth-crown matrices, F. O. Jaques, Jr., Cranston, R. I.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

OHIO STATE DENTAL SOCIETY.

The forty-fourth annual meeting of the Ohio State Dental Society, to be held in the Southern Hotel, Columbus, on December 7-9, promises to be one of the very best in the history of this society. The program contains the names of such men as Drs. M. L. Rhein, I. N. Broomell, Marcus Ward, C. P. Pruyn and Sidney Rauh of Cincinnati. The president, Dr. W. H. Whitslar, will give a steriopticon lecture on Tuesday evening on "The Human Hand." Dr. Whitslar has talked on this subject elsewhere and is a recognized authority on the subject.

The clinic program will be the longest ever offered by this society.

The arrangements committee will provide a special social feature for the entertainment of the members and guests, giving all an opportunity to become better acquainted.

Many new members have been added through the organization of component societies.

Let all members come and bring some friend. A royal good time and welcome awaits you. F. R. Chapman, Secretary.

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NERVOCIDIN AS AN ADJUNCT IN THE TREATMENT OF DEGENERATIVE CONDITIONS OF VITAL PULPS.*

BY A. D. KYNER, D. D. S., MOWEAQUA, ILL.

The members of this society, residing in a dental educational center second to none in the world, where you enjoy the great benefits and incentive of the dental colleges, and the inestimable value you derive from the several local societies in your city, ought to produce men of the highest attainments and no one, unless he be an inventor or an original researcher, should hope to impart any great amount of information to members of the Englewood Dental Society, who are so fortunately located in such favorable environments.

It has been said that the world does not need so much to be informed as to be reminded. Standing at the chair of a clinician at one of our local society meetings, the gentleman was treating a typical case of Black's phagadenic pericementitis, and was asked by a member how many treatments would be given to effect a cure. He answered four or five. This man certainly needed to be reminded, possibly to be informed.

So having nothing new to offer, the question of what to write on presented itself, as it usually does to the ordinary essayist. The following case seen recently in the office suggested a subject to bring before you. A lower left first molar had been filled four years previously. Had been the seat of troublesome symptoms from the time of filling. The painful condition increasing in intensity and frequency, relief was sought. Examination showed tooth loosened, tender to percussion, insensitive to hot or cold. Pain characteristic

*Read before the Englewood Dental Society, October 12, 1909.

of pericemental trouble. Diagnosis was made of a pulp either in the last stages of degeneration or faulty pulp canal work. The diagnosis was made sure on the supposition that the wisest are the least certain, fools have no doubts. But the following condition was what was found: On removing filling, pulp canal in distal root was filled one-half with gutta percha, pulp in remaining part of canal alive. Pulp in the buccal side of mesial root alive entire length, canal in mesial side of lingual root not findable. Floor of pulp chamber filled with a large pulp nodule that told the story of cocain pressure anesthesia and prolonged doses of arsenic that had failed to anesthize or devitalize the pulp, and the tooth was probably filled with the thought that if this pulp would not succumb to the means employed for its destruction, it ought to live forever, if left alone. This operator needed to be reminded that in the conservative treatment of the pulp, whether it be capping, amputation or mummification, all authorities agree that the pulp must be completely devitalized when pulp nodules are present.

So it seems that we sometimes forget, and it was thought that we might profitably refresh our memories about degenerative conditions of the vital pulp, and in connection with the treatment to remind you that nervocidin is a valuable adjunct in the management of these troublesome cases. I take it that this drug is not in general use, as a search of four prominent dental journals show but two articles, one appearing in November *Cosmas,* 1901, and the other August *Cosmos,* 1903, both by Theo. Soderberg, Sydney, Australia. The reason may be that the irritating properties of the drug were not sufficiently emphasized, and its use discarded before learning to control this property. Or, more probable, because cocain pressure anesthesia had just been given to the profession and this then new drug did not get the recognition its merits deserved.

The articles mentioned give an exhaustive resumé of the literature and experiments on nervocidin, and any one interested may refer to them for complete information. It will be sufficient for our needs to give only a brief synopsis. In October, 1900, Dr. D. Delma announced the discovery of Nervocidin, an alkaloid from the basugasu, an East India plant. It is a yellowish, hydroscopic powder, very soluble in water, slightly so in ether and alcohol. Slightly acid. It is a powerful irritating local anesthetic, producing complete anesthesia of soft tissues in solutions varying from 1 to 1,000 to 2 per

cent, the effect lasting from forty-eight hours in the weaker solutions to twelve days in the stronger. It is very irritating and when brought in contact with the mucous membrane, produces an intense burning sensation and when the contact is prolonged a superficial excoriation results, which appears to heal spontaneously in two or three days. Sealed in a carious cavity, complete anesthesia occurs to a depth depending on the density of dentin. Applied to a reasonably healthy pulp for from 24 to 48 hours, complete anesthesia results, lasting in one case tested by me, two weeks. The toxicity of this drug was demonstrated on dogs and rabbits, death resulting from respiratory and cardiac paralysis. While this paper does not deal directly with sensitive dentin, I wish to state in this connection that when used for this purpose, care must be exercised, as nervocidin is a mild escharotic and produces anemia of the pulp, and from experience and observations I believe that it should never be employed as an obtundant in deep seated cavities. In superficial ones, especially those sensitive buccal and labial cavities, it is ideal, and it was in attempting to seal in this class of cavities, that, from leakage on the labial and buccal mucous membrane, its escharotic properties were observed.

In the treatment of what might be termed pathologically healthy pulps, cocain pressure anesthesia is considered to be the best method. A review of a score of articles on this subject revealed a great difference of opinion on several important points. A majority of the authors laid great stress on accomplishing the removal of the pulp without hemorrhage, recommending an adrenalin chlorid-cocain solution as the controlling agent. Others used an aqueous solution, encouraging free bleeding. A few (among them Dr. R. Ottolengui) recommended using cocain in a strong antiseptic solution. The largest majority of these writers fill at one sitting and no impaired teeth are recorded except by Dr. Ottolengui. Few seem to consider the secondary hemorrhage of sufficient importance to mention it. Others did not believe that it occurred, and if a clot formed at the apex, nature would take care of it by absorption. The question of secondary hemorrhage is of interest and that it does occur, is owing to the non-muscular coated pulp arteries and non-valvular and open rigid veins, which preclude their ability to mechanically stop a hemorrhage after severance, as is their usual function. And the irritation produced in the apical region after

pulp extirpation, is conductive to a true secondary hemorrhage and the formation of a blood clot either in the pulp canal or in the apical space. If the clot remains sterile it will be absorbed with little or no ill effects. While normal blood is sterile, it is possible for micro-organisms to gain entrance into the circulation in several ways; through the vessel walls, where in an inflamed area, the pressure of the inflammatory exudate is greater than the intravascular pressure; entrance in the bodies of leucocytes that have incorporated them; actual penetration of the vessel walls by the growth of micro-organisms, and entrance via the lymph channels. So it would seem possible to infect this clot through the circulation, but it is more probable that an infection, if it occurs, is from forcing micro-organisms and their products (which are ever present in an inflamed pulp) into the apical region when pressure is applied to inject the pulp or from instrumentation. It is well known that micro-organisms precede the process of caries and pulps covered by hard dentin from ⅛ to ¼ mm. in thickness, were found by Dr. W. D. Miller, August *Cosmo,* 1894, to be infected. Pulps actually exposed or covered by carious dentin contained several forms of micro-organisms, the small cocci and diplococci having penetrated to the apical part of pulp. Their location shows how ineffectual are the attempts at sterilizing the field for operation, by applying—say Phenol for a few minutes to the cavity exposure of the pulp. Dr. Miller says out of seventeen cases of inflamed pulps examined, he found in four only cocci, in three only bacilli, in five cocci and bacilli, and in five no growth took place. It is especially interesting to note that the same writer states that in "cases where the inflammation of the pulp appears to be only in its beginning, the microscope will often reveal the presence of pus." If, as Dr. Miller found, micro-organisms are constant in inflamed pulps and pus frequently, as revealed by the microscope, even in the beginning of inflammation, it would be the better practice to use cocain in a strong germicidal solution and to drain any secondary hemorrhage into the pulp canal with a dry cotton tent, as recommended by Dr. Ottolengui, rather than to invite a clot to form in the apical region, with its liability to subsequent infection, by stopping the canal at the time of removal of pulp.

In order to ascertain, if possible, how the profession treated the exposed pulps in deciduous teeth, some thirty articles were reviewed.

It was noted that devitalization was resorted to by most writers. Some would use arsenic. Among them Dr. H. H. Burchard, Dr. Clark L. Goddard. Some condemned its use for this purpose. Dr. J. F. F. Flagg, Prof. Garretson, Dr. R. Ottolengui used cocain pressure anesthesia, the same as for adults. One gentleman treated these pulps conservatively, covering them with copper amalgam. Those who used tentative treatment flowed over the exposure different formulae of antiseptic pastes. Dr. C. N. Johnson uses oil of cloves and zinc oxid. Many agents were used to devitalize. Dr. Flagg recommended increasing pressure with cotton pellets saturated with oil of cloves. Dr. Darby uses cantharides in phenol. Dr. Dunbar employes aq. ammonia. Most of the men who resorted to tentative treatment expected further trouble. Those who devitalized with arsenic recognized its danger; other means (a few mentioned above) employed to destroy the pulp were slow and required frequent applications. Dr. Ottolegui expressed complete satisfaction from cocain pressure anesthesia, but most of the others were not so optimistic. The experience of the writer in the conservative treatment of exposed pulps in deciduous molars, is that the pulps usually die when you don't want them to and never die when you do want them to. The tentative treatment has been a failure because of the vascularity of this tissue, inflammations run riot and congestions require too frequent treatments, especially where patients live at a distance and it is not convenient to report for relief. Arsenic has been employed but always with more or less anxiety, although no bad effects were noted. The following method is practically a specific for aching pulps in deciduous molars. The cavity is cleaned and the pulp exposed, if possible, although this is not essential. Owing to the irritating properties of Nervocidin, it is necessary to combine it with an analgesic. Dr. Soderberg recommended cocain, but owing to its transient effect, the application becomes painful. After using several different drugs in combination with Nervocidin, thymol was selected, as possessing not only analgesic but strong antiseptic properties. The application is made in the following way: On a small pledget of moist cotton, take up a quantity of Nervocidin about one-half the size of a pin head, and apply near the exposure, if there is one. Over this flow a thick paste of thymol in chloroform and cover with a disk of blotting paper to fit floor of cavity. The best sealing for this case is a loose pledget of cotton soaked with the despised sandarac varnish

to fill about one-half of the cavity. This is condensed with a wet pledget of cotton. Complete the dressing with a temporary stopping. In making the application of Nervocidin, do not allow it to touch the pliers, as it becomes very sticky when moist. Being very soluble in water, it is difficult to seal, and in deciduous teeth, rather than resort to cement which is hard to remove, and temporary stopping which is difficult to place without pressure, the above dressing will be found to answer; it will not leak, can be applied without pressure, and is readily removable. Allowed to remain from forty-eight to seventy-two hours, the first case is yet to be met with where anesthesia was not complete and the removal of the pulp painless. And it has been observed that this application causes little or no pain, its irritating effects are practically nil in children's teeth. When this application remains in teeth from forty-eight to seventy-two hours, the teeth become sore, but many teeth, both deciduous and permanent, having been examined after these applications and fillings are completed, show no symptoms of tenderness. Several deciduous cases failed to return until two or three weeks after treatment; the pulps in these teeth were dead, having the appearance of arsenical pulps, and in one case an abscess formed. Eugenol had been used with the Nervocidin as the analgesic agent, and as it possesses little or no antiseptic or germicidal power, the necrotic pulp was not rendered sterile.

What is the best substance or material to fill these pulp canals? It would seem that some kind of an insoluble non-irritating antiseptic paste would be the best. And an iodoform paste is recommended in spite of the fact that the writer believes that iodoform is the vilest smelling substance extant, surpassed only by a combination of sensens, onions and whisky. The reason for using it (and we should have a good one to counteract the odor) is that in a pulp canal, this paste would be inert and non-irritating. When the roots are absorbed, the iodoform, coming in contact with living tissue, would be dissolved by the fats and its further decomposition be effected by the tissue juices, oxygen, etc., and would then exert its well known therapeutical effect. This treatment can be applied to any live deciduous pulp, whether aching or not, congested or otherwise, exposed or non-exposed, with a reasonable certainty that the case can be finished at the second sitting.

As mentioned above, in the short digression on cocain pressure anesthesia, this is the surgically correct method for removing

pulps, when applicable. In pulps that may be said to be pathologically diseased or have undergone degenerative changes as a sequence to either disease or senility, this method has been found to be far from universal in its application.

The several classes of cases that are troublesome to the writer will be briefly described. The five classes to be enumerated must be necessarily more or less stereotyped. These cases differ with the several temperaments, physical condition, age of patient, nature of the cause or causes, etc., but it is only possible in a paper to state a simple condition and allow to go unwritten the many complexities that may enter into the case.

Class 1. Cases of congestions of long standing, where the blood vessels may be said to be permanently dilated, and over-filled with blood, as a result of continued irritation and impairment of the vasomotor nerves. In the treatment of such a case after the cavity has been cleaned, pulp exposed and 10 per cent Formalin applied for five or ten minutes, congestion is relieved by puncturing pulp. Resorting to cocain pressure anesthesia at this time results in a copious hemorrhage when pressure is applied and after from three to five minutes of this procedure, results are nil and on removing plug or which pressure was applied, the cavity fills with venous blood. This hemorrhage acts as a barrier and also a carrier of the anesthetic, and its absorption and retention is impossible. Attempts have been made to induce the vessels to contract by hot water injections, raising the temperature to the thermol point of tolerance, but the effect failed in most cases. Sedative treatment may be resorted to, but many cases seemed not improved after several treatments. If arsenic is resorted to, its action is uncertain, delayed and often painful. What should be accomplished is the burning out of the coronal portion of the pulp, as the tissue in the roots is usually nearer normal. In these cases Nervocidin is especially indicated, as it produces anemia of the pulp. Apply in quantity the size of a pin-head to the exposure, cover with the thymol paste and blotting paper disk and flow over application thin cement, completing dressing with temporary stopping, (this manner of making applications need not be described again, as all are similar); allowed to remain forty-eight hours, in the largest majority of cases the pulp can be painlessly removed. In all cases, with very few exceptions, the coronal portion of the pulp can be extirpated, and either cocain pressure anesthesia, (the Nervocidin does not inter-

fere with this procedure) or arsenic may be resorted to with immediate results.

Class 2. A deep seated cavity, usually with an exposure of the pulp cavity showing evidence of arrested caries. Symptoms not painful, attacks of more or less continued uneasiness, extending over a long period. Pulp responds faintly to all tests. In opening or enlarging the exposure, pulp is found much receded. Puncture fails to induce any hemorrhage or very slight, but pain more or less severe is experienced from contact of probe. This case is a sequence of Class 1, the pulp having undergone sclerotic degeneration from long continued irritation. This condition has been described by Black, Arkovy, Weal, Hopewell-Smith, Rothmann and others, and the histology explains why prolonged treatment is the rule. The following description is from Burchard's Pathology, "Instead of the usual distribution of myxomatous tissue, bands and bundles of fibrous tissue appear. The pulp appears shrunken and stiff, blood vessels are contracted and the nerve fibres have undergone partial or complete atrophy." It will readily be seen that with the blood vessels and nerves in this condition, cocain pressure anesthesia is usually ineffective, and the absorption of arsenic difficult. Both cocain and arsenic depend on the blood vessels for their action, and in this degenerative condition, these vessels are practically without function. The treatment of this class, together with Class 4, have been most unsatisfactory in the sense that many treatments and sittings were necessary to effect devitalization. In a number of cases of this kind treated (and remember that men practicing in the rural districts see a great many because a large per cent of country patients do not apply for treatment until they get one foot in the grave) after applying 20 per cent Formalin, (this strength is used because these cases are infected for years and are not very sensitive) for from five to ten minutes cocain pressure anesthesia failed as a rule; the exceptions being where some courageous patient would stand for the pain. The best results were obtained by applying Nervocidin and, under the partial anesthesia, obtaining a large surface for absorption. Then combining Nervocidin and arsenic equal parts, after repeated treatments, these cases will finally succumb. I must confess that these cases and Class 4, to be described, have given me more trouble than from any other cause and a free discussion on Class 2 is invited.

Class 3. Small pulp nodules, the difficulty of locating and

recognizing this condition is familiar to all and only its clinical aspect will be treated, except to state that unlike Classes 1 and 2 where the pulps were more or less passive (although in Class 1 cases have been met where excruciating pain was experienced, subsiding upon hemorrhage relieving the congestion), but in this class the pulp is distressingly active. The following case is typical and all have encountered it. A tooth the seat of intractable pain, usually reflex, excruciatingly sensitive, cavity not of sufficient depth to account for the intensity of the disturbance, is given the usual sedative treatment without results. An attempt is made to either excavate or drill into this cavity and it just happens that this patient does not possess all the cardinal virtues that would tend to make this subject a block of wood for the dentist to chop on, and you don't drill. An attempt may be made to obtund the sensitive dentin, but it usually aggravates the condition. Arsenic is applied and Dante's Inferno is re-enacted. Pulp stones have been suspected, the diagnosis is now pretty certain. It might be well at this time to inform the patient that you are not a specialist in painless treatment of this kind and recommend him to your worst enemy. It is generally the rule for more or less pain to persist during treatment and the tooth to remain sensitive for some time after filling. Seal Nervocidin for twenty-four hours, with the comforting assurance that the tooth will be painful for several hours. Give the patient several dental plasters to apply on the gum, these will give him something to do, and occupy his mind to some extent. At the end of this time you can usually expose the pulp, unless the dentin be very hard and the distance to the pulp great. If you get an exposure try cocain pressure anesthesia. If this fails re-apply Nervocidin for forty-eight hours and this second application is, as a rule, not painful. At the expiration of this time many pulps have been removed, but if the pulp is not sufficiently anesthetised to permit removal, apply Nervocidin and arsenic equal parts, as in Class 2. The chief claim for Nervocidin in these cases is that the painful symptoms are generally under control after the first twenty-four hours, and while this drug is a powerful local anesthetic, a great many of these pulps cannot be sufficiently anesthetised to permit of a humane removal, but large exposures may be made and the intractable ones readily succumb to Nervocidin and arsenic. And it might be mentioned that in many idiosyncrasies of seemingly normal pulps to

cocain, the cause is minute pulp nodules, revealed only by the microscope.

Class 4. Large pulp nodules which fill the pulp chamber present mechanical as well as medicinal difficulties. Faint responses to thermol tests and insensitive dentin point to a low state of vitality and degenerative changes as in Class 2. This large nodule may either be free or adhering to some part of the pulp chamber, usually the floor. The effects of Nervocidin and arsenic in this condition have been practically nil. After application, attempts have been made to drill in the direction of the pulp canal openings and the amount of work accomplished was dependent upon the fortitude of the patient. When it was possible to gain entrance to the pulp canal openings, and these are generally found diminished in size from the formation of secondary dentin, the best results were attained by resorting to Callahan's sulphuric acid method with more or less pain attending the operation. As in Class 2, you are again invited to tell us how you handle these cases.

Class 5. Teeth in which secondary dentin has formed may present several clinical aspects. The case may be one where the formation has lessened or diminished the pulp chamber and canals as the result of age. This represents the sum total of the physiological activity of the pulp and has no therapeutical indications. This condition is encountered in pulp canal treatment in pyorrhea teeth. This secondary formation may be induced by localized irritation, as from abrasions, erosions, slow advancing caries and thermol shock from metallic fillings. These growths are more regular from abrasions, as the irritation is more uniform. As a rule they do not extend far into the pulp canals and in the treatment of pulps in these cases, trouble is often experienced in drilling, through the secondary deposits frequently being very sensitive. Nervocidin is of little value as an obtundent, as it does not seem to be absorbed to any considerable depth. Arsenic is indicated and when the pulp is reached, its response to treatment will depend on the length of time it has been irritated, and degenerative changes induced. If the circulation is unimpaired, cocain pressure anesthesia is indicated, but if a condition similar to Class 2 is encountered, Nervocidin and arsenic should be resorted to. Secondary deposits, caused from slow advancing caries or thermol shock through metallic fillings, are more or less irregular in form and may extend into the pulp canals. In the case of an upper

second molar that had been the seat of slow advancing caries, two perfect pulp canal fillings composed of secondary dentin were removed intact from the canals. The treatment in these cases is similar to Class 4. The difficulties are both mechanical and medicinal. The canals are often completely or partially occluded and the absorbent powers of the degenerative pulp tissue is but meager. Main reliance is placed in Nervocidin and arsenic in combination and sulphuric acid as an adjunct. Calcic degeneration of the pulp is mentioned as of histological interest, it being a second degeneration in an already anatomically degenerated tissue and is an indication of near death of the pulp.

Arsenic has been employed in the treatment of many of these conditions, although its use is severely condemned by many of the profession. Its way or mode of action is unknown and how it produces its degenerative effect on the tissues is a mystery. In the experiments of Dr. W. D. Miller (September *Dental Cosmos,* 1894) on mice, enclosing the tails in either plaster of Paris or applying glass rings to the tail close to the body to simulate the root canal and apical foramen, demonstrative that in no instance did the action of arsenic extend beyond the tail. Arkovy says that "arsenic is taken up in the blood vessels in the form of molecules," but it certainly is not carried by the blood. In the above experiments, the blood was circulating through these mice tails, but only necrosis of the tails occurred. The theory that the intense hyperemia of the pulp vessels produced by arsenic, mechanically occludes the blood vessels, preventing absorption of the drug, owing to their inability to expand, does not explain why in vessels free to expand, absorption does not take. It is well known that so-called cancer pastes contain a high percentage of arsenic, and this large amount is employed to prevent absorption. It is most remarkable that the destructive effect of arsenic takes place in normal looking tissue—probably combining with the haemoglobin of the blood to form arsen-haemoglobin, producing granular detritus of the myelin and causes the axis-cylinder here and there to disappear. It has no effect whatever on the connective tissue fibres or odontoblasts, but causes the connective tissue cells to enlarge three or four times their normal size. In some of the pulp conditions mentioned as being sclerotic, where the bulk of the pulp tissue had undergone fibroid degeneration, the vessels contracted and nerves atrophied, it can readily be seen, that, owing to the selective action

of arsenic, in these pulp conditions its effects are not constant because the tissue is unsuited.

The impaired teeth credited to the destructive effect of arsenic may be in many cases from faulty cleansing, medicating and filling pulp canals. It is an open question whether the destruction of the pulp of a tooth (except for trophic reasons) does not render such a tooth less stable in the alveoli, more susceptible to caries and loss of inherent strength. And it is not certain that this impairment of the dentin is not transmitted to the peridental membrane, and it suffers degenerative changes through association. But as it has been impossible to clinically prove that arsenic causes these "crippled" teeth, it will be given the benefit of the doubt and employed when cocain pressure anesthesia fails, rather than resort to general anesthesia as a preference.

That a trivial or minor operation such as pulp removal calls for a general anesthetic, is open to question. That men should recommend ether or chloroform for such a purpose is beyond understanding. The employment of nitrous-oxid is without objection, it is safe and its contra-indications are very few. But in these days of personal liberty sentiment among men, nervous women, neurotics and narcotic addicted people, a quiet, tranquil anesthesia such as would be required for pulp removal is not always attainable, and recourse to ether or chloroform may be necessary. In Lyman's collection of 393 deaths from chloroform, thirty occurred in the dental chair. Conditions are not found in the average dental office suitable for ether or chloroform anesthesia; neither is the average dentist qualified to administer them. He cannot make an intelligent selection of the proper anesthetic to use, because he is unqualified to make a physical diagnosis. If the patient is able to climb the office stairs or ride up in the elevator, it is taken as an indication that they are fit subjects for anesthesia. The dentist has a legal right to administer an anesthetic and the law requires of him only average skill, the same as for the medical man. Should an accident occur, however, he has little to fear from a coroner's inquest. A fatality from chloroform administered by a medical practitioner occurred in an acquaintance's office a few years ago. A large quantity of the anesthetic was used and when surgical narcosis was attained, the patient was raised to a semi-recumbent posture and she died. No blame was attached to the operators. But what happened to the patient? When they raised her, in the

weakened condition of the heart, the paralysis of the splanchnic vasomotor mechanism which control the abdominal vascular area, together with the force of gravity, drained the blood into the abdominal veins, and the right heart was emptied, and the cerebral circulation failed. It is believed that if nitrous oxid will not produce a satisfactory anesthesia that the dentist had better resort to arsenic to devitalize the difficult pulp cases, rather than risk his patient in this trivial operation, being one of the quota that go to make the chloroform mortality one in 3,082 from Gurtl of Berlin, and ether one in 14,828 from Juillard of Geneva.

In closing I will say that these degenerative conditions are difficult to overcome and the action of drugs many times limited. Nervocidin, as employed in these cases, is not a cure-all and its effect, like other medicinal agents, although a strong local anesthetic, is not always powerful enough to effect the desired result; its irritating properties should always be borne in mind and antagonized. But it will be found to be a valuable adjunct in treatments requiring a powerful local anesthetic, either as a preliminary to further medication, or used alone, and many perplexing problems will be solved by its intelligent use.

PRESIDENT'S ADDRESS.*

BY DR. W. H. MUELLER, MADISON, WIS.

Members of the Wisconsin State Dental Society, Ladies and Gentlemen: Thirty-nine years ago the Wisconsin State Dental Society was organized in this city with thirteen charter members. The greater number of these have since passed away and only one is still a member, the others of the few still living have either left the state, or severed their connection with the society. The one remaining member of the old guard is our honored member, Dr. Arthur Holbrook of Milwaukee, at present Chairman of the Committee on Science and Literature. The career of the society for all these years has been an honorable one, and it has at all times been an honor to any man to have been enrolled on its membership list.

The question of how to increase the membership of the society was one of the important topics discussed at nearly every meeting

*Read before the Wisconsin State Dental Society, Milwaukee, July, 1909.

for a number of years, but very little could be accomplished and the growth was slow. It remained for the Illinois State Dental Society to set the example and for this society to follow. At the meeting of this society, held at Madison in 1906, Dr. A. D. Black of Chicago, then secretary of the Illinois society, read a paper on the re-organization of the state society in accordance with the Illinois plan. A committee on re-organization consisting of five members was appointed. This committee worked faithfully and its report, with a few minor changes, was unanimously adopted at La Crosse last year, and the present re-organized Wisconsin State Dental Society is the result. In 1903-4 the Illinois and Wisconsin societies were about equal as regards percentage of dentists belonging to the state societies in these two states, Wisconsin having a little the better of it. After its re-organization the growth of the Illinois society was phenomenal. We figured that if we, in Wisconsin, could accomplish only a part of what the Illinois society had done, we should be satisfied. Since our last meeting the following district and county societies have been organized: Milwaukee County, 115 members; Dane County, 23 members; Columbia County, 13 members; Manitowoc County, 14 members; Sauk County, 9 members; La Crosse District, including the counties of La Crosse, Vernon, Jackson and Trempeleau, 26 members; Eau Claire, Chippewa and Dunn counties, 24 members; Walworth County (about), 10 members; total, 234 members.

We consider this a very good showing for the first year, when it is considered that the Executive Council had to start the re-organization without sufficient funds to carry it on actively. One of the important things which should be carefully considered in the future is the proper geographical representation on the Executive Council, in order to enlist the lively interest of all sections in the work of organizing county and district societies. All general sections, at least, should be represented and share in the constructional work which is being done. If we had had a northern member in the Council, we would now without doubt have had one or two more component societies.

From the date of its organization to the present time, the young men of the profession have been counted among the staunchest defenders of the Wisconsin State Dental Society. Many of the once young have grown old in the service, and some have gone to their last reward. Their work was a noble work and the results are in evidence. Time

has brought many changes and before many years have elapsed will bring many more. In the gradual evolvement of a better and more useful standard of efficiency, one suited to our present needs, we shall be obliged to look to our young men, those who are now with us as well as those to come. With this thought in mind, I wish to emphasize the importance of providing activities for them in society work. Young men should be encouraged in every way possible to begin their work at home as members of component societies. Just as soon as they have proven their worth, a broader field of endeavor will be found for them in the parent society.

For reasons already stated, it is evident that it is high time that we do some thinking on what the future position of the Wisconsin State Dental Society shall be. It is your Society and you will, therefore, be expected to provide for its future development. We have made only a beginning and the new plan under which we are working does not provide for any let-up anywhere along the line, at any time, present or future. There is a sense of individual responsibility for the general good which each member should not hesitate to assume, irrespective of his place of residence, age or experience in society work. By working together and in harmony a great deal can be accomplished.

As your President, I wish to congratulate this Society on the spirit of friendship and cordiality which is so evident among dentists throughout the State at the present time. This is as it should be. All things can be accomplished when men agree to push on the same wheel and in the same direction.

Good work has been done during the year in many directions. The Committee on Legislation appointed from members of the Executive Council, consisting of Doctors Marlow, Gatterdam and Gamble acting for this Society, introduced an amendment to the Act of 1903, known as Bill No. 544A. Doubtless most of you know that this bill is now a law. It is without question one of the best laws that has ever been placed upon the statute books. The principal benefits conferred by the law are:

A clear definition of the duties and powers of the State Board of Dental Examiners. Higher preliminary requirements. Reciprocity. Improving the finances of the Board, etc. As a full report will be made by the Committee on Dental Legislation later, I shall not go into detail regarding the new law.

DENTAL RESEARCH WORK.

Societies all over the country are concentrating their efforts on some special work. Research work on an extensive scale requires the expenditure of funds; therefore, for the present, our efforts must be directed along conservative lines. This calls to mind the condition of our finances. This problem must be solved by the Executive Council, and every effort that tends in this direction should meet with ready and cheerful co-operation by the members of component societies. Another problem which will confront this Society in the near future is the question of the Society publishing its own contributions to the literature of dentistry. A dental journal, a bulletin published and controlled by this Society, would be of inestimable value to its members. It would in a way add to our prestige from the start, and if properly conducted would become a powerful factor in the development of the men who constitute our profession in Wisconsin.

This year's bulletin did a great deal of good and it would seem as if a plan might be devised whereby at least three or four issues of a similar bulletin might be published during the year. I submit this to you for your thoughtful consideration.

The various committees have worked hard to make this meeting a grand success, as the very excellent program shows, and I hope all will have a profitable and enjoyable time.

We have lost by death two of our oldest members and former presidents of this Society—Dr. W. H. Chilson and Dr. F. B. Fletcher. On account of their long and untiring work in the interest of this Society, I suggest that a committee be appointed to present the matter in proper form.

For the honor you conferred upon me in naming me as the first President of the reorganized Wisconsin State Dental Society, I wish to at this time thank you one and all.

REPORT ON DENTAL SCIENCE AND LITERATURE.*

BY DR. HAROLD E. HOLBROOK, MILWAUKEE.

A complete review of the literature of a year relating to dentistry, or of interest to this profession, would be an enormous task,

*Read before the Wisconsin State Dental Society, July, 1909.

highly profitable for each and every one of us, but necessarily too tedious as a committee report at an annual meeting of this Society.

The past year has been an exceptional one for the dental profession from a literary standpoint, there being a number of new and valuable text-books offered by men prominent as teachers, new editions of works by noted authors, and the character, quality and high standard of society papers, discussions and original contributions is remarkable in whatever journal we may chance to read.

This report is founded on material appearing—The *Dental Cosmos,* THE DENTAL REVIEW, *Items of Interest, The Dental Digest* and the *Dental Summary.*

BOOKS.

Of the new books probably the most valuable to us as general practitioners is, "A Text-book of Operative Dentistry, by various authors—edited by Dr. C. N. Johnson and published by P. Blakiston's Son & Co., Philadelphia. There are 755 pages, with 618 illustrations, offered in three different bindings. In a review of this book in one of the journals, the writer says: "Notwithstanding the fact that a number of text-books on the subject of operative dentistry have appeared in recent years, this splendid work of Dr. Johnson is destined to occupy a distinctive place in our literature. Such a work can result only from a lifelong study of this subject, and the author here presents to us the results of his long experience and his many years of the closest study and investigation of every phase of operative dentistry." In compiling this work Dr. Johnson has had the co-operation of those whom we have learned to recognize as the most able teachers in their respective subjects.

Dr. G. V. Black has given us a new work on "Operative Dentistry," published by the Medico-Dental Publishing Company, Chicago. It is an immense, comprehensive digest, in two volumes, of the author's views and methods, some of which are described briefly and others in detail. The prominence of Dr. Black as an investigator and teacher gives the work a place in the front rank of our literature.

We welcome the advent of a text-book written by Dr. Calvin S. Case, Chicago, entitled, "Dental Orthopedia," including drawings and working details of appliances and apparatus for all forms of irregularities of the teeth. Published by C. S. Case Company, Chicago.

Dr. Case is probably the most original of the present day ortho-

dontists and this led to a rather severe criticism of his publication in the February *Items of Interest,* in which lengthy editorial even the title of the book was attacked. A more just review appeared in the *Dental Cosmos* for November.

Dr. I. Norman Broomell has compiled and edited a new book entitled "Practical Dentistry by Practical Dentists." It is a volume of 496 pages, published by the L. S. Caulk Company, Philadelphia.

Under the two subjects, "Operative" and "Prosthetic Dentistry," the reading matter is given in short paragraphs selected from articles contributed to the literature of the past ten years, and grouped under general headings. The editor of THE DENTAL REVIEW says: "Dr. Broomell has evidently given to this work much study, and the result is a volume which will prove of great benefit to those who are seeking for the greatest possible practical information in the smallest space. The book is useful alike to the student and the practitioner and we cordially recommend it."

Other books which have been published are:

An "Atlas and Text-Book of Dentistry," including Diseases of the Mouth, by Gustav Prieswerk of the University of Basil, Switzerland; edited by George W. Warren, A. M., D. D. S.; published by W. B. Saunders Company.

"Principles and Practice of Filling Teeth with Porcelain," by John Q. Bryam, D. D. S.; published by Consolidated Dental Manufacturing Company.

"Human Pearls," by Francis Eaton Burnett, D. D. S., Chicago.

"A Text-Book of General Bacteriology," by Edwin O. Jordan, Ph. D.; published by W. B. Saunders Company.

"Lectures on General Anesthetics in Dentistry," by Wm. H. De Ford, D. D. S., M. D.; published by John T. Noble Manufacturing Company, St. Louis, Mo.

"A Manual of Conversation for the Dental Profession," by Paul de Terra, Surgeon-Dentist, Zurich-Stuttgart, which comprises a collection of professional terms and phrases in German, English, French and Italian; published by Ferdinand Enke.

"Essentials of Bacteriology," by M. V. Ball, M. D.; published by W. B. Saunders Company.

"A Manual of Theory and Practice"; in the French, "Des Dento a Privoto," by Victor Dubois; published in Paris.

"Gray's Anatomy," the seventeenth revised edition, 1,625 pages,

1,149 engravings; published by Lea & Febriger, Philadelphia and New York.

"A Text-Book of Dental Pathology and Therapeutics," by the late Henry H. Burchard, M. D., D. D. S., third edition, revised; published by Lea & Febriger, Philadelphia and New York.

"State Board Questions and Answers," by R. Max Goepp, M. D.; published by W. B. Saunders Company.

"An Atlas of Diagrams Illustrating the Development of the Teeth," by Johnson Lymington, M. D., F. R. S., and J. C. Rankin, M. D., Belfast; published by Longmans, Green & Co., London.

"Compendium and Atlas of Dentistry, Including the Oral Diseases," by Gustav Preiswerk, Ph. D., M. D., University of Basil, Switzerland; published by J. F. Lehmann, Munich.

"Anomalies of Dental Occlusion, as It Relates to Orthodontia," by Dr. Louis Subirana, Madrid, Spain.

Dr. Burton Lee Thorpe, M. D., D. D. S., has published a volume of about 150 pages giving biographies of men who have been prominent in the Missouri State Dental Association.

A volume of 184 pages giving the "Transactions of the First Australian Dental Congress," held in Sydney, in 1907, is notable for the fact that the Australian government assumed the expense of issuing the publication.

The National Dental Association has arranged with Lea & Febriger of Philadelphia to publish "Guerimi's History of Dentistry," the appearance of which has been delayed so many months. The fact that the National Association has assumed the expense of the publication is a guarantee for the book as a valuable addition to our dental literature.

At the last meeting of the National Institute of Dental Pedagogics, held in St. Louis last December, a plan was submitted and adopted to establish a "Dental Index Bureau," under the auspices of that Society, the purpose being to classify and index current dental literature for subscribers.

The plan is as follows:

1. That the subscribers to this plan organize themselves into an association to be known as The Dental Index Bureau.

2. That the Committee appointed by the Institute will devise ways and means for carrying out the work of this Bureau during the coming year, and will call a meeting at the time and place of

the next meeting of the Institute, for the perfection of a permanent organization.

3. That this Committee will employ a competent person to classify as much of the current dental literature as possible, beginning with January, 1909, journals, and will furnish subscribers at frequent intervals, with author and subject cards of all articles classified.

4. That this Committee will be guided by a vote of the subscribers in the selection of the literature to be classified.

5. If the funds subscribed will permit, as much as possible of the literature of previous years will be similarly classified and indexed.

The subscription is $25.00, and ought to interest every dentist, and especially every component society. Dr. W. L. Fickes, 6200 Penn avenue, Pittsburgh, Pa., is chairman of that committee.

The proceedings of the last meeting of this Society, held in La Crosse in July, 1908, are recorded in the November, December and January numbers of THE DENTAL REVIEW.

Several valuable series of contributions have appeared in our journals during the year, most notable of which is that of Dr. Joseph Cavallara of Florence, Italy, entitled, "Syphilis in Its Relation to Dentistry," published by the *Dental Cosmos*. This is the most scientific treatise of original research which has been given us in the past year. Syphilitic dentition is described from the dental lesions in the foetus to the pathological conditions found with the fully developed teeth of the permanent dentition. The entire treatise is beautifully supplemented and illustrated with cuts and photographs.

Another instructive series of articles in the *Cosmos* is entitled "Pitfalls in Daily Dental Practice," by Dr. F. W. Sage, Cincinnati. The author has enumerated the many little ways in which the dentist may "dislocate a leg" or "break his neck," as he writes in metaphor, and offers suggestions by which the practitioner may protect himself against the wiles of those he has aided.

Under the title, "How to Make Gold Fillings," Dr. J. V. Conzett, Dubuque, Iowa, has written a series of articles which has appeared in the *Digest*. His methods of preparing and filling with gold, cavities in the several surfaces of the different teeth, is well described and illustrated with splendid photographs.

Beginning in the September *Items* is a series of papers by John Bethune Stein, M. D., of New York University. "A Study of the Maxillae with Regard to Their Blood and Lymph Supply." This

is a valuable contribution to our literature, illustrated with remarkably fine photographs. The serial affords a good text on the histology of the maxillary bones.

Dr. G. W. Clapp, editor of the *Digest,* published in the January *Digest* the first of a number of articles on the procedure relative to making "Artificial Dentures"; the different steps are explained in detail, aided by good illustrations, making it an instructive serial by one well versed on the subject.

CAST GOLD INLAYS.

A new departure, or the discovery of a new and valuable process will always attract the greatest interest and attention. So it has been with the casting of metals in dental practice. Although more papers have been read and more articles have appeared in our journals on the "Cast Gold Inlay," the procedure incident to casting and the several methods of casting them, than on any other subject, there have been practically no new ideas given. It has awakened the entire profession, not alone in this country, the birthplace of the process, but in many foreign countries. The July number of the *Dental Summary* was devoted entirely to articles on casting. In this number is a reprint of a paper read by Dr. Albert L. Le Gro of Detroit. It is a thoroughly practical exposition and a strong reminder of the possibilities of casting in operative and prosthetic dentistry. From the standpoint of technique, two valuable papers have been published and ought to be studied by every inlay worker; that by Dr. John Steele recorded in the August *Items* and the "Cast Gold Inlay," August DENTAL REVIEW, by Dr. G. W. Dittmar.

PORCELAIN.

In contrast to the abundance of literature pertaining to the gold inlay is the apparent lack of enthusiasm for the porcelain inlay. In the March REVIEW, W. T. Reeves is quoted, "What About Porcelain." It is a strong plea for the porcelain inlay, and Dr. Reeves' paper is quite as convincing as his actual work in practice. He is given strong support in his claims for porcelain by W. A. Capon, D. D. S., in a communication in the September *Cosmos.* Dr. Capon cites cases of eighteen years' service, declaring porcelain to be a Godsend in proper hands and in the right place.

The comparatively new subject of silicate cements seems to have supplanted the once popular porcelain. Those who use this material claim for it a permanent usefulness in dentistry. All advo-

cates admit it is still to be perfected, but herald it in its present state as the equal of porcelain in preserving tooth structure and for cosmetic effect approaching more nearly the ideal. Two splendid papers on this subject are recommended by this Committee: "Silicate Cements and Their Uses," by H. H. Johnson, Macon, Ga., recorded in the August *Cosmos,* and a contribution by W. V. B. Ames, Chicago, "Silicious Cements," in which Dr. Ames enumerated the several different preparations on the market and their working qualities, and offers suggestions in technique.

ORTHODONTIA.

Many able and valuable communications have been published under the heading "Orthodontia." It has been a remarkable year for this branch of dentistry and we believe from the progress made that orthodontia should be a distinct specialty.

We recommend for careful study "A Contribution to the Knowledge of Etiology and Treatment of Cases in Class II," in the July *Items,* 1908, by Dr. Ottolengui. The writer, after quoting the familiar statement that "Adenoids cause malocclusion," and that "Adenoids compel mouth breathing and mouth breathing produces irregularity," offers the following proposition: "Malnutrition causes malocclusion." Malnutrition is a special cause of malocclusions of Classes II and III. He says, "The permanent teeth erupt into a larger and different arch than the temporary teeth occupy, and if there is an interference with normal bone building functions, the teeth will erupt into an insufficiently large arch." The article is too long to review completely, and we suggest a thorough reading by those interested in this important specialty.

In the February *Cosmos,* Dr. Frank L. Phillips, New York, under "Orthodontia and Facial Orthopedia," attacks the same problem, showing the effects of mouth breathing with its ill effects on the system, its remedies, and results obtained.

Dr. R. H. W. Strong's article in the August *Cosmos* is prefixed by a number of valuable hints on "the education of the dentist" and of the parents of the patient. This is a splendid exposition and well written.

This subject cannot be closed without some mention of the treatise by Dr. H. A. Pullen, in the December *Cosmos,* "The Import of Certain Etiological Factors in Treatment in Orthodontia,"

and Dr. Alfred Rogers' paper in the April *Digest,* "Infra Occlusion." Both of these are valuable contributions.

"Prosthetic Dentistry" is probably the nearest contender for first honors in the number of articles contributed. Although very little that is new has appeared during the year, the literature shows a decided advancement in this art. The value of Dr. Clapp's series of articles in "Artificial Dentures" in the *Digest* must again be emphasized here. "Higher Ideals" has demanded attention and we recommend the following articles:

"Factors Affecting the Appearance of the Anterior Teeth on Artificial Dentures," by Charles R. Turner, D. D. S., M. D., in the August *Cosmos.*

"A Plea for Higher Ideals in Prosthetic Dentistry," by Dr. S. C. G. Watkins, in the August *Items.*

Several papers have been published on "Needed Changes in the Make of Teeth." In the February *Digest,* Dr. L. P. Haskell describes specific changes in manufactured teeth which would greatly improve the appearance and efficiency of artificial dentures.

A new and original idea in the construction of a lower extension bridge is given in the February *Items.*

"The Problem of the Lower Extension Bridge and Its Rational Solution," by Dr. Herman E. Chayes. The paper describes a rather ingenious method of restoring lower molars and bicuspids where a fixed bridge cannot be used. The article is interesting and clearly illustrated. The attachment used differs in many respects from those ordinarily used for removable bridge work and seems to have several advantages.

In the June *Items,* Dr. L. M. Waugh gives "A Study of the Articulation of the Human Teeth from a Practical Standpoint." The article reviews the work of Bonwell, Hayes, Snow, Prothero and Walker, and illustrates the different articulators and apparatus for taking the bite and gives many practical suggestions for securing correct occlusion in plate work, crown and bridge work, Orthodontia and Operative Dentistry.

In the same number, Dr. P. M. McCullough describes his method of making a lower denture which he terms "The Vestibule Bow Lower Denture," being a method for restoring lower molars of one or both sides without means for anchorage Distal of the space.

One of the most interesting papers for the year is that by Harris

Peyton Mosher, M. D., in the July *Items of Interest.* The subject is, "The Influence of the Premaxillae upon the Form of the Hard Palate and upon the Septum." This is of special interest to Orthodontists, but cannot fail to be of interest to general practitioners. The paper is well illustrated and is worthy of a careful reading.

X-RAYS.

We have heard much of the therapeutic value of the X-rays and we are beginning to appreciate its uses in dentistry. Instructive articles which have appeared on this subject are:

"X-Rays and Their Application to Dentistry," in the October *Items,* by Dr. Sidney Lange, Radiographer to the Cincinnati Hospital. The writer describes the technique of holding the film in place and taking the radiograph. He also suggests the various uses of the X-ray in dentistry such as locating unerupted or impacted teeth, examination of tooth roots and root fillings, locating pulp stone and the X-ray as a therapeutic agent.

A lecture by Dr. M. L. Rhein on Root Radiography in the *Items* for November shows the value of the X-ray in diagnosing pathologic conditions around the roots of the teeth. His lecture is illustrated with several photographs showing the effects of careless root filling and the destruction of alveolar tissue by abscess. He recommends the use of the X-ray in diagnosing any obscure lesion where pathologic disturbances are present.

"The Use of the Roentgen Rays in Dentistry," by Dr. C. E. Phaler, M. D., Philadelphia. In the September *Cosmos,* Dr. Phaler describes the uses and dangers of the Roentgen Rays and illustrates with diagrams their use in diagnosis. He terms it a painless, aseptic and accurate means of diagnosis.

"Pyorrhea and Oral Hygiene" have attracted the usual amount of interest with practically nothing new except the Tartar Solvent discovered by Dr. Joseph Head and described in the January *Cosmos.* This new remedy is to be described at this meeting, so we will not go into detail.

ANESTHETICS.

Under this subject we refer to the March REVIEW, in which was published a paper read before the American Dental Society of Europe, by Dr. Florestan Aguilar of Madrid, Spain.

"Dental Anesthesia by Intraginival Injections." The writer describes his method of injecting a combination of adrenalin chlorid

with benesol. The formula contains cocain which in each dose is found to be less than one-half centigram. Quoting from the paper, "During the period of anesthesia, all kinds of operations can be performed on the tooth without discomfort to the patient, and after a time, that varies from fifteen minutes to one hour or more, sensibility commences to reappear without any other symptoms, local or general, disagreeable to the patient."

We recommend for reading an article in the August *Cosmos* by Richard H. Riethmueller, entitled "Recent Studies on Novocain." Although this is not a new preparation, new formulae are given and the results recorded by those who have used it indicate that Novocain approaches the ideal local anesthetic.

EDUCATION.

There has been much written on the education of the dentist and the public. Suggestions have been offered for a revised curriculum in our dental school courses and for a change in preliminary requirements, but little has been accomplished as yet. We have been warned of the ethical relations that should exist between ourselves and colleagues and the profession and we have been instructed in the treatment of our patronage. Every dentist should become familiar with the new Code of Ethics as adopted by the Illinois State Dental Society and which appeared in an editorial in THE DENTAL REVIEW last month.

And the public is being informed of the necessity of caring for the teeth of children. We follow Germany in this respect, for there a system has been inaugurated whereby the teeth of school children are examined and cared for. The most complete, systematic and interesting report of research in this field is recorded in the March *Cosmos,* by Dr. Russel W. Bunting, Ann Arbor, Mich. "Report of the Examination of the Mouths of 1,500 School Children in the Public Schools of Ann Arbor, Michigan."

Two kinds of records were taken, a dental chart and an anthropological chart, to endeavor to ascertain whether or not there were any correlations between the child's physical or mental development and the time of eruption of the teeth or the amount of dental caries present; also whether the caries and eruption of the teeth are influenced by the type of the individual. The data obtained in these examinations are startling and ought to carry great weight in an attempt to procure systematic care for the teeth of children.

A well-written and instructive paper by Dr. Frederick B. Noyes in the July *Items* entitled, "The Structure of Enamel as Related to Cavity Walls" shows the necessity for an intelligent understanding of the structure of enamel and the proper preparation of the enamel margins of cavities. He says, "No one has a greater need to develop his constructive imagination than the dentist, for in proportion as his mental images of the minute structures of the tissues and the steps of procedure are clear, positive and brilliant, his execution will be rapid and successful.

CONCLUSION.

As the literature, new methods and processes, mechanical appliances and patents are reviewed the impression is "a rapid advancement in the science of dentistry." This Committee is pleased to congratulate the entire profession upon having obtained the prominence it now enjoys. This advancement is recognized throughout the world. It has been the means of educating the general public in the importance of oral hygiene and an efficient denture; it has led to the establishment of a commissioned dental corps in our army and navy; to the care of the mouths of school children, first in Europe and now in this country, and has made possible a closer relation between the allied professions, medical and dental, strengthened by the interchange of society papers.

The use of photographs for illustrating is a noticeable improvement over the crude sketches of former years and the reorganization of societies shows a marked universal activity.

A REMOVABLE RETAINER.*

BY ROBERT D. M'BRIDE, D. D. S., DRESDEN, GERMANY.

The experienced orthodontist invariably encounters no special difficulty in placing the teeth in their normal positions, but the subject of retention not infrequently taxes the skill and patience of the most proficient in this branch of dental science. I appreciate that a removable form of retention does not meet with the universal approval in the opinion and practice of orthodontists of today. The inclination of men of indisputable ability is towards a stationary form of reten-

*Read before the American Dental Society of Europe at Wiesbaden, April, 1909.

tion, and while I acknowledge that this principle of retention has its advantages, it cannot be disputed that it has not its disadvantages. However, in this short paper, it is not my intention to enter into a discussion as to the merits or demerits of the principles involved in stationary retention, but rather to submit for your consideration the description of a removable form of retention which in my experience has proven most practicable and proficient.

I do not claim that the principles involved in this removable retainer are new or original. They are simply a combination of principles, with which all orthodontists are perfectly familiar, so combined as to meet the adequate requirements of retaining the teeth in their normal relations. It is the outgrowth of many years' experience and its merits have been thoroughly and practically tested. While its construction is simple, there are a few details which must be carefully observed, and in the following description I will endeavor to be as explicit as possible.

When the treatment of a case is practically completed the patient is requested to call at an early hour in the morning and the entire regulating appliance is removed, and an impression of the upper and lower is taken in a compound impression material. A slight separation is made usually between the second bicuspids and first molars, upper and lower, by means of a waxed tape, and the patient is requested to call late in the afternoon of that same day. From the

models produced from the compound impressions my mechanical men construct an upper and lower retainer as shown in Figs. 2 and 3. It is observed that there is a flat bar in both upper and lower retainers passing from the rubber on the lingual between the teeth

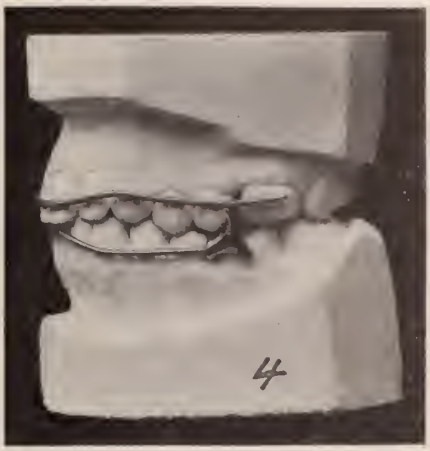
where the separation has been made by the waxed tape. To these bars on the buccal surface is attached a labial arch which is so constructed as to uniformly come in contact with the exterior surface of all the teeth. In second-class cases the bar in the upper plate which passes between the teeth, to which the labial arch is attached, has a spur extending downward and slightly backward along the buccal surface of the first molars about one-half a centimeter in length. The lower retainer with bar passing between the teeth to

which the labial arch is attached has no spur or lug as originally constructed, but a small lug is soldered to the bar which passes between the teeth and allowed to rest on the mesio-lingual cusp of the first molars, Fig. 7,* or it is embedded in the rubber and allowed to rest in the ligual groove of the first molars, Fig. 3. Neither of these positions will interfere with the normal occlusion of the teeth.

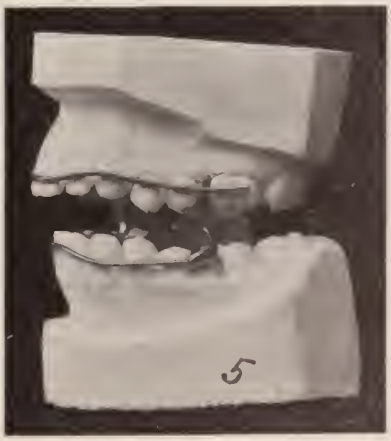
This lug holds the distal portion of the lower retainer in its correct position in relation to the teeth. Otherwise it would have a tendency to settle and its efficiency would be impaired. When the patient returns in the afternoon of the same day the separation is removed and when the retainers are sufficiently trimmed to allow their adjustment they are inserted and are not removed until the patient returns the following morning, at which time the retainers can be removed and readjusted without the slightest discomfort to the patient. The rubber immediately lingual to the superior incisors and cuspids is cut away sufficiently so that when the distal teeth are in occlusion the incisive edge of the inferior incisors and cuspids occlude on the rubber plate. By this means the plane of occlusion, already established, is permanently maintained which is so essential

*The lugs should rest on the first molar only and not on the bicuspid as shown in Fig. 7.

in second-class cases where it has been necessary to elevate the bicuspids and molars during the treatment. The rubber is cut away from the lingual surface of the bicuspids and molars, Figs. 2 and 3, in



order to allow these teeth to assume a normal occlusion of their occlusal planes. In cases where the arch has been widened or the teeth rotated sufficient contact is preserved to maintain their normal positions. Both upper and lower retainers are now inserted and a compound



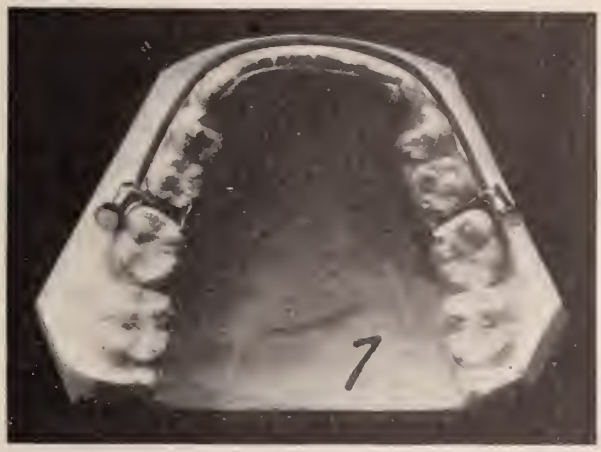
impression material is placed between the teeth and the patient instructed to close, and while the teeth are in occlusion the impression material is pressed about the buccal surfaces of the teeth

and the labial arches so that when it is removed both upper and lower retainers are firmly incorporated in the impression material. From this bite impression the relation of the occlusion is reproduced by plaster models in an articulator.

The retainers now occupy the same relative position on these models as they do in the mouth when the teeth are in normal occlusion. A lug which is adjusted to operate anteriorally to the spur on the upper is soldered to the distal end of the inferior labial arch, Fig. 7. The short piece of the labial arch existing between the bar which passes between the teeth and the lug is reinforced with solder. The posterior surface of the spur on the upper is also reinforced with solder. The metal portion of these retainers is usually made of clasp gold and united with gold solder. Naturally during the soldering process the material in which the rubber portion is embedded must constantly be moistened with cold water. In third-class cases the position of the lugs is reversed. With perhaps a few alterations this completes the construction of the retainer, which in a high degree is universal in its adaptability.

Not infrequently I construct the lingual portion of the retainers in clasp gold or platinum iridium as shown in Figs. 4, 5, 6 and 7. This all-metal retainer has commendable advantages, not that it is more efficient than the retainer just described, so far as retention is involved, but from a hygienic standpoint it approaches the acme of perfection. The lingual portion of the all-metal retainer which

comes in contact with the incisors and cuspids, upper and lower, is constructed by swedging a narrow strip of gold which conforms to the lingual surface of these teeth and which is reinforced to give the retainer sufficient rigidity. The portion which comes in contact with



the upper incisors and cuspids is utilized as a bite plane for the inferior incisors and cuspids and consequently maintains the plane of occlusion.

A clasp gold or platinum iridium wire connects these anterior reinforced portions of the retainer with the flattened bar which passes between the second bicuspids and molars. The labial arch and lugs operating on either side are constructed in the same manner as the retainer described above. In order to prevent any displacement in the distal region of the retainers a lug must be soldered to the bar which passes between the teeth or to the lingual wire, upper and lower, and allowed to rest on the occlusal surface of the first molars at some convenient point which in no way interferes with the occlusion. The retainers are stationary, held in position by so constructing the labial arches as to clasp above and below the buccal ridge of the upper and lower first bicuspid respectively, and to prevent any displacement of these teeth the lingual wire must necessarily come in contact with their lingual surface. Owing to the possibilities which the combined rubber and metal retainers afford for making slight alterations in the position of the teeth during their settling process, it is not advisable to make metal retainers immediately subsequent to

the removal of the regulating appliance. For instance, a tooth can be moved lingually by removing the rubber on the lingual surface and slightly crimping the wire arch which comes in contact with the labial surface with S. S. W. Clasp Bender No. 8, or a tooth can be moved outward by ligating it to the wire arch. A central incisor can be slightly rotated by cutting away the rubber on the lingual surface at one angle of the tooth and slightly crimping the wire arch at the other angle. Should it be necessary to shorten the labial arch for any desired purpose a slight loop can be made in the wire with the Clasp Bender in the region of the first molar. If a change in the position of any of the teeth subsequent to the construction of the retainer has been perceptible, the portion of the rubber immediately lingual to these teeth is removed and an impression taken with the retainer in place and from the model obtained the portion of the rubber removed is restored which will retain the teeth in the desired positions. The mesio-distal relation of the occlusion can be altered by adding to or taking from the lug on the lower retainer which operates mesially or distally, as the case may be, to the spur on the upper. In fact, any slight alteration that may be necessary to establish a normal occlusion of the occlusal planes of the teeth can be easily and quickly accomplished with this form of retention. It is obvious, from the above description of this system of retention, that I remove the regulating appliance from the teeth earlier than it would be advisable if stationary retention was to be used and accomplish the fine adjustment of the occlusion by means of the retainers.

The separation of the teeth caused by the flat bars which pass between the teeth does not interfere with the establishment of normal occlusion, for it is equal on both sides, upper and lower.

The retainers will hold the teeth individually and collectively in perfect alignment. Each dental arch is retained as a whole. The lugs which operate on either side in the distal region, as shown in Figs. 1, 4 and 5, maintain the mesio-distal relations of the dental arches. The plane of occlusion is maintained by allowing the inferior anterior teeth to occlude on the rubber plate immediately lingual to the superior anterior teeth. In the bicuspid and molar region sufficient latitude is allowed to permit a normal occlusion of the occlusal planes. No teeth are stationarily bound and in consequence are constantly under normal influences. When the retainer is perfected the case requires practically no further attention and an advantage

which is appreciated, especially by the older class of patients, is that the retainer can be removed for a short time and the patient can appear without disfigurement.

I have no hesitation in stating that with these retainers I can retain the teeth of any ordinary case in normal occlusion. It is obvious that teeth which have been elevated are the most difficult to retain with this system of retention, but even in these cases I experience no trouble if the patient is under constant observation.

I do not claim that this retainer is perfection, but owing to its wide range of adaptability and the essential principles of retention which it involves, in my experience it adequately meets in nearly every case the requirements to maintain teeth in their normal occlusion.

A NEW METHOD OF CASTING.*

BY PROF. DR. WILLIAM SACHS, BERLIN.

MR. PRESIDENT AND GENTLEMEN:

It is not at all my intention to go over the entire field of casting in this paper. This would exceed by far the time allowed to me. Besides am I not to take it for granted that you are all familiar with every detail pertaining to this new branch of our calling?

What I want is to present to you a new apparatus for casting the smallest inlay up to the largest plate. You can believe my experience that its working capacity is perfectly up to everything we want to accomplish with it on this line.

However, do not think for a moment that my appliance is supposed to prove the inferiority of all the others; the fact that with its help I have had continually the best of results and only a very few failures, is for me sufficient reason to use it exclusively until something still better has been found.

The apparatus which works on the centrifugal principle consists simply in a wheel, 65 centim. in diameter and turning on a ball-bearing. In its centre is fixed on one side a long square steel-pivot fitting into an iron slot which can be screwed on any table. On the other side of the wheel is a wooden handle which allows you to stop the rotation. Between the spokes, there are two weights to counterbalance exactly the weight of the casting-cylinders.

*Read before the American Dental Society of Europe, Wiesbaden, 1909.

To the rim you see attached a solid iron-hook which carries the frame for the cylinder. As this machine is equally good for the casting of the smallest inlay as well as the biggest plate a series of different cylinders with an equal number of iron holders and cone-shaped wooden base-blocks, corresponding all to different sizes, go with it. A heating furnace completes the outfit.

To succeed well each time, three essential conditions must be observed:

First. Except for ordinary sized inlays the establishment of a venthole is indispensable.

Second. The investment-material must be thoroughly heated.

Third. The metal must be melted to a perfectly liquid condition.

Allow me to select for a clear understanding of the whole process that kind of a typical case which occurs so frequently in practice; there is a model of a lower jaw with the six front teeth existing alone; all bicuspids and molars to be replaced.

First construct your clasps—then line the lingual surface of the model with oil, vaseline or a glycerine with water, and shape on it the plate in wax exactly as you want it to be in gold, in size and thickness. Here comes an important point; the smoother, the cleaner the surface of the wax is, the less polishing will be required for the gold plate.

If you wish to fasten your teeth with rubber attachments stick into the wax a few retainers of platinum or any other metal, the ends protruding, or model your wax with a rough surface on those places where you wish the rubber to set in. Now fasten on one side of the wax your pin with a bit of sticking wax, melt to the other end a wax thread 1 or 2 mm. in diameter and you are ready for the investment.

Without removing cover the wax plate right on the model with a layer of investment mixed rather thin about from 2 to 4 mm. in thickness.

For the investment I have found a composition which does not strink or crack and which consists in 1 part of plaster mixed to 2 of the finest ground river sand. You can buy this sand of the royal porcelain manufactory in Berlin, Wegelistrasse, 10 kilos for 1,80 mk. Be sure to ask for this price-quality, as they sell also a cheaper sand which is not as good for our purposes.

So soon as the investment is hardened, loosen your plate with

great precaution, remove it from the model and fix it with the pin in the hole of the corresponding wooden cone. Then clean the free wax surface from the oil by means of a small brush moistened with pure alcohol, dip the wax plate with the hard investment for a few minutes in cold water and then only cover it with investment. The dipping in water is intended to secure a more thorough union of the hard investment with the one to be made freshly.

Now the free end of the wax thread is fastened on the cone with a bit of sticking wax, the surface of the cone well oiled, the cylinder put in place on it and the empty parts of the cylinder filled up with very thin investment; repeated knocking on the table will prevent the formation of air bubbles. The investment once thoroughly hardened, separate the cone from the cylinder, remove the pin and proceed to the balancing, which is necessary to find out the exact counterweight needed to keep the wheel steady. To do this, hang your cylinder in the frame on the wheel, put your gold into the melting place and then, by moving the weights to their weight point establish an even balance so that the wheel should not move at all. Only now commence the heating. Start with moderate heat to prevent the melting wax from boiling and only after from 10 to 20 minutes time place the piece into the special furnace. According to the size of the piece one-quarter up to a whole hour will be necessary to bring the investment to red heat all throughout.

The proper heating of the plaster must be done with great care; it is to be heated thoroughly but must not be overheated. The red glow of the canal hole indicates the right moment when to transfer the form from the oven to the wheel. Now melt your gold with the blowpipe right in the conic excavation. To hasten the melting the use of borax is not counterindicated; I have seen only advantages in using it. As soon as the gold is in full ebullition turn the wheel slowly with your left hand by the wooden handle just a bit to the right so that the cylinder comes down a little and then with a strong push set the wheel swinging to the left; of course your gold has to be kept liquid up to the very last moment; the help of a second person is surely advisable. After about from 40 to 50 turns of the wheel—according to the force of the initial push and the weight of the cylinder—the revolutions will moderate. Now get hold of the handle and stop the wheel just when the cylinder is in the position near the floor.

If there are no porcelain teeth on the piece you can cool off at once in cold water, otherwise wait patiently until the air has done so. The enormous force of the centrifugal power will have driven the gold right into the infinitely small parts of the form, so that you get a faultless piece provided the work has been carried through correctly, and particularly that the question of heating was well observed. With these short indications, I have simply intended to explain the manipulation of the wheel.

After many trials I have succeeded in perfecting this apparatus to such a point as to accomplish with it whatever I can expect from it. Still, I am all the time after it to modify little details, and I should be delighted to hear from you gentlemen what you may perhaps think capable of improvement so that this machine may become absolutely perfect in every possible direction. However, as it is at present even with its possible imperfections it is absolutely sure to give the very best results.

CASTING PLATES UNDER PRESSURE.*

BY DR. K. M. O. SOLBRIG, PARIS, FRANCE.

The steady and continued progress in dentistry has been more marked, than in any other profession and we are now at the commencement of a new epoch, which has been called "The Period of Gold Inlays," but I think history will call it "The Period of Pressure Casting," of which the inlay is only one of the offsprings. The service that pressure casting has rendered to prosthetic dentistry is perhaps even greater than that rendered to operative dentistry, and the casting of plates is not one of the least important.

I see the greater part of today's program is taken up by the casting of plates, which in itself constitutes a decided progress; for at our last meeting I was alone in advocating the merits of the cast plate, which today seem to be generally admitted.

In fact, if we compare the cast plate with the swaged plate, the many advantages in favor of the former will cause us to abandon the latter.

In order to obtain a zinc-die, a special preparation of the model was necessary, giving it a conical shape and avoiding all undercuts

*Read before the American Dental Society of Europe, April, 1909.

so as to make it draw in the moulding sand and very often we had to even sacrifice the model, by cutting off the teeth.

This is not necessary in the case of a cast plate, as no change or mutilation of the original model is required.

In loosening the model from the moulding sand we invariably increased the dimensions.

These deviations from the original model are impossible with a cast plate, as no die or duplication of the model is necessary.

Our zinc-die at best was but an imperfect reproduction of the mouth, due to the contraction of the zinc which made it smaller, and although this difficulty was partially overcome by the use of the low-fusing metals, their lack of resistance was another serious objection. Who can affirm that the expansion in the sand and the contraction of the zinc would offset each other?

To counteract these changes we were in the habit of scraping the plaster model along the outlines of the plate, which of course was more or less guess-work.

This is entirely done away with in the case of a cast plate, as its fit is so nearly perfect that we need not resort to such expedients.

To allow of perfect swaging our selection of gold was unfortunately restricted to gold of a soft variety and limited thickness; this being an advantage in swaging, but constituting a decided disadvantage in the finished plate. To rectify this defect we were obliged to reinforce the plate with a duplicate and solder them together. Such a plate would be very apt to change form in soldering and refitting was almost invariably necessary.

In casting plates we meet none of these difficulties, as we can make the plate any thickness we desire and use the hardest gold obtainable; moreover, a cast plate never changes its shape afterwards if it has to be refired.

For casting plates, I strongly advise the use of platinized gold, which is known under the name of clasp metal.

It has been heretofore impossible to obtain a plate of such gold by swaging; the springiness and resistance of the metal, so desirable in the finished plate, made it impossible to give it the proper shape, and if too great a force was employed in swaging, the rugies of the model were flattened out and the delicate lines destroyed. We tried to overcome this difficulty by raising these parts in the model either

with tin or wax or by scraping the impression, but you will admit that this was decidedly uncertain in its results.

Even though we succeeded in securing a perfect adjustment of the plate at the edges, we were never sure of the fit on the palatal surface and it was often found to be defective if shortened for any cause.

All these precautions are unnecessary in the case of a cast plate, as the reproduction of the original model is so perfect, that it touches the plate at every point, and any alteration of the model would only impair its exactness.

Another great advantage of the cast plate is the fact that we can give it any shape and thickness we desire with the greatest ease possible, as all these changes are made in the wax.

We can strengthen by thickening it at places exposed to great strain, round it at the alveolar border, shape a rim and make retentions to hold the rubber.

For a swaged plate of course we could only employ gold of a uniform thickness, and any changes required demanded much skill and labor and therefore expenditure of extra time.

Under-cuts were most difficult to obtain with the old method and the folding and tearing of the metal were features of great annoyance, entirely overcome in this new process. In swaging, in order to have the plate the desired thickness, we either had to possess a roller or keep a considerable stock of gold of several thicknesses; a consideration of some importance to dentists not living near a dental depot.

In cutting the pattern we necessarily had a great deal of scrap, as we did not want to risk having it too short at any point.

With the casting method we have no unnecessary expense for remelting and rerolling of these scraps, as every particle of the remaining gold can be used for the next plate without fear of having zinc or lead cling to the gold as it always did when swaged.

All the other systems of swaging plates, such as the use of hydraulic pressure, shot, rubber, water bags, etc., had their serious drawbacks, and we were never able to obtain a plate that would fit the palate as perfectly as a rubber plate.

This is the reason galvano-plastics were used, and we hoped they would prove to be the solution of the problem. The adaptation was perfect, however the strength of the metal was insufficient.

THE WELDING OF THE METALS.

We are all aware of the fact, that we are able to weld the casting to the solid metal.

Allow me to make a few remarks concerning the principles of this phenomenon, which have to be well understood, and which may be explained in the following manner. The molten gold slightly melts the surface of the solid gold which it comes in contact with, and thus produces union.

The conditions, however, must be such as to allow this action to take place.

First. If the solid metal be too cold, the fluid gold is chilled and no welding of the two metals is possible.

Second. The molten gold has to be heated much above its melting point in order to facilitate this action.

Third. In case the liquid gold has to travel for too long a distance, or through very restricted spaces, where its bulk is greatly diminished, it will lose a great many calories, and no union of the two different metals will take place.

Fourth. A foreign substance, or oxidation, interposing itself between the two metals will of course have the same result.

CASTING ON THE MODEL.

We are able to cast plates directly on the model, obtaining in this way the most perfect adaptation that is possible to conceive. To do this, however, the impression ought to be taken with a plastic compound, as the model has to be made in investing material which does not possess sufficient strength to allow of a plaster impression, especially in a case where teeth are remaining.

In order to cast a case directly on the model it is hardly necessary for me to explain that the wax is applied in the usual manner, and after fastening it to the model both together are invested in the cylinder, and the case finished in the usual way. With this method we obtain a reproduction of the model with its finest details. A few objections, however, may be raised.

First. The difficulty of using a plaster impression.

Second. The necessity of taking a second impression of the mouth, as the model is destroyed in the casting.

Third. The wax must not be applied under warm water, as the model disintegrates easily when moistened.

Fourth. Clasps or teeth can not be fitted to such a model, as it is too fragile to stand the wear that a plaster model would. I therefore give the preference to the other method, which allows of finishing the whole case on the original plaster model.

The wax being so very thin allows of a most perfect adaptation, and assures a perfect fit in the finished case.

At our last meeting I had the honor of giving you a demonstration of the technics of my method, which remain essentially the same. Allow me, however, to call your attention to the new way of investing the wax which renders all vents of any description superfluous.

After covering the wax with a thin layer of fine investment, coarse investment is next applied before the first is entirely hardened. The same procedure is repeated on the other side of the wax, and the whole, when hard, invested in the cylinder with coarse investment, which allows the imprisoned air to escape at all points, thus overcoming in an easy manner one serious difficulty, heretofore met with in the casting of full plates.

In conclusion allow me to say, that we have succeeded in perfecting a method that is giving us entire satisfaction, and everybody can obtain these perfect results in observing certain details of manipulation; details that can only be brought out by a practical demonstration, but which are of vital importance to the perfect success.

REPORT OF CLINICS. MAY, 1909.*

DR. T. L. GRISAMORE AND DR. J. K. CONROY, CLINIC COMMITTEEE.

Eighty-two clinics were announced in the program and each of the clinicians was requested to write out some account of his clinic and send it to the committee. Only thirty-eight reports have been received and the committee are unable to tell who of the others were present and made their clinics and who were absent.

WEDNESDAY MORNING.

SURGERY.

No. 1. Dr. H. A. Potts of Chicago. Deep injection of alcohol for relief of tri-facial neuralgia.

*Read before the Illinois State Dental Society, May, 1909.

The patient, a man of middle age, had suffered from pain more or less paroxysmal in the left side of his face for several months. He had had teeth extracted for its relief but to no avail. Finally empyema of the antrum of highmore was diagnosticated and an opening was made through the canine fossa. This did not offer sufficient drainage and at subsequent time an extensive resection of the anterior wall of the antrum was made. From time to time the bony walls were curetted and packed but the pain still persisted.

At this time, three months after the resection, the patient presents a large cavity in the left superior maxilliary bone lined with a suppurating mucous membrane and granulation tissue.

He complains of pain more or less paroxymal in the region of the posterior portion of the submaxilliary bone involving the tuberosity.

While the case differs entirely from tic douloureux the pain seems to be confined to the parts supplied by the posterior palatine nerve and the injection of alcohol seems to offer some hope of relief. Notwithstanding the atypical case in hand an injection of 2 cc. 70% alcohol was made into the region of the foramen rotundum.

The patient was advised to have at least a second injection made, this he did not do. A report of the case some two months later was that he had been benefited by the one injection. Since then nothing has been heard of him.

No. 4. Dr. Sidney McCallin of Chicago. Treatment of pyorrhea alveolaris.

The clinic was to demonstrate the removal of deposits from root of tooth badly diseased from pyorrhea.

Asestoria was used as an anaesthetic—the pockets being flooded with it. Then with proper instruments the foreign deposits were removed. This is the first and all important procedure in the saving of roots affected by pyorrhea.

After the instrumentation was finished the pockets were flooded with warm lactic acid c. p. The malocclusion of this tooth was then corrected by grinding with stones and polishing ground surfaces. When malocclusion can be corrected in this way it is not always necessary or desirable to ligate or splint a tooth in any way. The rest of the mouth was then given a thorough prophylactic polishing treatment—after methods demonstrated by Dr. D. D. Smith. The clinician considers that the mouth should receive this polishing

treatment each sitting, after one or more individual teeth have been operated on. Gum massage after healing has advanced to a certain point, and certain limited medication are of assistance toward rapid recovery.

FILLINGS.

No. 7. Dr. Robert Goebel of Lincoln. Filling of Ascher's artificial enamel in upper central incisor.

In cavity preparation the enamel margin was cut to a rather sharp angle with scarcely any bevel.

I use a convenient shade guide and determine the color before securing the rubber dam. This guide I keep before me in mixing the cement, especially if two or more shades are used. The powder is drawn into the liquid as rapidly as possible until the desired amount is used before spatulating. Then a quick spatulation is given it until a putty-like consistency is reached. When I cannot readily use the shell instrument I use a celluloid strip and metal burnisher producing considerable pressure toward margins. I use a convenient face cream containing parafine and a small amount of vaseline to lubricate a fine cuttle-fish strip or disc in polishing.

No. 8. Dr. A. G. Johnson of Chicago. A table clinic with Keeton-Williams crystal gold.

No. 12. Dr. W. H. Pontious, of Chicago. Combination porcelain and gold inlay.

The gold inlay was made and set first, formed in a manner to receive all of the stress of the occluding teeth, the labial surface cut away to form a shallow cavity to receive the porcelain veneer which is to be made and set subsequently.

INLAYS.

TABLE CLINIC.

No. 13. Dr. John Bohr of Chicago. Inlay metal, casting without machine, using jarring method.

The results were obtained by the following method: 1st, apply sprue No. 1 to the wax inlay, the usual way as for casting gold and place same in cone. 2d, Place sprue No. 2 at the extremity of the wax inlay, as an air gate allowing the gas to escape. 3d, Remove the oil of the wax with alcohol and allow to dry. To assure accuracy and avoid bubbles, apply a coating of investment compound with a brush. Let the coating become glazed. Then place cylinder and

complete the final investing and allow compound to harden. 4th, Heat cylinder and remove cone and both sprues, dry and burn out the wax. 5th, Remove from Bunsen and set on a dry piece of asbestos pad or warm marble or metal slab. Place metal in matrix and melt to fairly fluid. Jolt the asbestos pad or marble or metal slab, and the metal will run through sprue hole No. 1 and chill at the extreme of sprue hole No. 2. Allow metal to chill. Care must be taken not to remove the cylinder from the base until metal is thoroughly chilled.

The second day, the clinic of Cast Aluminum plate, casting plain and gum section teeth to the plate, showing how melted aluminum in a crucible can be poured into the matrix of the flask by a jarring method using two air gates. This being a simple and perfect method of casting aluminum plates.

CROWNS AND BRIDGES.

No. 19. Dr. A. E. Schneider of Chicago. The Porcelain Jacket Crown. .Porcelain Veneer.

Strip the tooth of enamel, grinding very little deeper, using carborundum stones.

Take measurement of root as for gold shell crown and make band slightly longer than tooth and countour at gum line. Take medium sized fissure burr (plain) and under the free gum margin cut a shoulder in tooth the depth of diameter of burr. Tooth now should be cone shaped, with base at shoulder cut with the fissure burr.

Fill the band (copper, soft soldered) with Detroit Modeling Compound, warm over flame and press over tooth to get sharp accurate impression of shoulder on tooth. Chill and remove. Now use extra tough pink wax and take another accurate impression and bite of prepared tooth and its companion on opposite side of mouth. This gives one an idea of contour to restore.

Take modeling compound impression and make cement root of at least the same length as natural root. Heat band and remove with modeling compound.

Trim cement root cone shape from shoulder to apex of root. Place in impression of wax and flow up bite with plaster. This will give working condition same as mouth, for tooth can be removed and replaced at one's convenience.

To make Steele's self-locking matrix fold platinum around root and trim so there will be enough excess to make a "tinner's joint" on lingual. Now burnish thoroughly from labial to lingual and trim off all excess.

This matrix is far superior to any other for jacket work. To build a tooth in one bake apply for instance No. 4 new S. S. W. extra special high fusing porcelain in shoulder of matrix flush with margin running it up to thin layer at incisal and to get the transparent blue white coloring from incisal to gingival, build heavy with No. 2 porcelain on incisal gradually thinning it as you approach the gingival. By varying the thickness of Nos. 4 and 2 respectively you can obtain most of the colors in the shade ring. To attain some colors with a muddy effect use No. 8. For extra white effect mix Nos. 4 and 2 and cover with No. 2. Mould your crown to shape and bake, and if properly manipulated one baking is all that is required; there being almost no shrinkage and no pulling of the matrix from the gingival shoulder. Strip matrix from porcelain crown, roughen inside with stones and cement to root, being careful to mix your cement so it will be thick, but with plenty of flow to it and then by gently pressing crown to place it will settle nicely, giving you the most durable porcelain work ever put in your patient's mouth with results which will please both you and your patient and make you a porcelain-jacket crown enthusiast.

No. 23. Dr. Robert J. Cruise, of Chicago. Table clinic.

"Uses and Abuses of Gutta Percha in the Cementation of Crowns and Bridges."

Clinic consisted in a demonstration of the use of gutta percha cement (Evan's), for the general details of which the reader is referred to any of the dental depots, where full literature regarding this material can be obtained.

The special points made by the clinician were:

(1) Method of using gutta percha cement in combination with oxyphosphate, thus making a final sealing with the latter, which is more cleanly, and yet leaving the possibility of removal of crown or bridge with comparative ease and no destruction to either teeth or crowns.

(2) Caution against using gutta percha in the case of badly decayed roots, as pressure is liable to bring about splitting of the roots.

(3) In cases where crowns or bridges are to be set temporarily, the gutta percha cement used alone is far preferable to temporary stopping or base-plate gutta percha.

(4) The average beginner in the use of this gutta percha cement is discouraged with it as it proves somewhat difficult to manipulate when it comes to using it for permanent work, so the clinician wishes to warn those trying it to give it a good test and experiment in technic with it before abusing it, following all instructions in detail and with the complete outfit furnished. The clinician does not recommend the universal use of it by any means and acknowledges that it is not suited to many cases, but it has a useful place as judgment will indicate.

No. 22. Dr. W. B. Tym of Charleston. Obtaining wax model for casting gold cope where root is badly broken down.

A plaster model was used for demonstration. First the root is ground off, establishing definite margins, a post of 13 gauge gold clasp metal wire is cut to the length desired and serrated for convenience in retaining wax to proper place, later these serrations aid the cement in holding the post in the root. The wax is then heated and placed in position on the post which is then placed in crown and the wax trimmed to about the shape desired, the crown having previously been ground to articulate. A band is then made to approximately conform to the end of the root, being considerably longer than the circumference of the root. The band, which is of platinoïd rolled to thirty-six gauge and is very rigid, is measured to the crown instead of the root and is nicked on opposite sides at the approximate measurement of the crown. These nicks are then slipped together and the extending ends bent down, thus forming the band which is then cut away at the contact points. The crown mounted upon the post, the band is placed in position, having previously oiled the band and all parts coming in contact with the wax, the whole is then forced home and the patient allowed to close and establish the correct articulation.

The whole mass is removed at once or in parts, as is found convenient, the band being easily removed by slipping the ends apart. The surface wax is then removed and the result is usually satisfactory in the first attempt, though a repetition may sometimes be necessary.

ARTIFICIAL DENTURES.

No. 27. Dr. J. E. Schaefer of Chicago. Anatomical arrangement of artificial teeth.

The clinic consisted of two cases, one in which the teeth were arranged according to the principles of their anatomical relation, as laid down by Dr. Bonwill, the other an ordinary set up, where no consideration of these principles had been observed.

EXTRACTING.

No. 28. Dr. A. Brom Allen of Chicago. A few pointers on instrumentation and the necessity of radiograph in diagnosis before extraction.

Table Clinic, composed of mounted specimens showing the abnormalities in the natural teeth. Also cases of impacted third molars, and the procedure in the removal of the same. Showing that the utmost care should be used to drill away the process, thereby releasing it as much as possible before operating. Also forceps and elevators and their uses.

ORTHODONTIA.

No. 31. Dr. C. D. Bates of Chicago. Means of getting an in-locked incisor into position.

The condition most frequently occurs in the upper incisors, shutting inside of the lower, in which case I prepare a piece of inlay-wax of suitable size and press it downward on lower teeth, just below the one to be straightened, pressing into contact both labially and lingually extending nearly to the gums, and having the labial surface inclined at such an angle and high enough that when the jaws are closed nothing will touch but the mal-posed tooth and the labial surface of the wax, which is at such an angle that, when replaced by the cast gold, it will exert a force outward upon the mal-posed tooth in proportion the the force with which the teeth are brought together, thus leaving it with the patient to determine the length of time required to bring the tooth into position.

I sometimes use the same principle upon the tooth to be moved, by putting the gold on it, so it will reach over the lower tooth, care being taken not to have gold between the teeth to interfere with its going between the adjoining teeth.

The more nearly perpendicular the labial surface the greater the outward pressure. If the surface is too nearly horizontal or if too

soft gold is used the occluding tooth will dig a pocket and not slide. (I use 18 Karat solder.)

To determine if it is indicated in a given case and to study the shape to be given I sometimes make models and mount upon an anatomical articulator and form the wax as indicated.

While I do not claim this can be used in every case, it works nicely when indicated, is simple to apply and requires practically no attention.

MISCELLANEOUS.

No. 33. Dr. G. W. Dittmar of Chicago. Casting.

Exhibited a number of models of gold inlays, cast-bridge work, cast-gold shell crown, and cast-partial lower plate.

Demonstrated the use in casting of Paris Hard Wax Flux, flowing a film of this wax over the warmed surface of metal, on which casting is to made, before adding the inlay wax from which the model is carved. Also showed technique of investing the wax model of a partial plate or other large frail model of wax, so as to insure no bending or breaking.

Some of the models shown were furnished by Dr. W. H. Taggart and Dr. H. C. Barber of Chicago.

No. 34. Dr. Geo. B. McFarlane of Chicago. Table clinic. Adjustment of matrices and separator for amalgam fillings.

Clinic showed an articulated model, with two proximo-occlusal cavities cut ("extension for prevention") with steel, and copper matrices in position, and the "Perry" Separator adjusted; demonstrating the proper application of both these articles, to permit the insertion of amalgam in order to restore the contact point, and the removal of the matrix and separator without breaking the filling or losing the contact point in so doing.

Without that manipulation it cannot be done.

The matrices were so shaped as to follow the gingivae, and yet permit the proper expansion at the occlusal surface to make correct form of filling.

Wrenches of his own make were used that permitted ease in adjusting the separator.

No. 35. Dr. W. H. Cowen of Chicago. Using suggestion as a means for painless dentistry.

"Cavity preparation, using hypnosis as a means for entire relief

from pain." I had a very nervous young lady and the cavity was a labial, extending below gum margin. Clinic consisted in hypnotizing patient, removing all sense of feeling in lower jaw by suggestion, applying rubber dam followed by clamp, placing same below gum margin and preparing cavity with absolutely no sensation of pain to the patient.

"I had intended inserting gold filling but owing to crowded conditions at chair, placed instead a temporary filling and finished about ten days later at my own office in Chicago.

"In the meantime there had been no return of sensitive conconditions and while a deep cavity, and no cavity lining used, the tooth is not affected by thermal changes as is usual in other deep cavities."

No. 36. Dr. F. H. Bowman of Springfield. Method of using tartar solvent.

Clinic demonstrated the use of Dr. Head's tartar solvent in crystal form made by placing about ten drops in a small wax cup and setting aside for twenty-four hours. In this form it can be picked up by slightly moistened toothpick and carried to bottom of pyorrhea pockets as it dissolves slowly. Although it may not be quite so strong it has in eight months' experience given excellent results.

No. 38. Dr. F. K. Ream of Chicago. Dental radiograph, taken while you wait.

Dr. Ream made a number of skiagraphs of interesting conditions in the mouths of visiting dentists, and showed the application of the high-frequency current and violet ray treatment in neuralgic conditions as applied to dentistry.

FRIDAY MORNING.

SURGERY.

No. 42. Dr. O. L. Frazee, of Springfield. Surgical treatment of root in chronic alveolar abscess.

There was no patient.

No. 43. Dr. F. B. Moorehead, of Chicago. Alcoholic injection for trifacial neuralgia.

There was no patient.

PYORRHEA AND PROPHYLAXIS.

No. 45. Dr. F. H. Skinner of Chicago.

Scaled or planed an upper right first molar for pyorrhoea, using the C. M. Carr scalers. Root was polished with wooden points, tape and "flour of pumice," after which pheno-sulphonic acid was passed into every portion of pocket by means of a German silver broach looped at the end. This carries a minimum amount of medicine well into every portion of pocket, without getting any excess where it is not wanted. The entire root was apparently a smooth and polished surface, and with proper cleanliness carried out, the tooth should be cured of pyorrhoea alveolaris in one treatment.

FILLING.

No. 46. Dr. A. H. Peck of Chicago. Platinum and gold filling.

The operation was only an ordinary gold filling. The case did not call for the use of platinum and gold.

No. 47. Dr. A. E. Boyce of Tuscola. Table clinic. Gold filling.

Lining the cavity with soft foil and finishing with any of the mat golds, either singly or in conjunction with cohesive foil. Cavity is prepared similarly to usual cavity for gold filling, using grooves for anchorage.

Burnish in as large a piece of soft foil as possible and place a piece of mat gold on same and condense.

Filling is built from bottom of cavity out, keeping soft foil against the walls, building the four walls simultaneously until all edges are covered, then finishing in the usual way.

Claim.—A better adaptation of filling to the walls of the cavity, and not so much danger of checking enamel margins.

No. 48. Dr. Grafton Monroe of Springfield. An adjunct to the rapid filling of large molar cavities.

The clinic was for the purpose of showing the advantage gained by the use of Crystallia—a preparation of pure tin—shredded in form and much more easily adapted to a cavity than ordinary tin foil. It mats together freely and is introduced into the cavity by taking a pellet, which has been formed between the fingers, corresponding in size to that of the cavity and after pressing it to all the portions of the cavity as base for crystal or fibre gold—the two materials will be found to so interlace together that with but a thin layer of the fibre gold, the operator may proceed with any other form of gold he chooses, condensing thoroughly from the time he starts to use the different form of gold.

No. 50. Dr. C. E. Bellchamber of Effingham.

Ascher's Artificial Enamel. Cavity was prepared by hand instruments, margins square, interior of cavity being box form. Two shades required for filling, which was distal cavity of left upper central incisor, involving both lingual and labial surfaces. Color of filling blending well with tooth.

No. 51. Dr. C. C. Corbett of Edwardsville. Amalgam filling with cement lining.

Dr. Lucien H. Arnold Chicago patient. Inserted a large amalgam filling in anterior proximo-occlusal cavity, extending from gum margin and including about one third of grinding surface of superior second molar. After preparing cavity it was lined with solf cement, and amalgam immediately inserted pressing out the cement at cavity edge as much as possible, freeing the cavity edge of cement, then adjusted the hand matrix (a steel strip) using a cotton wedge to preserve the V-shape space, then dried out any moisture and finished inserting the filling. The hand matrix being held in place with thumb and finger of left hand, and filling completed with the right.

INLAYS.

No. 52. Dr. E. H. Allen of Freeport. Gold inlay.

Cast gold inlay for Dr. C. L. Snyder of Freeport, Ill. The cavity was a disto-occlusal in the inferior left first molar, prepared with flat seat at gingival margin and floor of occlusal surface flat. The cavity was shaped so that the wax model would draw without danger of distortion. The casting was done with a Taggart inlay casting machine. Pure gold was used for the inlay. There were no unusual features about the operation, so that no particular importance can be attached to the clinic.

No. 54. Dr. Fred H. Swartz of Morris. Gold inlay.

Gold inlay in the upper left first molar—mesio-occlusal cavity. I made two models and both were spoiled in casting. However, I made inlay for patient later and set same in cavity.

CROWNS AND BRIDGES.

No. 62. Dr. S. C. Sims of Sterling. Table clinic.

A method of making a cast gold crown by the use of an aluminum band and the stump to form the wax model. Also a method of making a cast metal retaining appliance in orthodontia.

No. 63. Dr. R. C. Willett of Pekin. Strengthening inlay abutment for bridge work.

In the use of the cast gold inlay as an abutment in bridge work the weak point is found in making the connection between the bridge dummy and the inlay abutment, if either soldered or cast. This weakness may be overcome by placing in the wax model inlay an irrido-platinum bar 16 or 14-gauge square, letting it rest well across the occlusal step and extend out from the inlay about two millimeters just lingual to contact point.

The soldered or cast connection over this projecting bar will make this weak point one of the strongest in the bridge.

ARTIFICIAL DENTURES.

No. 65. Dr. E. H. Hickman of Arcola. Vulcanized base plates for full upper and lower dentures.

Impressions are taken and patient dismissed. After obtaining models, sandarac with thin coat and cover with tinfoil, then take sheet of fresh red rubber and press to place, same as making wax base plate, invest and vulcanize.

Advantage: Gives you a firm, solid base plate, which is less likely to slide out of position when taking a bite in mouth where a great amount of absorption has taken place, also enables you the better to build out or restore the features in those cases and a chance for a good try in, knowing exactly how the case will be when finished.

Teeth may be set up in wax and finished in ordinary way or set directly to base plate with rubber and vulcanizable gutta percha.

No. 67. Dr. J. L. Bridgford of Macon, Mo. Correcting the fit of loose or misfitting plates.

The material used is known under the trade name, "Bridgford's Plate Paste." The paste is a little heavier than tooth paste. It is applied to back of a vulcanite or metal plate, after it has been cleaned by etching the palatal surface with bur. The plate is then placed in water and allowed to stand three or four minutes, then is placed in patient's mouth. The excess of paste is gradually forced out and the impression remains on the back of the plate. It is then vulcanized and the impression becomes a part of the plate. The advantage is, there is no excessive thickness of plate, because the paste does not remain in any perceptible amount excepting at the defective points, and there only enough to correct the defects.

EXTRACTING.

No. 69. Dr. O. G. Collins, of Decatur. Giving somnoform for extracting.

No patient was found.

MISCELLANEOUS.

No. 75. Dr. Rudolph Beck of Chicago. Injected bismuth paste in a case of empyema of the antrum, also demonstrated the use of the paste for the cure of chronic alveolar abscesses and sinuses of the jaws.

No. 77. Dr. C. L. Hine of Tuscola. Cast splint for loose teeth.

A splint for loose teeth, especially adapted to lower anterior teeth, but I have used it in almost any position in the mouth. I first secure an impression in modeling compound of just the ends of the teeth or perhaps the incisal third. The reason for not taking more of the teeth is the danger of the impression dragging or hanging and thus spoiling everything. I then make a cast out of Brophy's investment compound. Then wax up, by taking a narrow strip of base plate wax about one-eighth inch wide, warm it and press it tightly on the lingual side of the teeth, leaving just an edge to be turned over the incisal ends, and over on the labial sides. This is then trimmed so that all the wax on the incisal ends and labial sides is removed except what is between the teeth. This will leave a bar of gold on the lingual sides with small strips extending over the incisal ends (between the teeth, so as not to be in the way in closing the teeth), and a little on the labial sides, which is polished down so as not to be rough. If the wax is still heavier in the back than I wish I scrape it off, or if it is not wide enough more can be added. This can be made to include as many teeth as the operator chooses. I then trim the cast as small as can be conveniently done, mount it, leaving it still on the cast, and invest and cast out of clasp gold. The more irregular the teeth the easier and better it works. Sometimes when the teeth are worn I take a knife-edge stone and cut a shallow groove between the teeth. If a tooth is so loose as to give way when the occluding teeth touch it I extend the gold over the end a little, so that the occluding teeth strike the gold instead of the tooth. This is set with cement and polished. In making one for six teeth I would cast in two pieces and solder, as the shrinkage in the gold would make it difficult to set if cast all in one piece.

No. 78. Dr. P. B. Lesemann, of Nashville.

A Simple Method of Making a Band Matrix Without Soldering.

The measurement of the tooth to be banded is secured by tying a ligature around its greatest circumference, cut the measurement, and draw the ends apart; place it on a strip of matrix metal (I prefer the S. S. W. thin steel matrix strips) and with a suitable pointed instrument punch two holes about one-thirty-second of an inch apart, crossways through the strip at each end of the measurement; cut off the ends of the strip about one-eighth of an inch from the holes. Take a piece of copper wire, about 28 gauge, with the beaks of pointed flat-nose pliers, bend the wire in the shape of a staple, draw the ends of the staple through the two holes in one end of the matrix strip, double the ends of the band upon themselves, draw the ends of the staple through the other two holes, grasp the ends of the wire in a pair of pliers, and pull until the ends of the strips overlap, and the holes are opposite each other, twist the free ends of the wire tight, cut the twisted end close to the band, and with flat-nose pliers press the ends flat and close against the band. This makes a strong, smooth joint, can be made in a few minutes' time, and will meet all requirements of a band matrix.

No. 79. Dr. J. Tichy of Chicago. Treatment of putrescent pulp canal with sodium and potassium.

In the case of a tooth with a putrescent pulp canal the rubber dam should be employed wherever possible. First treatment of tricresol and formalin for at least three or four days.

The second treatment would consist of thoroughly cleansing the canal or canals with sodium and potassium. This preparation is put up by Dr. J. K. Ward, coming in six glass tubes and any practitioner can successfully use it by following the directions. The material has a great affinity for moisture and should be used with care about the patient's mouth and wherever possible the rubber dam should always be employed; the few minute particles of the sodium and potassium which will cling to the platinum broach are sufficient to work into the canal at one time; this should be repeated again and again until a sudsy appearance is noticed when it should be always carefully washed out with hot water. You should always exercise the greatest care and not force any debris through the apical foramen as this is what raises the rumpus. The action of the sodium and potassium on the decomposed matter in the root canal turns all the

fatty material into soap—which is easily washed out with hot water and entirely removed with the assistance of a broach. Instead of having a dirty looking root canal as it appeared at first, after this treatment it is as clean as though it has been scrubbed with a brush.

The next thing to do is to use warm air to dry out the root canal thoroughly, and by capillary attraction use saturated solution of hydronaphthol and alcohol. This part of the operation takes probably about ten or fifteen minutes, then dry out the root canal again and fill permanently.

No. 81. Dr. T. H. McClure of Chicago. Replacing an incisor immediately after extraction.

In this operation, a highly glazed porcelain root is added to the dummy of the bridge used in replacing the lost tooth, extending almost the entire length of the socket.

Models of cases from one to five years standing show a retarding influence of highly glazed porcelain on the surrounding tissue, and, when the usual absorption has taken place, the case still presents a sightly appearance.

No. 82. Dr. J. E. Hinkins, of Chicago. Platinum and gold filling.

No patient was found.

PROCEEDINGS OF SOCIETIES.

AMERICAN DENTAL SOCIETY OF EUROPE, MEETING AT WIESBADEN, APRIL, 1909.

DISCUSSION OF THE PAPER BY DR. R. D. MC BRIDE, ON "A REMOVABLE RETAINER."

DR. C. P. HASELDEN, of Hamburg:

Thought Dr. McBride had scored another success, not only in the application but in the fact that he was one more successful member of the Society who had shown something new and of great value at the meeting and he wished to express his thanks for the time and trouble he had taken and the clearness with which he had explained the matter.

DR. J. W. GALE, THE PRESIDENT:

Thought a method of the kind was very advantageous for a

patient who was necessarily away from the orthodontist, because it could be made in duplicate, and therefore in that way the embarrassing breakdowns that so often occurred with fixed appliances would be obviated. Very often one saw a tooth completely ruined under a fixed appliance, the patient not being under the direct inspection of the dentist. The patient came back in three or four months with the enamel of one tooth destroyed and it was rather embarrassing for the operator, to say nothing about disfigurement of the patient. Dr. McBride's method obviated that and in that way was a decided advantage in retention.

Dr. E. D. Barrows, of Berlin:

Said for a number of years he had used a vulcanite plate with a wire on the outside going round the teeth, and he found the patient took it out too often. Consequently not only were one or two teeth found to be lost, but nearly all the teeth decayed on the inside. It seemed to him that permanent retention when it was applicable was far preferable, and he was not in favor of movable retention.

Dr. J. W. Gale, the president:

Pointed out that Dr. McBride did not advocate the method as the acme of retention, but qualified his remarks by saying it was only one form of retention.

Dr. W. A. Spring, of Dresden:

Could not conceive the possibility of a tooth suffering under a properly constructed band properly set with cement.

The President:

Said it did not. It was when the band was loose.

Dr. Spring:

Said the retention now very commonly used in America, the internal bar retention, was so simple and so easily cleaned that it seemed it was preferable to any kind of removable retention which the patient so frequently removed and left out for a day or two.

Dr. W. G. Law, of Berlin:

While not wishing to appear to criticise the appliance in any way, could not conceive of successful results with removable retainers for the simple reason that retention should be always stationary and balance maintained. The retainer had to take on some of the natural functions of a muscle. In a great many cases of Class 1, where there were narrow arches, if it were demanded by the patient that a removable appliance should be used, an appliance with a vulcanite plate

might be in some cases successful; but if the case was one of Class 2, it was difficult to retain, and the same thing held of Class 3. In his experience he depended upon a force which was as nearly natural as could be made. With regard to the liability to decay under fixed retention, if the retention was properly made that liability was nil. He had never had decay under a band. He had found some slight traces where he thought some change had started, but had never had decay or decalcification of the enamel. He had had a few white spots occur at the edges of the bands, especially the gingival edge, if they were made a little high and the cleansing was not thorough, and that was the fault of the patient. The white spot was not decay, but the slight beginning of a change, and it had been practically cured by care. The best work was done by the simplest appliance possible placed in the mouth, making the patient less conscious of anything in the mouth and yet fixing the appliance that the patient could not take it out. In stationary retention he thought a mistake had been made in making the bands too weak. When the bands were made too narrow and the spurs a little lighter than they should be for bands that had to be in use for two years, there might be a little difficulty. In some cases fractures had occurred. As a whole, he believed that if bands were properly and strongly made they would not break, nor would the teeth suffer under them, and the best results would be obtained. Personally, he had never used the appliances shown by Dr. McBride, but he did not criticise them in the slightest way, because he did not doubt that Dr. McBride had obtained good results with them. Although they were easily made and easily applied, he did not believe without a great deal of experience they could be managed skilfully.

THE PRESIDENT:

Thought he must have made himself very poorly understood. Naturally, he did not mean that a tooth would decay under a fixed band; what he meant was that the patient knowingly had gone for several months with one of the rings loose. Naturally, when it was fastened with cement it would be another thing.

DR. KIRK DAVENPORT, of London:

Said it was a special pleasure to him to find it was possible for a little individuality on regulating to be introduced at a dental meeting. He thought a great deal could be accomplished by experimenting and working on broader lines than were at present being

followed out. He had a tremendous admiration for Dr. Angle's work and for the work of Dr. Law and other eminent specialists, but it was not always practicable for men to do those things, and there must be a ready means always at hand that could be utilized for special cases. Unless there was a quick and easily made appliance for regulating, even the men who were tied to the other methods would have difficulties. He had had the pleasure of seeing a large number of the appliances, and in Class 2 cases they retained the teeth and kept them in position and the relationship of the two jaws was very good. There was one case Dr. McBride had not mentioned that had given him trouble, and anyone using the appliances should guard against it. In having the appliances made in the workroom, care should be taken to prevent the upper spur from getting too close to the lower molar and preventing a lateral motion. Dr. McBride had said that he put them on afterwards, but in his own case he put them on at the same time, and very much to his chagrin he had found that Nature could not work on account of there being no lateral motion.

Dr. George Northcroft, of London:

Thought Dr. McBride made one point of very great value to those who used or were ever likely to use movable retaining appliances, namely, the necessity of having the little spurs put on the lower plates when vulcanite was used. A retainer really was not a retainer unless it was held up to the top edge of the tooth, and it had been his own custom usually to place the spur in between the lingual cusps of the lower molar, and he found that the most convenient position to put it. Also he did not notice whether Dr. McBride ever put spurs over the two central incisors on the outside arch. On occasions he had found that a useful addition. If there was much rake in the incisor region—and everyone knew it was impossible sometimes to get the tooth quite vertical—there was a tendency for the upper arch to slip upwards, and that was prevented by two little spurs going over the cutting edges of the central incisors. As far as white spots on teeth were concerned, he had always understood that they were a sign of decalcification and commencing decay.

Dr. R. D. McBride (in reply):

Thanked the members for the consideration they had given to his communication. The expression of Dr. Law was quite correct with reference to details of any mechanical appliance of that nature; its construction was necessarily more perfect in the hands of the

experienced. He had no hesitation in saying that he could not in many cases obtain as good results by using a mechanical form of appliance as he could by using the form he had shown; whereas on the other hand, members who advocated the stationary form of retention would perhaps experience some difficulty in using the form he had shown. Each one had his own idiosyncrasies. In reference to the retention of Class 2 with the form of retention illustrated, he considered it the easiest class of all to retain. Dr. Law had spoken of the lack of reciprocal force in reference to retention of cases, but the retainers held both upper and lower arches collectively as one and were so constructed that the individual teeth were held in their natural positions. Then the lugs operating on the side held the upper and lower arch in the normal mesio-distal relation. He had found—and undoubtedly other orthodontists had had the same experience—that it required but very little force to retain teeth in their normal occlusions if the force was operating intelligently and if all the occlusal appliances were occluding in their normal relations. With regard to the remarks of Dr. Davenport, as to the lugs impinging on the buccal surfaces of the lower molars, he had also in his early experiences of the retainer had the same difficulty. In one case particularly, a long time ago, the lugs were impinging on the buccal surface of the first lower molars, and quite astonishing to himself the molars were depressed in their sockets through the influence of the lug impinging upon the side of the tooth.

DISCUSSION OF THE PAPER BY PROFESSOR W. SACHS, OF BERLIN, ON "A NEW CASTING APPARATUS."

DR. WILLIAM HIRSCHFELD:

Said that Dr. Sachs having kindly invited him to open the discussion on his casting apparatus, he felt like exclaiming as the French did on similar occasions: "Les pieces heurenses l'out pas d' histore," which meant that a well-worked-out piece did not require any discussion. That was exactly the case with the invention of Dr. Sachs; it was a thing so well combined and yet so simple that it spoke for itself. Still, the Doctor at the end of his concise and clear paper asked for expressions of opinions on possible improvements, and as he had been using the appliance for the last six months, he hoped he might be excused for venturing a few remarks upon it. First of all, the casting wheel was a most valuable aid in the accomplishment of what might be called high-class artistic dentistry.

He would not touch upon the question whether casting would do away altogether with the swaging of larger base plates, nor would he say anything of the facility of making inlays with it. Where he found the wheel of such immense help was in the rapid construction of small bridges, small plates, and of permanent splints for the support of loose teeth, and for making pivot teeth of any kind. He had had very little experience with casting appliances working on other principles, but, as Dr. Sachs said, where was the need of something else if whatever was required could be done with the apparatus? It was perfectly amazing to see with what precision the centrifugal power could reproduce the most infinitely small contours of inlays and plates. Where other machines required complicated appliances to produce the necessary contours to drive the gold into the form, the wheel had the power right in itself without needing the help of anything but Nature. No doubt those who started upon the new specialty of casting would have to go through the school of experience, walking over the same, sometimes steep, path over which all successful men had gone, the path of failures; but those unavoidable failures would be very limited, and it would be soon discovered that it was not through faulty machinery, but simply through the non-observation of three factors—the proper heating of the investment, the proper melting of the metal, and the establishment of a vent hole. With regard to the latter, simple reason would suffice for using it; centrifugal force must necessarily drive out the air somewhere. Dr. Solbrig, whose name could not be separated from anything concerning casting in dentistry, had met with the same difficulty with his apparatus and had solved it in a most ingenious way, namely, by coating the wax of the plate with a thin-grained investment and filling up his cylinder with a coarse-grained mass which was supposed to possess sufficient porosity to allow the air to escape. He had tried the same experiment on Dr. Sachs' wheel, but had had regular failures. With the wheel a vent hole was absolutely necessary. With regard to heating the investment, at present there was no apparatus with which the work could be done quickly, but he had a notion that in some near future an electric furnace might come in handy, and should feel greatly obliged to the man who would invent such a one to do the heating in less time. One objection was that help was needed to do the work with the wheel, and he thought something might be modified to replace human assistance. It might be possible

to construct the wheel in connection with a dynamo or some clockwork to set it starting. The transfer of the heated cylinder from the furnace to the wheel also might be simplified. One man could hardly place the hot cylinder on the flame, and help was required to hold the wheel in the proper position, unless it was held against something like an open drawer. As for the melting of the gold, it was not difficult to get the gold into a liquid condition, but to keep it sufficiently long so that from the moment the blowpipe was taken off to the time the assistant set the wheel starting it should not get hard, and in that way be prevented from flowing freely forward in the entire form, required some experience. He felt almost guilty to have ventured such slight critical remarks, but they took away nothing from the practical use of the apparatus. Dr. Sachs had given the profession in his wheel a marvelous addition to their clinical outfit, and he could only express to him his personal admiration and thanks, which he was sure would be shared by all the members.

Dr. C. E. Luce:

Asked whether Dr. Sachs had had any experience in casting porcelain teeth on a gold bridge, and if so, how he treated the case.

Dr. W. Mitchell:

Asked whether the speed was the same for a small article, as it seemed to him the speed would be necessarily slower for a large plate than for a comparatively small filling.

Dr. C. H. Abbott:

Thought the apparatus might be simplified if one of the balancing weights was adjusted by a moving screw.

Dr. W. Dunn, of Florence:

Was very much interested in the apparatus because he had been using the centrifugal system in his laboratory for some little time, with a different apparatus. A friend of his had told him there was no need to bother with a complicated apparatus for centrifugal force, as the casting ring and apparatus could be swung freely round by an assistant. It had been found that that answered in every way. The thing was slung on the end of a wooden rail 5 feet long, held by the assistant, and swung round as fast as possible for a second or two, and that was quite sufficient, especially for large pieces. In that way they had been able to cast porcelain and gold, and the larger the quantity of gold, the better it answered. It had also allowed of a piece being joined and soldering had almost been completely done

away with. He merely made those few remarks to endorse the system that Professor Sachs had invented.

PROFESSOR SACHS (in reply):

Said that Dr. Luce had asked for experience in casting porcelain teeth direct with a bridge or a plate, but it should be recollected that when one tried to cast a porcelain tooth one must not be surprised if the tooth cracked. There was a certain security in not covering the hottest wax on the labial surface of the tooth nor on the cutting edge, and have the tooth as free as possible. When the gold came on both sides it would contract faster than the tooth itself and would crack the tooth. His own method of putting porcelain teeth into a bridge was as follows: He took a tooth with long pins; bent the pins a little to a ring, and covered with a small portion of stents material. He modeled the bridge just as if he intended to cast it with the stents, but before investing the piece he withdrew the tooth, cast the bridge, and in the bridge there was a hole the shape of the stents on the pins. The pins were then taken off and the tooth fastened in with cement, and it would very rarely come off. He had only had one case in two years where the tooth went off, and it was his own fault for not having made it more correctly so that it would not drop out. Another method was to leave the pins standing and model the bridge without the tooth and put in a piece of graphite such as was used in a pencil. Then the piece was cast and the graphite drilled out, the pins roughened, and the tooth fastened with cement. It stuck so tight that it could not get out. With regard to speed, he used the same force for a small inlay or a large plate. Certainly with a heavy casting ring hanging on the wheel the speed would not be quite so fast as with a small ring, but the same strong turn was given to the wheel to drive the gold into the form. He did not think there was any disadvantage in using the same force for small inlays and for large plates. With regard to the weights, the screws might be better, but there were several little things that had to be improved. It was a very good idea to have a thread to move the weight until it balanced the whole wheel. With regard to the hand apparatus mentioned by Dr. Dunn, that was invented by Dr. Barley, and it was that which gave him the first idea of constructing a wheel. The apparatus, however, was only fit for small inlays and not for large, heavy plates. He had never seen any gold spilt by turning with the hand, but he had always the sensation that it was rather a

dangerous thing. The wheel was more sure and it turned in a perfect circle. Someone had complained that if he used a cone the gold would easily spill out in turning, and he had therefore constructed a small apparatus. He took a cone and put on a half round rubber ring, and put the wax form on the cone, bored the investing material, and in taking out the wooden cone and the rubber ring the shape of the metal plate was kept entirely sure and the metal prevented from spilling out. It always took a certain time to perfect an apparatus, but he had no doubt that only a few little details required consideration.

DISCUSSION OF THE PAPER BY DR. K. M. O. SOLBRIG, OF PARIS, ON "CASTING PLATES UNDER PRESSURE."

Dr. E. Rosenthal, of Brussels:

Asked whether clasp metal used in making plates did not change color in the mouth, because generally it was a low grade gold.

Dr. W. Sachs, of Berlin:

Asked whether clasps were cast directly on to the plate or soldered on afterwards.

Dr. C. E. Luce, of Stuttgart:

Asked what experience the essayist had had in casting gold directly against porcelain.

Dr. L. C. Bryan, of Basel:

Said Dr. Solbrig spoke about regulating the thickness of the plate, but it was really extraordinary to see how thin the plates were, something he had never seen the like of.

Dr. W. S. Davenport, of Paris:

Said they had had the advantage in Paris of seeing the development of Dr. Solbrig's work. Dentists could not begin to work too soon or read Dr. Solbrig's statements too often, because everything he had done up to the present tended to make the whole system absolutely perfect. He had complete control over the thickness of his asbestos disc, and had found that a certain thickness would give a certain amount of steam, just the amount of steam necessary in the work. Three months ago in Paris comparatively few men were doing the work, but at the present time a great many were doing it. Dr. Bert, one of the most important men in the profession; Dr. Hayes, one of the most conservative men in the profession, his brother and

himself, were doing almost nothing in gold plates except by cast work, and they had all found it absolutely ideal. He sincerely hoped reprints of the paper would be made and sent out to the members so that they might read the paper again immediately without waiting for the publication of the proceedings.

DR. SOLBRIG:

In reply, said there were two kinds of clasp metal, and he found one was simply 16 karat gold, and on account of the extra amount of copper was a harder metal. That was not the metal he referred to. The metal he referred to as clasp metal was a platinized gold. It was 17 karat gold, with perhaps 1 karat of platinum, thus making about 18 karats, and was absolutely perfect in its color in the mouth. There was, however, room to improve upon it by using 18 karat gold and adding a certain amount of platinum, which increased the resistancy of the gold. With regard to Dr. Sachs' question, he cast the clasps right to the plate, but for a full upper plate advised soldering the clasp to the plate. With regard to porcelain and gold, he could only repeat what Professor Sachs had said. There were perhaps two reasons for checking porcelain, one the difference of temperature, and the other the difference in the contraction of gold and porcelain. Gold could be cast to porcelain teeth without cracking the teeth if necessary precautions were taken, one of which was to have the porcelain hot enough. One cause of check was hot gold touching porcelain which was not hot enough, and another check would occur around the porcelain when the gold came over the porcelain, when as the gold contracted in a different degree the porcelain must check. That could be overcome by cleanliness and care and only covering one side of the porcelain. With regard to the thinness of the plate, he was surprised that several friends he had spoken to were not acquainted with the preparation of the wax, which could be had in different thicknesses. By using wax the plate was obtained just as it was wanted. The wax was so tenacious that it could be applied without any fear of squeezing or tearing it, and that was absolutely necessary. He did not think he merited the praise given him by Dr. W. Davenport. He had been using cast plates for a year now in daily practice, and they gave absolutely perfect results as to the resistancy and the wearing power and in every respect.

REMARKS AND DISCUSSIONS IN REGARD TO ARTIFICIAL TEETH IN NATURAL ANATOMICAL FORMS.

Dr. W. A. Spring, of Dresden:

Much has been said and written about the unwillingness of manufacturers to furnish the profession with artificial teeth in natural anatomical forms, and so much was said at our last meeting that I then made up my mind to find out if it were really true that we were unable as a profession to secure the forms we desired. To show you how strong the opinion seemed to be at our last meeting that manufacturers were unwilling to furnish the profession with natural anatomical forms I beg to quote from Dr. Bryan, who said: "What the manufacturers said was that there was no market for ideal teeth, and that not one dentist in a thousand would take them. Manufacturers would not make an article of which they could not sell at least 10,000 of the one pattern; in fact, the whole question was a commercial one. If the society would adopt a number of ideal forms and agree to support the manufacturers in purchasing them, or if the society would agree on an ideal and undertake the expense of manufacture, something might be done." While in America last winter I called on the president of a Dental Manufacturing Company and called his attention to the attitude of the profession in the matter. He assured me it was a misunderstanding, and that the firm of which he was president was very much interested in furnishing such forms, and that they had spent a great deal of time and money on the subject. They have, to my knowledge, two practical dentists working on such forms. He said that if we as a society would indicate any form that we believed to be correct they would be very glad to manufacture it. I now come before this society with a statement supported by a letter from Dr. Frantz, the president of the Dentists' Supply Company:

"We have been much interested in your statement that there is a feeling among dentists abroad that manufacturers of artificial teeth are not willing to offer moulds carved in keeping with recent advances in dental knowledge. We are unable to state the attitude of any other manufacturers on this subject, but we wish to assure you that we are deeply interested in the presentation of such moulds, and we have done no small amount of studying along these lines ourselves. In fact, we have spent several thousands of dollars endeavoring to present such moulds to the dental profession.

"The sum of our experience, up to date, has been that those moulds which were agreed upon by certain dentists as very desirable, have been condemned as utterly unfit for use by other dentists, and after an outlay of several thousands of dollars we find ourselves not much further toward the attainment of our object than we were at the beginning.

"We should be very much pleased to co-operate with any representative dental society in the effort to furnish anatomical moulds, provided that we could be certain that moulds so made would be generally acceptable. We authorize you to state that if any society, which represents the views of any large percentage of dentists in any civilized section of the world, will agree upon one or more moulds and submit plaster models for the same, with the certified approval of the society, we should be glad to place them upon the market at as early a date as may be practicable."

I would suggest that the society, which has certainly occupied a very important position and has done a great many things of decided advantage to the profession, should through the president appoint a committee, or everyone here as a committee, to present at our next meeting some moulds, and that we as a society should adopt a mould which shall be suitable. We are not obliged to agree to purchase any; they simply want the approval of a body of men. In that way we should be able to do a real good to the profession.

Dr. J. W. Gale, the President:

Said that perhaps at the business meeting a formal motion might be brought forward, the president to appoint a committee.

Dr. George Northcroft, of London:

Felt he could not let the opportunity pass without saying, as he did in London when the point was brought forward, that since the introduction of the Gritman articulator, which had necessitated the deepening of the sulcus in the masticating surfaces of the teeth, necessitating in the present moulds a great deal of grinding, tooth moulds had been introduced taking into consideration that difficulty and putting the teeth in a more anatomical form. Those teeth were introduced by Mr. Hubert Visick, to whom credit was due because he went to a great deal of trouble in inducing the English manufacturers to put the teeth upon the market. It was undesirable possibly to mention the name of the manufacturer, but at the same time there was such a tooth upon the market and it ought to be known.

Dr. Kirk Davenport:

Thought it was advisable the manufacturer's name should be known.

Dr. George Northcroft:

Said it was always considered that in recommending manufacturers one had an axe to grind and therefore he did not desire to mention the name.

The President:

Thought Dr. Northcroft was quite in order and anyone who wished for the information could speak to Dr. Northcroft privately.

Dr. V. de Tray:

Presented the case of a little girl, fourteen months old, who had the habit of throwing the lower jaw forward, and the four incisors in the lower jaw did not come into place and the lower tooth came forward. There was no possibility of putting in any apparatus, and he took an impression in Stents of the chin and swaged a cap for the patient to wear. In that way he thought to throw the condyles a little in to allow the teeth to come into place. The bones of the head being soft, he was very careful. After a week, as he was afraid of the child lying on the side during the night, he took an impression of the head in a salad bowl and swaged a cap of metal over the head, bringing the force all over the head, and lined the cap with velvet. After four weeks he was very pleased to see that the teeth came in place. The girl had brought the condition about by sucking two fingers, and he had long stockings placed over her arms to prevent the sucking. To assist in regulating he took one stocking off and allowed the child for a few days to suck and that brought the upper teeth a little forward and kept the lower as he required them.

Dr. de Tray showed models of the case before commencement and after completion.

He also showed another case of a lady of thirty-two who had a very large protrusion of the upper incisors. There was pyorrhea of the upper teeth and he could not regulate them. No bicuspids were articulating. The lady had a good deal of stomach trouble and he came to the conclusion to extract the four incisors, being very careful to prevent bleeding. An impression was taken and a plate made with a gold front and a rubber back, throwing the jaw in front, and bridges were made. The lower jaw was thrown forward and kept in position by wedges and normal occlusion obtained. Recession of the gum had taken place and it would be necessary to make another

bridge with two Richmond crowns or some inlays. The digestion of the lady had greatly improved and she had gained weight.

THE IOWA STATE DENTAL SOCIETY, 47TH ANNUAL MEETING, DES MOINES, MAY 4 TO 6, 1909.

DISCUSSION OF THE PRESIDENT'S ADDRESS.*

DR. CONZETT:

Mr. Chairman: Before entering upon the discussion of this paper I wish to ask your indulgence just a moment while I ask the convention to rise. (Done.) I cannot enter upon the discussion of this magnificent paper before I first pay a tribute of love and homage to the memory of Dr. C. E. Laird, who passed away last week and was buried Sunday. But once in my life have I ever received such a shock as came to me when I entered the clinic room yesterday morning and a member came to me and asked me if I knew that Dr. Laird had passed away. The shock was so great and the sorrow so intense that it took from me the joy of meeting with the men that I have met with and took from me for the time the pride I had in the officers of this association and in the work which this association has accomplished. My emotions will not allow me to enter upon a eulogy of Dr. Laird. He was a man I loved intensely; a man who was a friend that I had—that you had. He had clasped our souls with hoops of steel and those bands of steel even death cannot break. And while God has taken his body from us his spirit is still with us; his memory will ever be dear to us and his sterling Christian character, his conscientious principles will ever be an inspiration to you and to me. My emotions are almost too great, as I have said, to speak about him at this time but as I, with Dr. Cooke and with my wife, sat in his home yesterday afternoon for an hour and saw the great sorrow which was there and saw the tremendous loss which that home, which that mother and those four little ones, has sustained, and knew of the loss which his profession had sustained, and knew of the loss which you and which I have sustained in our friendship, I cannot refrain, before entering upon the business of this session, from paying this debt of homage and love to his memory and pausing for just a moment as we speak of his character and his life work.

*This address was published in the DENTAL REVIEW, October, 1909, page 953.

Mr. President, before we go any farther I move you, sir, that a committee of three be appointed to adopt suitable resolutions upon the death of Dr. C. E. Laird.

(Seconded by Dr. Pherrin and carried. All seated.)

I am very proud indeed of the Iowa State Dental Society. I have always been proud of it and in the last decade in which I have been associated with the state dental society I have, with but one exception, been proud of the presidents who have been elected and who have sat upon this chair. You of course know of the one exception and of the one president of whom I could not be proud. And of all the pride which I have had in the presidents and the dentists of the state I wish to call attention now to our present president. Dr. Bruner is a man I have admired and loved for a long time; he is a man for whose character and talents I have a very high regard, and I am prouder of him than ever this morning as we have listened to this splendid paper. It is one of the best papers that has ever been given or that I have ever heard presented to the Iowa State Dental Society and I wish to endorse everything that he has said. It would not be possible for me to emphasize all of the points which he has made and it would not be best for me to do so if I could because the rest of you will want to say something upon the subject. But I will touch upon a point here and there and I wish not only to felicitate this association upon its president but the other officers as well and the work they have done because the clinical program and the program of essays that has been presented for our delectation at this meeting has been one of the very best which it is possible for us to have and as we have looked at the clinics and heard some of the papers, and will hear the rest, I am sure that we will be very proud of the men that we have elected to the various offices. The committee on ethics has given us, as the president has stated, a splendid object lesson in the illustrations that have been brought before us of the advertising and methods of ethical men in bringing their profession to the notice of the public. There are many men who have erred in this way and erred through ignorance, and as we look over the display we saw some men whom we know would not have done those things except from ignorance. I do not know why men will be ignorant of ethical principles or why a man should be advertising in the way some men have, but I believe, as those men come and look over the illustrations and

see the display, that they can see very vividly and very quickly the great difference between the ethical man and the non-ethical man. I believe the young men as they come out of the schools and colleges will want to put themselves on the side of the ethical men and will wish to eschew forever the unethical men and their methods. The committee was asked as to whether there was such a thing as ethical advertising. It is a question as to whether that can be. I do not believe that printers' ink can be used at all by an ethical man any more than simply in his stationery. I believe the less we have to do with the public prints the better and this would open up a large field. I was almost going to speak on that but it would open up so large a subject I had better let it alone entirely. So many of us have suffered in that way through the reporters and editors doing things which they ought not to do and saying things that we would not want them to say that I must refrain from speaking of it or it will take up too much time. Your president has spoken of the black plague. That we are all very much interested in, and we should be very much interested in it as a profession because no profession or body of men is exposed to the dangers of the black plague, syphilis, as is the dental profession. One of our chief surgeons in our home city told me the other day that within the past two months he had had six cases of syphilis in which the lesions had taken place upon the lips. Gentlemen, this is a condition of affairs that should not be tolerated in any community. As you know, the medical profession and the dental profession attempted to get through the legislature and have passed a bill during the last session for the regulation of this disease but it was defeated, perhaps because it is almost impossible in the present state of the public mind to bring a bill before the country in such a way that it can be observed but it seems to me that the only way that we can succeed along this line is by educating the public. If the public conscience is once aroused to the importance of this subject then I know no legislature, no congress, will dare to prevent the passage of such a bill for the regulation of this disease. When we think of the tremendous importance of it, when we think of the ravages these diseases are causing, not only syphilis but the other diseases as well, and when we think of the children that are being born into this world to suffer throughout their entire lives, and the sins which are visited not only upon the first, but upon the third and fourth generations, and the results of these sins and short-

comings which those children must go through life with, gentlemen, it is our duty as humanitarians, if not our duty as dentists, to do all we can to wipe out this perilous scourge from the earth. Our good president said some very nice things about the state board and I think perhaps I may be able to say something upon that subject without egotism inasmuch as I a the youngest member of the state board and do not expect to remain upon the board but a very few months. I believe it will be pardoned if I say something about the splendid work which has been accomplished by the state board in the past and warn the dental profession that unless they look to their own interests it may be possible that the state board may be done away with by the legislature. We must not allow such a thing to come to pass. The best attainments of the dental profession in the state of Iowa and throughout the United States have been accomplished by the passage of sanitary laws and those laws have been brought about very largely by the coöperation of the dentists and carried out by the state board. The high standard which has been attained by the dental profession in the state of Iowa has been very largely attained by the splendid work which the State Board of Dental Examiners has done. These men have worked early and late for the good of the dental profession. The compensation has been very meager, and not at all commensurate with the work they have had to do, and I have not done any of it, so that I can speak of these things as I said before, without egotism. Our secretary and the president and the members of the board have worked assiduously for the advancement of our interests—your interests and my interests. They have done this without pay, or pay so meager that it has been practically nothing. The state legislature has taken the money which rightfully belonged to the board and diverted it to other channels, so that $1,000 has been taken away from the board. The State Board of Dental Examiners of this state has always been self supporting and always will be if the legislature will let it alone. Now I do not think it will be possible to have that $1,000 returned. In our meeting of the state board yesterday it seemed that that would not be possible of accomplishment, but we should make some expression and lay it upon the hearts and upon the minds of the legislators in our immediate vicinity that if they do not wish to incur our severe displeasure they will keep their hands off of the state board as far as the funds are concerned because, you may know it or not, there has been great

danger in the past year of the abolishment of the State Board of Dental Examiners. Gentlemen, I believe that that would be a dreadful calamity to the dental profession of the state of Iowa because if the powers which are now vested in the State Board of Dental Examiners were vested in some general board that did not have the special interests of the dental profession at heart I do not believe that it would be able to accomplish or maintain that high standard which we have maintained in the past. And so, Mr. President and gentlemen of the association, I wish to lay this upon your hearts this morning that you in this association, at this meeting, take action in endorsing the work which the State Board of Dental Examiners has done in the past and in laying upon the hearts and minds of your legislators the fact that we, as dentists, insist that the State Board of Dental Examiners shall be maintained as in the past. Our president spoke of the army and navy bill which came before our national congress and it is your duty and my duty to do all we can for the adoption of that bill, and the committee which has that in charge has from time to time sent to the members of the dental profession throughout the country resolutions asking you to see your congressmen and see that the bill is properly taken care of in congress. I believe that is a matter of great importance to us and great importance to the profession in general. He also spoke of the National Dental Association going to the West. I am very, very glad that they are recognizing the West. I am glad it is going to Denver, and as we go to Denver we shall have our old friend Brownley there to greet us. One of the great sad things that has come to me was the death of Dr. Laird, and while I was bowed down with that I went over and saw this tall sycamore standing there that we have loved so much in the past, and as I clasped Brownley's hand, as I had not done for nine years, and looked into those old eyes, my heart overflowed with joy. We will see Brownley there. I tell you fellows I am mighty glad to see him back and we all are. As he went from us nine years ago we were all very sorry and very much afraid we might not see him again and my heart is rejoiced as ours have all been to have our old friend Brownley with us again. We are glad not only that the convention goes to Denver but we are mighty proud of the fact that as it has come west it has given us a western president. Burton Lee Thorpe has been a name that we have all loved in the past, and been proud of, and I am mighty proud of the fact that the first president west of the

Missouri river—I believe that is right—is our dear old friend Burton Lee Thorpe, and I am proud of the fact that he is with us today. (Applause.) The National Association in its campaign of education has given us a booklet on the care of the teeth and that is just one of the things along the line of education that he has spoken of. Gentlemen, if we enlighten the public concerning our profession, if we enlighten the public concerning the diseases of the body, then those diseases can be prevented in that way better than in any other way. We can—I was going to say cure disease—but we can prevent it by disseminating a knowledge of the causes of those diseases. As you know I have been very much interested in prophylaxis in the past and I am more interested in it today than I have ever been in the past, because it means not only the prevention of disease of the teeth and the oral cavity but prophylaxis as well comprehends the prevention of the diseases of the body because as we understand bacteriology and the conditions of the mouth we know that the oral cavity is the ideal culture medium for the cultivation of all forms of bacteria and we will have tuberculosis, diphtheria and all of the various pathological organisms cultivated in the oral cavity and when they are allowed to pass down to the body if there is a lack of resistance, these organisms are especially prepared to invade the host, and we have the various diseases which the human body is heir to. I believe that it would lessen general disease if the oral cavity is kept in a clean healthy condition. We will have less diseases of childhood and manhood if the oral cavity is kept clean. Cleanliness is said to be next to Godliness, and cleanliness is certainly next to healthiness. We cannot have a healthy body unless it is a clean body, or a healthy mouth unless it is a clean mouth, and as we educate the public along those lines we will have very largely served them and in part at least solved the problem of the prevention of communicable disease. The very best place we can bring that to bear is in the public school. I know we have not yet attained to the point where there is no professional jealousy, so that it is almost impossible to go before your own communities in your public schools, though that has been done. I have upon one or two occasions been called upon in our home city to do that work and I shall be very glad if others would. But I believe, Mr. President, that we can accomplish a very much larger work if there were appointed by this state society several men who might be called into various communities to deliver popular lectures upon this sub-

jeet, not only before the schools, not only before the various educational societies, but before the mothers' clubs and before general meetings, and have a lecture in the evening, perhaps with a stereoptieon, calling the attention of the public to the neecssity of the eare of the teeth. This subjeet is so large that I eannot amplify it as I should. I simply leave the subjeet, eongratulating your president and this soeiety upon the splendid message whieh our president has given us. (Applause.)

Dr. T. F. Cooke:

I knew that there would not be anything left for me to say when Dr. Conzett got through and that is the reason why I aeeepted the invitation to diseuss this paper. I know we are all in the condition of that newsboy at the feast who, when pressed to eat farther, said that he "might be able to chaw some more but he eouldn't swaller no more." (Applause.) We will go away, I am sure, from this meeting with a very exalted feeling. We have heard ourselves patted on the baek and we have patted ourselves on the baek until we think that as members of the Iowa State Dental Soeiety and members of the dental profession we are pretty nearly the whole thing. It reminds me a little of the small boy who was in a home where the conversation had turned to his smart sayings and his smart doings, and he was very much interested in what was being said. When the conversation finally ehanged to other lines that were not interesting to him he turned to his mother and said, "Please talk about me some more." We have been told how great the profession is and what a wonderful soeiety the Iowa State Dental Soeiety is, until we have come to believe it. I was very mueh interested last night, if you will pardon this digression, in the leeture that we heard from this platform. Our attention was ealled to the faet that dentists in the past, the pioneer men and the men to whom we look up in a measure, those who have just passed out of our sight, were men who aecomplished things in their time in other lines besides dentistry, men who were broad enough so that they reached out in their thought and in their affections and aetions and took in a broader and larger field than simply the oecupation of our profession. I am always glad when I hear or know of a dentist whose influenee in his eommunity and in his state reaehes out beyond the confines of filling teeth and plugging up holes and things like that, as good as that is, and reaehes into other fields and other spheres and other phases of influence for better things and

secs things from some other standpoint. I wish—and I have said it before, perhaps here at other times—that as a profession we might grasp our true, our rightful place as men who in our own communities, as least, ought to take somewhat of a leading place, might take it in the right direction and have our influence going out to those about us in such a way that we would stamp our impress upon the community in which we live as men who feared God and hated sin and wanted to see everything right and first things put first. (Applause.) I want to say that much now. So far as discussing the paper that has just been given to us is concerned, really I am not in a position to say very much about it. I was glad to know that this matter of the state board was brought in. I do not know much about state board affairs. I think I realize that the State Board of Dental Examiners is an important feature, and stands—as a safety contrivance if you will—between the profession and the laity, and I believe that the State Board of Dental Examiners ought to be upheld in everything that they are trying to do for the betterment of conditions, and I believe that if this condition exists as the president has given it to us, so far as the legislature is concerned, then this society, if there is anything that can be done, ought to take some action to try and conserve our rights as a dental profession and to place ourselves in the right attitude before the legislators in our state. The matter of ethical advertising is one that has previously been a hobby with me —that is of ethics. I do not believe much in ethical advertising and I did not get in yesterday to see the exhibit that the chairman of the ethics committee has on the wall. However, I saw the one last year and I know its purport. I shall be glad when all our men shall feel that the Golden Rule, doing unto others as we would that others should do unto us, is the thing that prompts us in all advertising work. I wish we might have a dentist on the reportorial staff of some of the newspapers here in Des Moines at our next meeting. If so the advertising we would get there would be a little more ethical. (Applause.)

DR. MONFORT:

Any thing that relates to the state board I am very much interested in. I served a while on the state board and I know what they have to contend with, and I think they have accomplished a great deal. It is news to me that there was any danger that the state board might be abolished. I do not believe the people of Iowa want to

make money off of the dentists. It seems that they have been making some, however. I do not believe that the legislature will appropriate this money that the dentists paid in for their licenses if you and I do our duty and see to it that they understand the matter. We can control that at the next legislature if we individually do what we ought to do and what I promised to do, and did not. I promised Dr. Brower that I would write to some of the members of the last legislature in regard to this matter and forgot it. But when the next legislature is elected, if every dentist in this state will take that matter up with their representative and senator, it will be accomplished. They won't dare go back on us. I am interested in everything that has to do with the education of the public. I thought, as Dr. Conzett was speaking when he quoted what Dr. Thorpe said last night, I thought if the Iowa State Dental Society would buy a lot of mouth mirrors and distribute them among the physicians it might be a good thing. In regard to this little book that the National Association has published, I am glad that there are some copies here. I would suggest that someone be appointed—the secretary I guess, he hasn't anything else to do—who would take orders for these pamphlets and send in the order from Des Moines. I believe he would get several thousand copies.

Dr. De Ford:

Mr. President: I think it is not well understood how near we came last winter to losing our dental law and the reason we have a law today on the statute book is simply because the time for adjournment arrived before the legislature had an opportunity to deprive us of our law. The legislature this year did some very peculiar things and among others they had it in for us. They paid their respects to the medical profession and robbed them of everything pretty nearly that was sacred to them in this state, and we escaped simply by the statute of limitations—the legislature adjourned before it had a chance to hit us. I had a talk with Governor Carroll and he stated to me his intention in regard to this matter and what he wished, and what he proposed, and that was this: That a commission be appointed and it will be the function of that commission to govern the state board of health, the osteopaths, the veterinary surgeons, pharmacists, physicians—indeed, there are seven of these divisions, and we are one of them—three men to have this work in charge. This commission was to be made up of business men, not

physicians or dentists, but this commission was to appoint somebody to conduct the examinations at the dental colleges—that is, do the state board work. The compensation to be $6.00 a day. We would have no state board of examiners at all, the board to be discontinued. I went over to the House of Representatives and talked with Representative Jewett. He showed me the bill he had prepared, and it was even more drastic than the one Governor Carroll mentioned. I talked to him something like an hour in regard to the bill he was in favor of, and I think they will push it through next session. I am afraid they will unless every man in this state does his duty. If such a bill should pass we will sever our connection with the National Association of Dental Examiners and have no recognition anywhere, because you know three business men could not meet with the National Association of Dental Examiners. A man appointed by that commission would be of no importance there or permitted to sit with that body. That was the condition of matters here in Iowa last winter in regard to dental legislation. Everything was to be cast aside and everything was to be thrown out.

VOICE:

Will you let me ask you a question, Doctor?

DR. DE FORD:

Yes, sir.

VOICE:

What did the governor and Mr. Jewett propose as benefits to be derived from this commission plan? What was their argument in favor of it?

DR. DE FORD:

It was a matter of saving money to the state. The pharmacy commission handles several thousand dollars a year, something like thirty thousand. The medical examiners handle a large sum also, and by having a commission of this kind three of those men were to be paid six or seven thousand dollars to do the work of the present boards. This did not save anything to the state, because these men get their fees of course from the men who take the examinations in these various departments. But that was the argument that was used and that was their intention and the only thing that saved it was simply because they did not get to it. Now you want to look after this matter next year. See the members of the legislature, the representatives and senators, and see that the men stand right be-

fore they eome to Des Moines. You see what a bad thing it would be if these three business men seleeted three dentists to eonduet these examinations. The worst quaek in the state of Iowa might be appointed.

DR. CONZETT:

Wouldn't it be best to leave it in the hands of the legislative eommittee? Nothing would be done if left in the hands of the whole profession.

DR. DE FORD:

Well, the legislative eommittee could not leave their homes last winter. I spent a great deal of time at the legislature simply beeause I live here. Dr. Pherrin eame down from his home in regard to the matter of exempting dentists from jury duty and the bill passed the house before he left town. Two days after he got home it passed the senate and it became a law very promptly. The legislative eommittee eould look after that, but it is a pretty diffieult thing; it is hard even for a man that lives here.

DR. CONZETT:

The point I desired to make was this: If we plaeed this matter simply in the hands of the profession of the state, nothing at all would be aceomplished. But if it is plaeed definitely in the hands of one committee and that eommittee looks after it and jaeks us up occasionally and reminds us at the time of our danger it will be aceomplished all right. But if we in this way plaee it in the hands of the profession it will go by default.

DR. DE FORD:

Well, there has been a standing eommittee for years to do that very kind of work.

DR. CONZETT:

That is why I suggested plaeing it in their hands, with speeial instruetions.

DR. MONFORT:

I think I had something to do with getting this bill in regard to exemption of jury duty through. I think you received some letters from me, and the senator that introdueed the bill was from my distriet, and I was instrumental in getting him to introduee that bill, and put it through.

DR. DE FORD:

I know you did those things. Dr. Monfort eould not eome

down here and stay two or three weeks without compensation and the people in his office needing him. This state society is big enough and rich enough to make an appropriation so that one or two men could come here when necessary and stay a few days and feel that they are not working at financial loss. You ought not to expect any man to come and stay a week or two at a time and you cannot do it in any other way than by being right here. They tell you, "This bill comes up tomorrow at 4 o'clock." I have been there several times and they didn't get to the bill, and they say, "We will telephone you when it is considered again." You go to the capitol day after day and they say, "We cannot get to it." Dr. Monfort has done all he could do at long range, and so have these other men, but they could not do work with the legislature by being at home and doing it by letter.

Dr. Monfort:

I just want to say that I instructed Mr. Allen at any time that I was needed he was to call me by telephone or telegraph, and he did not see any necessity of it.

Dr. Pherrin:

This matter of handling our legislature is something that reminds me of the little boy's explanation about an elephant—that it had a tail on both ends—and the only difference is we have got to have a head on both ends. We have got to have a head at home for these representatives, and we must have a head here where the work is going on. Now I feel that I have been given credit for something I am not justly entitled to. I am a tail-ender on this legislative committee, being appointed to fill a vacancy. The matter really, I believe, should have been left in the hands of the legislative committee at the time. It is true that we must use our influence at home, and the best time to use it is before election. Give the candidate to understand that if he does not live up to his pledge, if you can get a pledge from him, off comes his head the next time. Say, "If you can't do it, we will let somebody else do it." We have two representatives in Linn county. If all the dentists in Linn county went to these representatives they would be completely disguested and they would knock the heads off the state board in a minute. Select some man that can interest these men; don't bore them to death, but let some man go in there that has a winning way—like myself or somebody else—and meet them, but don't disgust them—that is a thing that

will tire our legislators quicker than anything else—state your case candidly and squarely and there rest your case, and you are better off than if you keep continually bothering them a little here and a little there and every few days. We have to progress slowly in those matters. I wish to compliment the president while I am upon my feet upon his excellent paper. I did not hear quite all of it, but since the discussion has come up I have heard the ideas and I wish to compliment him highly on his theories and ideas in regard to the education of the public particularly and there are some things in regard to the stamping out of the black plague that can be done right in our own communities. If you have the confidence of the state board of health you can do things that seem otherwise almost impossible. In a little country town like that in which I live you do not see as much of this terrible malady as you do in the larger, more crowded cities, but occasionally you do find these cases. More often they originate in those wholly innocent, but a case came under my notice a short time ago, within the last two or three months. A young man of the town became infected with syphilis, and at the time he was a waiter in a restaurant. He met me one day on the street and asked me if I know anything about chancre sores. I told him possibly I did and examined him and found mucous patches there and other lesions of syphilis. Those canker sores had not hurt him at all. The next day I met him again on the street and I asked him what he had done about it. He said, "Nothing." I took him right over to his physician, who happened to be the physician of the local board of health, and he put him under specific treatment. He asked the young man what he was employed at at the time. He told him he was a painter by trade. At that time he was working in a restaurant, but he said he was a painter and did not tell the physician that he was a waiter in a restaurant. I passed this restaurant every day and I saw him at work there. I spoke to the physician in regard to it, and it was brought before the board of health and he was compelled to leave that restaurant. They told him if he did not do it they would proceed openly and above board. Those things can be brought about. I believe that that has lessened the liability of contracting that terrible disease to quite an extent in that community. Now, that is only one instance, but I think we can work along those lines and accomplish a great deal of good if it cannot be done according to law. I wish to again compliment the president on his valuable address.

Dr. West:

It seems to me we are all of one mind here. Our legislative committee has done all it could and accomplished a great deal, but from the statement of Dr. Monfort here it seems that we need somebody to watch these legislators. In these days of freakish legislation they are apt to do anything over night. Dr. Monfort did not know that we were in any danger whatever of having this law passed which would have done away with our board of examiners, and I think Dr. De Ford is right when he says we need somebody that would be compensated in some way that would be sufficient to induce him to devote some of his time to looking after these legislators when they are in session, not so much for what we know is coming, but to prevent what may come. This law might have been passed and the legislative committee not know anything about it. Dr. Monfort says he did not know anything about it and he is a very active member of that committee. He is a good man for the place when he knows trouble is coming, but it is to prevent trouble that we don't know of that Dr. De Ford's remarks had reference to.

Dr. Culp:

I have had some experience in politics, but it has been my experience that a man is always more amenable to the will of his constituents before the primary, and I think if you go back to the primary and take care of the primary that the election and the law such as you want will take care of itself. Some of the gentlemen have brought up the question that they must not bore the legislator by too many letters. That may be at the time when the legislature is in session, but I have yet to see the first man who was running before the public at a primary who was ever burdened by having too many people talk to him at that time. Then is the time when he is amenable, if ever, and then is the time when the state society or the dentists ought to talk to their different candidates, so that the man who is nominated is a man favorable to such measures as the dentist wants adopted. This is done in other lines of business and in other societies. The creamery society of this state got such measures through as they wanted largely by just adopting that plan, and I see no reason why the dentists could not do it in the case of their measures. I think the time to talk to the candidate is before the primary in June.

DR. BAKER:

I believe the time this legislative committee was appointed we had one man in Des Moines who was supposed to keep watch of all those things and inform those who were farther away.

DR. DE FORD:

Dr. Entrikin is that member, and I want to say for Dr. Entrikin that he has done that work for four or five years, and Dr. Entrikin has lost very much financially by doing that work. He is tired of it—and he thinks that there ought to be a change in the committee. You men don't seem to realize how much time this takes, shutting up your office to attend hearings and having them put you off; and still you have got to be there, because if you don't get a hearing when they get ready you don't get a hearing at all. Dr. Entrikin did all he could. He did not this winter and he explained why he could not. He told the other members of the committee he could not and would not and it was so understood. I will say for Dr. Entrikin that he has worked faithfully for several years.

DR. BAKER:

I think it is necessary that you get a local man on that committee. This is what we need, and if necessary we may need to pay that man something, but that seems to be the whole gist of the discussion here today, that we need a man to watch those things, and that man will have to be here in contact with the legislature, so that if Dr. Entrikin is through working on that committee we ought to have had his resignation and had a new man appointed.

DR. POSTON:

I enjoyed the president's address very much. The feature of the education of the public is one I think we ought to take more interest in. This legislative proposition is good, but we do not want to neglect that other resolution offered for our adoption, with one exception. I do not see why he limited it to cities of 5,000 and over. It should come down to the smaller cities. With that exception I would be very much in favor of this society taking action at this time and adopting that resolution.

DR. PHERRIN:

Excuse me for speaking on this a second time. It has been my idea all the while not to send a professional man here—that is, a dentist—but maintain a lobby here with a good lawyer, a man to watch those things and notify us and call upon us at any time as he would wish. Pay him for it. You could not pay a dentist for it.

If he comes down here and loses a month's work it is impossible for the society to compensate that man for his time and trouble and he may never—no matter how much you see fit to pay him—regain what he has lost, particularly if he has competition in his own town, because he is losing some of his best patients there in that time. I would like to hear from Dr. Burton Lee Thorpe in regard to the national law and something along this line.

DR. BAKER:

Mr. President: Let me state right here that that is a good suggestion, but we need the committee and the thing to do is to authorize the committee to employ such a lawyer.

DR. BURTON LEE THORPE:

Mr. President, Ladies and Gentlemen: I enjoyed the address very much indeed, and I agree with you that you made no mistake in electing Dr. Bruner your president. I have also enjoyed the other addresses. I closed my eyes back here and imagined that I was in a Methodist conference; I didn't know that there were so many preachers up here in Iowa. The president told you a number of things I am very much interested in and one of them is the legislation now pending as recommended by the committee on legislation of the National Dental Association. The legislation is now before the Congress and Senate of the United States. At Birmingham the association appointed Dr. De Ford a member of the committee and vice-chairman of the legislative committee. It seems one man in particular is blocking this army and navy legislation in Congress, and that is your member from this district, Congressman Hull, who I am informed was elected last year by a majority of only 29 votes. I take it if the Iowa State Dental Sociey would appoint a committee today and authorize them to either write, or better, to wire Congressman Hull that it was the wish of this association that he use his every influence to promote and pass the Senate and Congress Bills 510 and 1015 that the nearly late defeat that he met with in this community would cause him to interest himself in this bill. I hope some of you men will make a motion here to that effect, that the president appoint a committee of three, and I might suggest along that line that it might be very well to have the congressman's dentist on that committee, because the legislators will listen to their own dentists in preference to anyone else, and I realize, and I think you do, that we as a profession have had very little influence in politics for the simple reason that we have not taken a stand with men who have been candidates

for office. Suppose a man had five to ten patients a day, with whom he talks and impresses with his argument for or against the prospective candidate, he surely would have marked influence and his influence be felt. We have struggled four or five years with this army and navy regulation. The bill was sent me last night. A copy of both bills Dr. De Ford now has, and it seems to me that it is a very satisfactory bill as it now stands. It gives our men the rank of assistant surgeons, first lieutenants and captains, making it possible for the men now on the examining board to be reappointed at the pleasure of the president without any more examinations. That is all we can ask, and let us be thankful for small favors, anyway; take what we can get and later on amend or add to the law as may be necessary. I hope this association will see fit to send such a communication to Congressman Hull. He is the only real stubborn Iowa man that I ever met. The members of the legislative committee have had more trouble with him than any other one man in Congress. I do not know why it is that he cannot see things from the standpoint of the profession. Another thing I desire to refer to briefly is the fact that this, the great section of the West, in July, 1910, has the next meeting of the National Dental Association, at Denver, and I hope this society will go in a body. You ought to send four or five carloads from Iowa. Other western and southern states have promised to do this. I have never seen so much enthusiasm over one meeting. Denver is a most delightful place for a meeting. They have one of the largest auditoriums in the country, the best hotels, some of the best fellows out there I ever met in my life. Dr. Brownlie is, I think, going to follow me, and invite you to be his guests at his home. If he does, go. But I promise you, without any exaggeration, that the next meeting of the National Dental Association is going to be the largest, greatest and best that has ever been held, for the simple reason that it is going to be held in the great West, with western men at the head of it. I have never seen such an enthusiastic lot of men in my life as the Denver fellows. Why, they went back home from Birmingham, and had a meeting of their local society and had not been home more than ten days before they had raised $2,000 amongst their local men for entertainment. They are starting fourteen or fifteen months in advance. They are going to do it on a big scale, and we from the great West must go and show the dental profession just what the West can and will do, and we can do whatever we attempt, I feel confident. (Applause.)

(Dr. Brownlie called for by several.)

DR. BROWNLIE:

Mr. President and Members of the Iowa Society: Of course this is a discussion of Dr. Bruner's paper, and I must mention that first. I have enjoyed Dr. Bruner's paper just like I always enjoy everything he does, especially when he comes to see me in Denver. I have had that pleasure a couple of times. I must say that yesterday and today are very happy days for me. It is nine years since I last met with you at Dubuque. I have been away a long time, but when the Iowa State Dental Society is in session my thoughts and my heart are always with you. I have had the pleasure of seeing a great many of you at different times in Denver, and I want you all to feel that the latch string is always out to a member of the Iowa State Dental Society. One of the very happiest times of my life was when I was in Albuquerque, N. M., and received a message from Dr. Clack saying that the Iowa State Dental Society had voted to leave my name on the membership list. The Iowa Society is one of the best societies in the country, and Dr. Thorpe once said to me: "Why, I can pick twelve operators in the Iowa Society and send them any place in the world, put them up against any society." Maybe you think that did not make me feel proud of the old Iowa Society, and to think that I had been a member of the society and was still retained on the rolls. The meeting in Denver, July 19, 1910, is going to be the grandest and best meeting the National Association has ever had. (Applause.) I got a telegram from Birmingham the day that the National Association selected Denver as the meeting place that said: "Denver selected unanimously. Burton Lee Thorpe, President." And of all the enthusiasm that created both as to the selection of Denver and of Burton Lee Thorpe as president! Dr. Thorpe was out there two years ago and made a hit with everybody. Sunday the committee got home from Birmingham, Monday afternoon they had a meeting at the Auditorium, and chairmen of all the committees were appointed. In fact, I believe they had made arrangements for the chairmen before they left Birmingham, but when they got home the committee was gathered together at the Auditorium and plans were made immediately to prepare for the meeting one year and three months away. I shall not go back on what Dr. Thorpe said. If it is necessary to get you all out there we will keep you at my house if I have to rent the whole apartment and put beds on the roof. (Applause.) I want you all to come. There ought to be 200

men from Iowa at the Denver meeting, and if you will come out there we will show you the time of your lives. Nothing will be left undone to make it a great meeting.

DR. DE FORD:

Mr. President: May I say another word now? As I understand it we are pretty nearly in the same fix in national society affairs as we were last winter in the state society affairs and it is necessary to do something very promptly. Dr. Thorpe suggested that a telegram be sent from this body in session to Congressman Hull. I will say this—that I saw letters at Birmingham in March over the signature of Ex-President Roosevelt showing that he was in favor of these bills. I know that Speaker Cannon would have entertained the bill in the house. The United States Senate passed the bill and yet Congressman Hull would not report that out of his committee. That is the condition of affairs there and I think it would be well if every dentist who is here in Des Moines, and every other dentist, after he goes home, would write to his congressman and have his congressman go and see Hull. Every man in this district especially should write to Congressman Hull and ask him to do his duty. Dr. Thorpe made one little mistake in regard to Hull. I think, if I was informed right, he won out in the primaries by 29 votes and there are something like 200 dentists in this congressional district. Some of you men in Des Moines know who can influence Congressman Hull. See them and have those men write down to Washington and it will do some good. So, Mr. President, I move you, sir, that the secretary be instructed to telegraph Congressman Hull, asking him to use his influence to have passed this bill which the committee of the National Dental Association is trying to have passed.

PRESIDENT BRUNER:

Mr. Chairman, fellow members of the society. It has given me great pleasure, I assure you, to listen to your remarks on my feeble efforts to present the status of dentistry as it appears to me in Iowa at the present time. I am very grateful indeed that it has been my privilege to stand before you at this time in this capacity. It was suggested to me since coming to this meeting that conditions at this time were favorable for a splendid address from the president. I have feared that I might disappoint my fellow members here today in the preparation that I have made. That I have struck so responsive a chord in the hearts of my fellow members I am very glad I am sure. I had expected that some of the ideas presented in the paper might

meet with some opposition from this society or the profession of the state. Ihave endeavored in my investigation along the line of my pet theme which I have introduced to you today, to interest the medical profession and I have been surprised at the favorable comment at the hand of our brother fraternity. When I first took up the investigation of the subject of dental education in our public schools it occurred to me that it was a very big problem. I had not gone very far in my consideration of the subject until I arrived at the conclusion that we must, if anything were to be accomplished at all, join hands with the medical profession. Therein we might be able to accomplish something for ourselves and for this great state of Iowa, that we might not ever hope to accomplish in any other way. The response that I had from the president of the Medical Society of Iowa and also from the Hahnemann Medical Association of Iowa were so favorable and the encouragement so great that I was induced to take the matter up with some of the local medical men and there I received the same hearty response. I assure you that in presenting this resolution today it is not all to my credit. I owe a great deal to the friends that I have in the medical profession and my earnest desire is that we as dentists may come closer and get nearer to our friends in the medical profession. When we can get closer to them by any means then we can hope to see things accomplished that we of ourselves could not hope to do. The thought has been suggested here —I do not recall by whom—in reference to our state board proposition, that the place for action is before the primary election. We have had proof of that presented to us by various members who have taken part in the discussion and it seems to me that therein lies the secret of our success in maintaining our present dental laws in the future. This society should go on record in some way—I know not how it should be done—as being opposed, first, last and all the time, to any material change as has been suggested by our state legislature. In conversation with the secretary of the state dairy association some thoughts were presented to me that were of great value along this line. He said to me, "There is one thing that must be done if you would accomplish anything. I have learned long since that if things are to be done some one, two or three, perhaps, individuals have got to put their heart and soul into the work, even at a personal sacrifice." The splendid results attained by the dairy association were due probably to the interest and the sacrifice of two individuals. They secured at the hand of the legislature an appropriation of $10,000 to carry

on their work. And before this was accomplished they had a pledge of $1,000 to be given as premiums for finding where the best cow was in the state of Iowa. Now then, if the state dairy association can obtain those things from the legislature, it would seem to me that we, as a dental profession, engaged in a humanitarian work, if we got at the condition of things, might accomplish like results for the dental profession. The appointment of a committee to take up the proposition of army dental surgeons, now before our national congress, it seems to me is opportune at this time. As suggested in my address, we have the men right here with us today who can give us the pointers and tell us the how and the why. The work of the National Dental Association has been spoken of and its splendid prospects. It has been on my heart that we might send at least a hundred delegates to the Denver convention, and I am sure with the invitation that we have just received from our good friend and honorary member of this society, Dr. Brownlie, we will all want to go. May we not at least send two or three hundred delegates to that convention? Now to return to my pet theme, the one that deals with "The People's Disease." How shall we control it? As suggested in my paper and has been spoken of heretofore by Dr. Thorpe and others, the national society made a great stride indeed when they placed before us this booklet entitled "The Mouth and the Teeth." We cannot use too many of them. I hope every member of this society will provide himself with at least one copy before leaving this convention. We have plenty of them here to supply every member, I think, in attendance upon this convention with several of them. The suggestion that this society be authorized to procure several thousands of them is not out of order it would seem to me. If these booklets were distributed among our school children, in the homes, in every place where we could expect an audience or hope that they might be read, I assure you that it would not be long before an interest such as we have never known in the state of Iowa or in these United States would be aroused in the minds of the laity along this line and we could hope for the accomplishment of better things in the future for our profession, for the medical profession, for the people of this entire country than we have ever seen, or may have dreamed of. Again thanking you for your hearty discussion of my paper and approval of the points presented in it and expressing to you my grateful appreciation of your comments, I close this discussion. (Applause.)

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL.

THE FUTURE OF THE NATIONAL DENTAL ASSOCIATION.

There seems to be an honest effort on the part of representative men from one end of the country to the other to devise some plan whereby the Association shall represent more completely than it has in the past the great body of the profession who are interested in society work. There never was a time in the history of the profession when the society spirit was so dominant as it is today. Nearly all the State and local organizations are increasing rapidly in membership and in activity, and we believe there is a larger percentage of the entire profession identified with dental societies today than ever before in the history of dentistry. In view of this it would seem desirable to enlist the interest of a larger number on behalf of the National Association. We believe this can and will be done, though we have no panacea to offer for all the ills which seem to have been attached to the National as it has existed in recent years. Some of these difficulties may be attributable to the present plan of organization, as has so frequently been charged, but we venture to suggest that there are difficulties not of this nature which have seriously handicapped the Association through no fault of the management or of the men who have conducted its affairs. We refer particularly to the great distances in this country, and the difficulties in the way of assembling a large and representative gathering every year to take part in the meetings. We believe that the men in charge of its affairs have worked faithfully to make the Association a success, and we deplore some of the criticism which has been meted out to them. They probably have made mistakes, but the character of

some of the criticism has been such as to foster animosity and breed discord. This, above all things, should be avoided if we are to have a united profession working to the common good—meaning in this instance the biggest, best and most enthusiastic organization which has ever existed in the profession.

Our present plea is for a more deliberate and calm consideration of the question from all points of view on the part of all concerned, eliminating the element of personal ambition, and suppressing harsh criticism which is always calculated to do more harm than good. Let everyone interested in the National—and every reputable practitioner should be interested in it—unite in an effort to formulate a plan whereby we shall have, with all of our disadvantages as to distances, one of the greatest organizations of its kind in existence.

THE TAGGART CASE.

We give editorial prominence to the following communication because we believe it to be of the most vital interest to a large number of the dental profession. It is a matter which sooner or later must come to an issue, and it is surely worthy the most careful consideration of every man who is using the casting method.

THE NORTHERN ILLINOIS DENTAL SOCIETY AND DR. TAGGART.*

At the banquet of the Northern Illinois Dental Society on Wednesday evening, October 27th, after remarks by Drs. C. E. Bentley, T. W. Brophy and Edmund Noyes about the relations of the dental profession with Dr. Taggart and the debt we all owe to him, a committee, consisting of Drs. Edmund Noyes, T. W. Brophy, E. H. Allen, Jas. W. Cormany, and H. G. Logan, was requested to prepare some statement or expression which may represent the views of the society, and present it for consideration at the afternoon session on Thursday. The committee prepared the following, which was adopted without dissent, and the same committee was reappointed substituting Dr. F. E. Roach for Dr. H. G. Logan.

"Whereas; Dr. Wm. H. Taggart is a charter member of this society, and all of our older men have been frequent witnesses of his explanations and illustrations of many ingenious devices, and

*All dental journals are requested to copy.

methods and tricks of operating, freely given to the profession in our discussions and clinics and WHEREAS; there has never been any serious attempt to deny the moral obligation of the profession to Dr. Taggart for the perfecting and promulgation of the process of casting metallic inlays, crowns and bridges and WHEREAS; if the present apathy of the dental profession continues there may be great danger that financial ruin and bankruptcy to Dr. Taggart may result unless he should be able, out of the proceeds of his practice, to pay the large sum of money expended for the perfecting of the casting process and the manufacture of his machines in excess of any amounts hitherto received from their sale, and would leave him under a crushing sense of the ingratitude and injustice of his professional brethren and the bitter reflection that of all the twenty or thirty thousand who are using the casting process, he is the only one among them all who has not profited financially by its use.

"THEREFORE, RESOLVED; that we earnestly recommend and entreat the members of this society, and of the profession throughout the United States, (all of whom gratefully acknowledge their indebtedness to Dr. Taggart) to support and remunerate him either by buying his machines, or by making a personal settlement with him exactly in the same manner as any of us would make settlement of any other acknowledged debt the exact amount of which had not been determined previously. And we make this recommendation and entreaty for the purpose, and with the hope that the members of this society, and the members of the profession generally, by reason of our initiative and example, may rally so numerously to the financial support of Dr. Taggart as to enable him to meet all of his obligations and have a generous sum for himself. To facilitate the convenience of making such settlements as recommended we suggest that a committee be appointed to ascertain from Dr. Taggart what sum he will accept in settlement of his claims from those who do not wish to buy his machines, and to announce it when these resolutions are published."

The committee held a conference with Dr. Taggart November 10th, all members of the committee being present, and after a pretty full discussion of the subject, received from him the following statement and proposition:

Dr. Edmund Noyes, D. D. S., Chicago, Ills.

Dear Sir—Some days ago you presented me with a copy of the preamble and resolution passed by the Northern Illinois Dental Society October 28th, 1909, and requested me to furnish the profession with the information asked for, that is to say: that I inform your Committee, representing the Dental Society, of the sum I would be willing to accept in settlement of my claims against those who do not care to buy my machines.

You will understand that I am prepared to furnish my machines to any person who cares to buy the same, and I had expected to receive remuneration for my invention in that way. I may say in this connection that I firmly believe my machine is the most suitable for performing the work in question of any machine now before the public, and that intrinsically it is worth all the difference in price between it and other machines, wholly regardless of the question of the royalty being included in the price. There may, however, be those in the profession who do not care to purchase an expensive machine and would feel that the work done by their cheaper machines, which I consider inferior, is satisfactory. I am ready to grant to any person an office-right to use my invention with a single machine during the term of the patents for the sum of $50.00. This will include a complete release for the past damages. You will readily understand, of course, that the law gives me the right to a much higher compensation than this, my attorneys having informed me that the legal measure of damages recoverable in case I am obliged to sue any individual dentist would be the reasonable value of all the time he has saved by the use of the invention; and with a busy dentist, whose time is valuable, this amount would, of course, be far in excess of the modest amount which I have named. I, therefore, in making this offer, could only hold it open for a reasonable time, and would not be bound by it in the case of any dentist whom I may be obliged to sue, for if I am compelled to go to the expense of litigation against any dentist I shall expect to recover not $50.00, but several hundred dollars, for past damages, besides being in a position to settle on my own terms for the future. However, should any considerable number of dentists care to take advantage of this offer, I shall be perfectly willing to accept this kind of a compromise.

This offer, you understand, will remain open only for a reasonable period, because it may become desirable for me to dispose of the

patents to others for a sufficient consideration, and such others would, of course, be persons who view the matter in a purely commercial light,

Your very truly,
Wm. H. Taggart.

The committee are unanimously of the opinion that this proposal by Dr. Taggart is just and reasonable, and moderate in amount, and we earnestly recommend the members of the profession generally to make settlements with Dr. Taggart in accordance with this proposition, or by the purchase of his machine.

Unless some thousands of such settlements are made within a reasonable time there is no hope that the present deplorable situation can be relieved by any voluntary action of the members of the dental profession.

(Signed) Edmund Noyes.
T. W. Brophy.
E. H. Allen.
Jas. W. Cormany.
F. E. Roach.
Committee.

THE EDITOR'S DESK.

DR. GETHRO'S ARTICLES.

Beginning in the January number in this department, Dr. F. W. Gethro of Chicago will give our readers an account of his trip abroad during the past summer. Dr. Gethro shipped his automobile to Genoa and from there toured through Italy, France, Switzerland and Germany. His account of it is wonderfully interesting, and the photographs taken on the trip are among the best we have ever seen. We can promise our readers a rare treat when these articles appear.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

NEW YORK, Nov. 12, 1909.

My Dear Mr. Editor:

Your New York correspondent for many reasons has not been able to keep in touch with the dental world in a regular way for the last year or so, but he feels a reasonable assurance that you may expect to hear from him more regularly this winter.

The various societies of our metropolis have planned very attractive programs for their members. The First District Society announces that Dr. Arthur Black of Chicago will be here in December, and Dr. J. P. Buckley, also of your town, in January. Dr. E. C. Kirk of Philadelphia is to read a paper in February and Dr. George E. Bates of Boston, in March. Sections in eclectic orthodontia are to be continued this winter if the members desire, also a class is organizing in crown and bridge work under the direction of Dr. Fred A. Peeso of Philadelphia and Dr. Ralph Reitz of New York, and Dr. F. T. Van Woert is to have charge of a section in gold and porcelain inlays.

The American circulating dental clinic will be held under the auspices of this society some time during the winter.

The regular meeting of the First District Society occurred on Tuesday evening, Nov. 9, at the Academy of Medicine, as usual.

The president, Dr. J. W. Taylor, was not in the chair. He has been very ill of late and has gone to California, so it is reported, to recuperate. Dr. B. C. Nash, the vice-president, presided in his stead, and after disposing of the regular business introduced that very close and conscientious student, Dr. I. N. Broomell of Philadelphia, who read a paper, rather short, on the "Adventitious Effects of Large Masses of Gold in Contact with Tooth Tissues," which he illustrated with lantern slides. Dr. Broomell went into the matter of the causes of death of pulps, from crowning of teeth in particular, and the pathological changes which occur in vital teeth entirely covered with cap and cement. He said that about a dozen pathological changes in pulps may occur, some of which are hyperaemia, dry gangrene, atrophy, nodules, pathologic pigmentation, caries, secondary dentin, etc.

The slides were excellent and showed quite clearly pathological changes. They were all of teeth that had been vital when the crown attachment was made. The paper seemed to be an argument against the preserving of the pulp in teeth about to be covered with the gold shell for any purpose.

Dr. Van Woert, in opening the discussion, said that it has been his practice for years to devitalize pulps before placing on crowns or even very large fillings. It has been his clinical experience that thermal changes are the greatest cause of trouble. Gutta percha cement alone for attaching crowns he does not consider as acceptable, but gutta-percha on the post or in base of crown and then set with cement is the greatest thing in his practice. Pulps most always die under large cement fillings. He cited as argument against covering of teeth with gold caps that in the days when he did much implanting of teeth, those cases that were held in place with ligatures were successes, but those that were covered with gold bands failures.

Dr. Arthur Swift took decided exception to any such judgment. His experience has been exactly opposite. Rarely does a pulp die under a gold cap, and then he is inclined to think it due to some other cause than the presence of the cement. He has one in his own mouth of 20 years' attachment. Recently it was reattached and he knows it to be vital, and for the past year he has been investigating this very subject in his own practice and feels positive there can be no excuse for general devitalization of pulps. Gutta-percha cement has not been successful.

Dr. J. Leon Williams was also present at this meeting, and when called upon to say a few words of discussion, remarked: "Could anything show us a greater field for original research work? Clinical experience is very much at variance here. I am today very much in the dark as to what causes the devitalization." He has had cases act both ways. In majority of cases devitalizes now where he is to attach extensive bridges.

Dr. Ottolengui thinks that we try to save too many pulps because we feel that we are wrong with our technique in filling pulp canals. We must cease to feel that we must save all pulps. They are not always safe to leave in a tooth. If there is the slightest doubt about the foundation upon which we are to raise our edifice we must eliminate it.

Dr. Swift, in answer to a volley of onslaught after his remarks,

said that the men who have the courage to *save* pulps should be applauded—and the answer came from the majority of those present.

Dentists throughout the country are asked to reserve Saturday evening, January 22, 1910, to attend a dinner to be given to Dr. James Truman, for so many years connected with the dental department of the University of Pennsylvania. The dinner will be at the Waldorf-Astoria hotel.

About 30 members answered a call of the New York and New Jersey vice-presidents of the Interstate Dental Fraternity on October 29, at the Brevoort House, where a dinner was served and paid for out of the funds of the frat. Considering that the invitation read that some matters of vital importance were to be considered and that the bank roll in the treasury made it possible to pay for the dinners of all members in good standing, and that Mr. Horace Fletcher and Dr. J. Leon Williams of London were present, the attendance was a thing to comment on.

Mr. Fletcher spent only a short time in the dining room. He was introduced very soon after the dinner courses began to appear, which, of course, put an end to the feast for the time being. For my part, I would much have preferred listening to him discourse for the rest of the night than to eat, because he had a message for us—something to say—and he held the attention for about twenty minutes.

He expressed himself as much pleased to be with dentists, for he recognized in them the true practitioners of preventive medicine, laboring at the gate of disease. Advisers before the fact of disease.

About Fletcherizing, he told us that to masticate properly meant everything to us physically. After middle life the possibilities of recuperation were beyond belief. In the past six months he has increased his own powers 21 per cent of total strength. Proper mastication will keep the blood streams free from auto-intoxication, was one of the extracts I made from his remarks.

He described the mouth as an air-tight gate over which we have control. There are only about three inches of the alimentary canal so under volition; the rest of it, about 25 feet, we have no control over. We were quite interested by a description he gave of watching the movement of food impregnated with sub-nitrate of bismuth through the alimentary canal in the cat by means of the X-ray. The bismuth obstructs the rays. He said that while the cat was at rest the function

was active, but when she was disturbed digestion first slowed down, and if the disturbance was sufficient function ceased entirely. Taste plays quite an important part, too. When that sense takes place, it telegraphs to the stomach the kind of food to prepare for.

Mr. Fletcher spoke very highly of orthodontia. Nutritive equilibrium was another of his themes. "Don't prescribe anything against which Nature forbids." "Disability is generally an infliction, not an affliction." If Nature has given us the responsibility of mastication or assimilation, she has placed the means for control within our grasp.

Dr. J. L. Williams was also a guest upon this occasion and was called upon by the chairman to speak. It has been generally known that the doctor has been in poor health for some time, but he assures us that he has recovered quite completely again. He believes his present health due to following Fletcher's ideas.

He is with us for a few months' vacation, and we are to have the pleasure of listening to him before one of our societies soon—the Odontological, I think.

Dr. W. W. Walker also was present and in his inimical way told us what Fletcher had done for him. His was an entertaining and encouraging as well as witty speech.

This was the first meeting called in a year, and quite a few seemed to be of the opinion that to disband was the logical thing, but finally that was overruled and it was voted to keep the organization intact subject to a call if at any time there seemed to be need of meeting.

A regular meeting of the Institute of Dental Technique, which is the society made up of the younger generation, took place on the afternoon and evening of October 26.

The afternoons are devoted to clinics and this month several very instructive features were presented. Dr. Charles Ashe of Brooklyn showed a case of raising the bite with cast inlays, and Dr. Martin L. Collins had some very interesting compound castings.

Dr. H. C. Ferris had his outfit, such as he uses in one of the Brooklyn hospitals. He demonstrated his antiseptic method of preparing the mouth for a dental or surgical operation.

In the evening Dr. M. I. Shamberg gave a lecture, using a great number of slides, wherein he described in a general way "Some of the Unusual Lesions of the Mouth."

THE BURROUGHS.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Controlling Hemorrhage in Setting Crowns and Bridges:—In irritated conditions where the gums have a tendency to weep and bleed, treat the gum margin with a 15 per cent solution of Trichloracetic acid. I know of no other astringent that so absolutely controls such a condition in setting crowns and bridges and inlays, and at the same time having such a curative effect.—*J. E. Argue, Red Lake Falls, Minn.*

Septic Finger Conditions:—Do not use a broach upon which cotton is rolled with the fingers. Use Johnson and Johnson's, or Darby's, aceptic absorbent points handled with foil carriers only. An absorbent point cut short enough to enter root canal dry, then covered with a drop of the antiseptic you wish to use, on a pledget of cotton and the cavity sealed with cement will give the best results.—*H. H. Opitz, Chicago.*

Inserting Amalgam:—You cannot make a first-class amalgam filling by taking a packing instrument nearly the size of the cavity, and with one or two pushes fill the cavity. It takes time to put in a good amalgam filling. Take small quantities of the material at a time and use small instruments; and by rotary movements and direct thrusts get the amalgam in complete contact with the walls of the cavity.—*C. P. Pruyn, Chicago.*

Baking Porcelain:—The best results in baking porcelain are obtained by raising the temperature in the furnace in a uniform manner—timing each step until one is reached that will require one and one-half minutes to melt a cylinder of gold—advance the step no further—the cone will commence to change its form in from one minute—in the lowest of the high fusing bodies—to ten minutes—in the *very* highest fusing bodies.—*A. E. Matteson, Chicago.*

Trimming Cervical Margins of Wax Models:—To facilitate trimming of wax at the cervical margin in constructing difficult models for cast gold inlays in mesio-occlusal or disto-occlusal cavities in bicuspids and molars, remove that portion of wax involving the contact point. This allows free use of instruments and strips. When margin is satisfactory a small piece of wax touched with warm instrument will restore sufficient body to carve contact point and adjacent area.—*Elmer S. Best, Minneapolis, Minn.*

Banded Crowns:—Just as soon as we get away from a narrow and well-fitting band which protects the root from decay and fracture, we tread upon dangerous ground. I have had the opportunity of seeing and replacing many crowns, their roots having fractured by being unprotected, and it behooves us to be cautious, although in many cases such crowns have done good service for many years. Yet are we justified in taking these chances?—*Adolph Gropper, Milwaukee, Wis.*

One Cause of Failture in Operative Work:—One cause of many failures in operative work is the fact that the operator has not had the finished work mapped out in his mind before he starts to do it with his fingers. If the dentist has an idea how it is to be done and how it will look, before he commences it, his fingers will respond to the dictates of his brain, and I think all of us should first study the conditions and map out in our minds what we are going to do before we begin.—*Don M. Gallie, Chicago.*

Metal as a Sounding Board in the Mouth:—I believe that vulcanite has a tendency to absorb or not reflect, certain sounds, whereas it is quite otherwise with metal, and of all metals silver is better than any. In fact, in regard to sound silver has the same effect as a bright light has on photographic plates as compared with the light of a dull day. The vocal actinic action, as I may term it, brings out as clear, sharp, crisp notes that will be more or less muffled by vulcanite or any material lacking a fibre or metallic composition.—*W. Mitchell, London, England.*

Make a Correct Diagnosis:—A failure to make a correct diagnosis must be considered as a common cause for many of our failures.

I believe that quite a percentage of our patients who leave our offices with the assurance that they are now in good condition for another six months have decay in places we have failed to discover. How many of us take the time and pains to adjust the dam, apply the separator and force the teeth apart to examine suspicious proximal surfaces in bicuspids and molars? It is of the utmost importance that we discover these decays in their beginnings.—*Fred W. Gethro, Chicago.*

To Prevent Distortion of Matrix Caused by Shrinkage of Porcelain:—Paint the margins of the matrix with quite thick shellac varnish, then build the porcelain over it. The shellac will burn out, leaving a space which may be filled in on the next bake. I always use a lower fusing body or enamel for the last bake on my porcelain inlay or crown, as the fine edges of porcelain that have been fused more than twice are liable to be over-fused in the final baking which accounts for the bubbles along the margins of some inlays.—H. N. *Orr. Chicago.*

Burnishing Instruments:—It used to bother me to understand why, under seemingly the same conditions, that I was able to burnish a pellet of gold to a portion of the filling at one time, and at another time absolutely fail. I learned that it is simply a question of blued instruments or nice new nickeled ones; the nickeled finish being a positive bar to success in this procedure, and it also being necessary from time to time to re-establish this blued finish on the burnisher by simply heating in Bunsen flame until the burnishing surfaces have lost the bright polished appearance and are again blue.—*Frank R. Houston, Green Bay, Wis.*

Selection and Handling of Colors for Porcelain Inlays:—I have abandoned the use of the shade guide, and make use of three colors, white, gray and yellow; very occasionally, brown and blue are needed. These colors all fuse at a given temperature, 2,360°. In cavities not involving the incisal angle, two colors, yellow and white, are all that are needed in 95 per cent of all inlays that are made. The graduations of colors are obtained by sandwiching the yellow between the white layers, the yellow forming the center and the white

the outer surface. The deepness of the color varies with the thickness of the yellow layer.—*F. E. Cheeseman, Chicago.*

Setting Porcelain Inlays.—It has been my custom to set all porcelain inlays with a white cement. There are two reasons for this: The first is, that the effect of the cement is always the same; whereas, if cement of different hues were used, that would not be the case. The second is, that white reflects and does not absorb light. When the cement is thoroughly mixed, the cavity and the etched surface of the filling are coated with it. If the filling is a simple approximal or approximo incisal, it is inserted with the pliers or fingers, then with a piece of tape the force should be applied in such a manner that the filling will be rocked into position.—*Lester F. Bryant, Chicago.*

Avoiding Destruction of Walls in Making an Inlay.—Where there is a cavity with a deep portion of decay beneath the enamel, and it is desirable for many reasons, especially esthetic reasons, to preserve the enamel so that it can not be seen that the tooth has been filled, the operation may be accomplished in two ways, first by cutting it out and then by filling with cement in order to get the proper matrix or impression, or it might be ignored in forming the cavity. If the enamel is made with a slightly flaring line and one utterly disregarded the existence of the decay, then after the inlay had been finished one might cut out the decay and put in an inlay with the certainty that the support of the cement beneath the overhanging wall would be great and render the filling as secure as if that portion had been originally sound.—*N. S. Jenkins, Paris, France.*

Local Treatment of Pyorrhea.—As a remedy for local treatment in advanced cases of pyorrhea alveolaris, a 10 per cent solution of sulphocarbolate of zinc has proven very efficacious in my experience. A solution of this salt should be employed as a daily mouth wash until the discharge of pus has ceased. Before instrumentation to remove the deposits from the effected teeth, I have found that the use of Dr. Head's bifluoride of ammonia is a most gratifying aid in many of these operations.

The proper use of a stiff brush of a suitable size, for the massage

of the gums, is an effective aid to prevent a relapse of the disease as well as to assist in the progress of the treatment. But the massage treatment should in no case be prescribed until the discharge of pus has ceased.—*C. J. Grove, St. Paul, Minn.*

Fees:—I do not think we know the difference well enough between wages and fees. Plumbers, gasfitters and house painters charge by the hour, and they earn wages. Doctors and lawyers make fees, and there are many other things besides the time consumed that may properly be considered in determining the amount of a fee. Physicians, surgeons, and lawyers usually have a standard of fees, which is also usually a sliding scale and varies with the skill required, the difficulties to be overcome, the time consumed, the probable benefit to patient and his wealth or poverty. It is usually conceded that professional men are under greater obligations to do charity work than are mechanics or tradesmen and the duty to "consider the poor" ought to imply the privilege or the right to "consider" also the rich. —*Edmund Noyes, Chicago.*

MEMORANDA.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The twenty-eighth annual session will be held at Denver, Colo., on Monday, August 1, 1910, commencing at 10 a. m. Hotels and railroad rates will be given in a later issue. Charles A. Meeker, D. D. S., Sec'y and Treas., 29 Fulton street, Newark, N. J.

DR. L. P. HASKELL.

Dr. Haskell states that officers of societies frequently ask if he is willing to devote time to society work, giving talks illustrated with models. He writes that he is willing to do this in any reasonable number of cases, asking only that his expenses be defrayed.

A CORRECTION.

To the Editor of THE DENTAL REVIEW:

Dear Sir:—In the October number of your Journal, on page 903, on the fourth line from the bottom, "have" should read *hear*, in order to convey the intended meaning of the paragraph. Yours truly,

London, England. W. MITCHELL.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

The following officers were elected at the annual meeting of the Odontological Society of Chicago, held Tuesday evening, November 2, 1909: President, W. V. B. Ames; vice-president, C. N. Johnson; secretary and treasurer, L. L. Davis; curator, J. H. Wooley; member board of censors, E. A. Royce.

ALUMNI ASSOCIATION, DENTAL DEPARTMENT, MARQUETTE UNIVERSITY.

The fourth annual clinic and manufacturers' and dealers' exhibit of the Alumni Association, Dental Department, Marquette University, will be held in the Milwaukee Auditorium, Milwaukee, Wis., January 18, 19, 1910. Every effort is being made to make this the most successful and interesting meeting of our society. Men of national reputation will give clinics. All ethical practitioners are cordially invited to attend. W. F. Straub, Secretary.

INSTITUTE OF DENTAL PEDAGOGICS.

The seventeenth annual meeting of the Institute of Dental Pedagogics will be held at the King Edward Hotel, Toronto, Canada, December 28, 29 and 30, 1909. The institute is composed of dental teachers of the United States and Canada. An excellent program has been prepared and matters of vital interest in the advancement of dental education are under discussion. Interesting and valuable teaching methods and appliances will be exhibited. Dental teachers, examiners and ethical practitioners, who are interested in the advancement of dental education, are cordially invited. Further particulars can be had from the chairman of the Executive Board, Dr. H. E. Friesell, Dental Department, University of Pittsburgh, Pittsburgh, Pa.

THE G. V. BLACK DENTAL CLUB CLINIC.

It is a pleasure to announce that the program is almost prepared for the annual clinic of the club, which will be held in St. Paul on February 24 and 25, 1910.

The members of the club will make operations on the first day of the clinic, while the second day's operations will be made by the members of other study clubs.

Essays will be read by Drs. Barnes, of Seattle; Chappel, of San Francisco; Friesell, of Pittsburgh; C. N. Johnson, of Chicago, and C. E. Woodbury, of Council Bluffs, Iowa.

Thursday evening Dr. G. V. Black, of Chicago, will deliver a lecture, which will be illustrated.

The profession generally is invited to attend the meeting. The program for the clinic will be published later.

For further information address R. B. Wilson, Secretary, No. 409-10 American National Bank building, St. Paul, Minn.