# THE

# Dental Summary

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# REGULAR CONTRIBUTIONS

## CAVITY PREPARATION AND MANIPULATION OF GOLD FOIL.*

By C. E. Woodbury, D. D. S., Council Bluffs, Iowa.

I feel that some apology is due for appearing before you two consecutive years with papers the texts of which are so nearly alike, and I assure you that it was only the repeated in-

Fig. 1 Fig. 2

sistence of your executive committee which caused me to do so. Therefore, if you have any criticisms to make, address them to your committee and not to me.

The subject, however, is one of vital importance and well worth going over not only twice, but five or six times, and I

*Read before the Nebraska State Dental Society, 1907.

have found myself very much benefited in the reading I have done preliminary to the rewriting of this paper.

### TECHNIC WORK.

To those who are interested in improving their methods of cavity preparation, let me strongly urge upon you the necessity of doing much technic work in your laboratories. This work should be done in freshly extracted teeth and plaster models of teeth. The human teeth you design to use should be cleaned as soon as extracted and dropped into glycerine to which one dram of carbolic acid to the ounce has been added. This will keep the teeth in good condition to work on at your leisure.

The ideas which I am to explain to you this evening are in

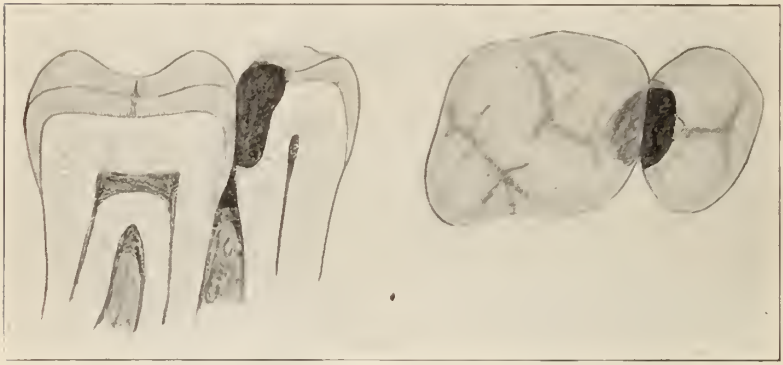


Fig. 3 Fig. 4

no wise original with me, or, in fact, to any one man. They are the accumulated ideas of the best men of the past and present which have been gathered together and systemized by Dr. G. V. Black. He has added to them the results of his own extensive experiments and experiences, and has given them to us for our use. We should all unite to do honor to this great man, who, I believe, has done more for the dental profession than any man who has ever lived. I wish also at this time to give credit to G. V. Black, C. N. Johnson and Wm. Finn, whose writings and drawings I have liberally used in the preparation of this paper. Credit must also be given to E. K. Wedelstaedt, not so much for what he has written, but for what he has done through clinics and demonstrations.

To G. V. Black belongs the honor of originating and sys-

temizing those things which we believe to be correct in regard to the filling of teeth. But without E. K. Wedelstaedt they would never have been known to the profession at large, and to him should be given the credit of literally forcing them upon the reluctant dental profession. I cannot read this paper without doing honor to this great man, who has made the dental profession of the northwest what it is.

### STUDY EACH CASE.

It is necessary to study the conditions and environment of each case that presents itself to you. Ascertain what caused the decay and what is necessary to prevent its recurrence. Learn to differentiate between your cases, some of which will call for much wider extension than others. Study the causes

Fig. 5 Fig. 6 Fig. 7

of decay of the enamel so that you may intelligently combat its ravages. Study your failures and those of others, and see why they fail. We should learn more from failures than successes.

The cavity preparation is only one of several essential things that go to make a successful operation. To properly condense your gold, to properly step your plugger, to trim your fillings to correct form, are a few of the essential things, but there are many others which you must grow into. It is a subject that admits of unlimited study, for which you are well repaid.

It is impossible, in a paper of ordinary length, to give anything more than the essential principles underlying the prepa ration of cavities and outline the technique for ordinary cases. Modifications of these preparations can be applied to all cavities, and once the underlying principles are mastered, they can be adapted to all cases.

## SIX IMPORTANT POINTS.

There are six points to which I wish to call your especial attention:

**First. Restore the tooth or teeth to be operated on to their normal position and occlusion, so that when the filling is made a normal interproximal space and contact point will exist.**

In nearly all cases that present themselves to us, in which the decay has been at all extensive on the proximal surfaces, there has been a dropping together of the crowns of the teeth so that they lean against each other for mutual support. The gum within the interproximal space is obliterated and the peridental membrane often injured by the packing of food and other debris against them. It is not unusual to find the teeth in contact at their gingival thirds instead of at their occlusal thirds. And unless the mesio-distal diameter of the teeth is re-

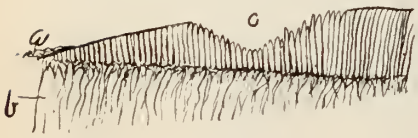



Fig. 8

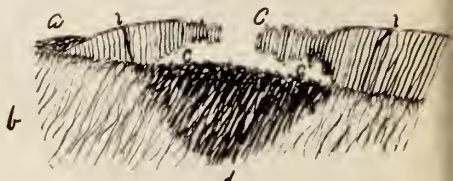



Fig. 9

stored and a proper contact established, the space will be a constant source of annoyance and disease. Fig. 1 shows the loss of space, the teeth being almost in contact at their gingival margins; the gum is crowded out and diseased and the peridental membrane inflamed and sore. Figs. 2, 3 and 4 show faulty fillings. The failure is due to not restoring the teeth to their original size, meso-distally, and not placing proper points of contact. Such fillings are likely to cause decay to recur, not only around the margins of the filling, but in the proximating tooth as well.

Prior to operating, sufficient room should be obtained so that the operation can be made conveniently, and which will permit us to restore the parts to a condition of normality. It does not make very much difference what means are used to obtain room, mechanical separators may be used or the cavities may be packed with cotton, gutta-percha or other substances. It sometimes requires months to regain this lost space, but per-

manent operations and healthy soft tissues can never be brought about and maintained unless this is done.

If the contact point is properly made, as in Figs. 5, 6, 7-26, the gum will fill the interproximal space, and by keeping out foreign matter, protect the peridental membrane from injury and the teeth from recurrence of decay.

**Second. Remove all enamel rods that are not supported by dentin.**

We all know that the strength of the tooth is in the dentin and that the enamel is simply an armor to protect it from wear and decay. This enamel, the hardest structure in the human body, is made up of a system of rods, the ends of which rest upon the dentin, the general direction of this length be-

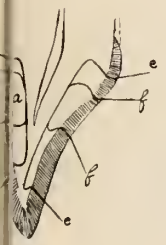



Fig. 10

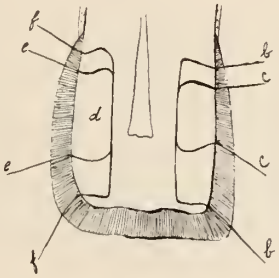



Fig. 11

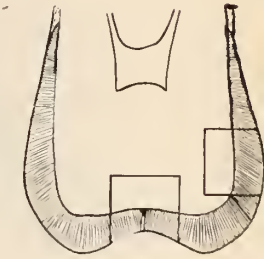


Fig. 12

ing at right angles to it. The rods are the shape of irregular hexagons and are cemented together by a bond which has much less resistance to stress, and slightly less resistance to chemical dissolution than the rods themselves. In fact, primary decay of the enamel begins by the dissolution of this cementing substance. The rods themselves are broken away or fall out, thus allowing an entrance of the micro-organisms of decay to the dentin through the breach thus made, as in Figs. 8 and 9. We find these rods in two conditions, namely, straight rods lying in straight rows, which are easily split apart much like a straight-grained pine stick, and irregular and twisted rods, very hard to cut or split, more like a pine knot. There seems to be a general idea that there is a material difference in the density of enamel of different teeth. This, however, is erroneous, the apparent hardness being due to the interlacing of the enamel rods, making them more difficult to cut with instruments, but

no more resistant to decay. The rods lying in the gingival third of a tooth are almost always in direct line with the short axis of the tooth. In the middle third they decline to the occlusal, and in the occlusal or the incisal thirds they incline quite sharply so that at the summit of the cusps in the molars and bicuspids and the incisal surfaces of the front teeth they are in line with the long axis of the tooth. (Figs. 10, 11, 12). In the molars rounding over the cusp they again diverge until the developmental groove is reached. Thus you will see that a cavo-surface angle in the occlusal or incisal third of any of the axial surfaces would require a much longer bevel than a margin on the occlusal surface or in the gingival third, in order

Fig. 13

Fig. 14

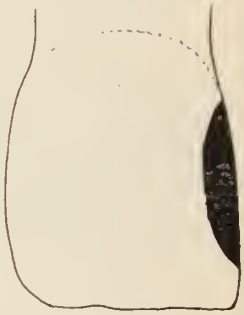


Fig. 15

that no enamel rods will be left with their dentinal ends cut off and short peripheral ends left unsupported. If such short rods are not fractured by the plugger, they are sure to be broken during mastication if they are on an occlusal or incisal surface. It is often necessary, for aesthetic reasons, to leave enamel on the labial surface of the incisors in the middle third, which, under other conditions, would be cut away, the danger of fracture in this location being from the use of the plugger, as no masticatory force can reach it at this point. This enamel should be protected by cement where possible, and great care should be used in the malleting. When the margin approaches very close to the occlusal or incisal end of a tooth, as on a proximal surface, the bevel must be so long as to leave a thin friable edge of the filling material and to contra-indicate its use, necessitating cutting the tooth to a position where the rods assume a more perpendicular character. The mesio-lingual and

disto-lingual ridges in the incisors must be cut away when approached by decay on account of the inclination of the rods at these points. In preparing a cavity, the inclination and depth of the bevel must very largely be determined by the sense of touch, an experienced operator being able to tell by the feel of the enamel under the chisel what its direction and characteristics are. A close study of the arrangement of the enamel rods, their characteristics and the lines of cleavage, will save many fillings that otherwise will be failures.

**Third. Extend gingival margins under the free margin of the gum and all other margins to smooth surfaces in such a position that they will be kept clean by the excursions of food and the action of the lips, cheeks, tongue and tooth-brush.**

This is what is called extension for prevention, and concerning which there is probably more discussion than over any

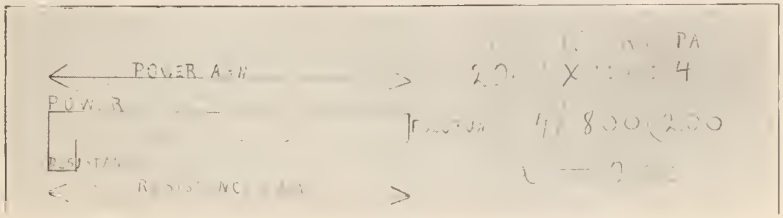


Fig. 16

other subject relating to cavity preparation. Dr. C. N. Johnson very nicely gives the reasons for this extension, which I quote: "Observant operators have noticed that there are certain points around ordinary proximal fillings where decay is most likely to recur. This relates to the labio-gingival, linguo-gingival, and the occlusal and incisal angles. The reasons for this are found in the fact that these regions are not kept clean by the friction of food in mastication, or by the lips or the tongue in their various movements. If the anatomical relation of the proximal surfaces of these teeth is studied, it will be seen that a considerable area in the vicinity of the contact point is not cleansed by the natural processes. This is what admits of caries in this region in the first instance. If, in the preparation of a cavity, we limit the area to a small, round outline, we have left unprotected at the points indicated more or less of the surface of the enamel, which is still subject to decay. With the same influence at work which originally induced decay,

there is little to prevent recurrence. The remedy lies in so extending the outlines of the cavity that the margins are kept clean. The gingival margin of the proximal filling has often been alluded to as the "vulnerable point," even when fillings were well inserted, but this is hardly in strict accordance with facts. In reality, decay seldom recurs along the gingival margin proper. It usually begins at the labio-gingival or buccal and the linguo-gingival angles. From here it may extend and involve the entire gingival margin, but the initial point of failure is usually at the angles. This is because there is a lodgment place in these positions for deleterious matter to form, undisturbed by the friction from the tongue or the lips and unprotected by gum tissue. In this small sheltered harbor micro-organisms of caries produce their acid and attack

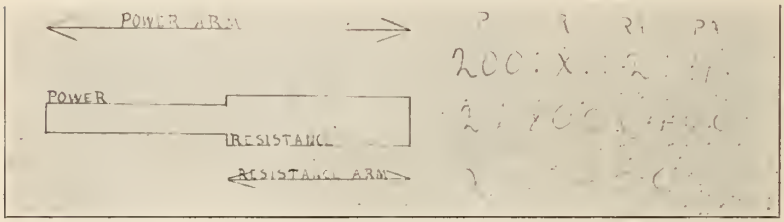



Fig. 17

enamel. No tooth may be considered safe from recurrence of decay around proximal fillings unless the gingival wall has been carried sufficiently root-wise to bring that portion of the filling under the gum, and the labio-gingival and the linguo-gingival angles have been extended to a point where the margins of the fillings are kept clean by friction."

The argument that the opponents of this extension make is that they do not believe in sacrificing good tooth structure because there may be at some time recurrence of decay around a filling.

I will grant that in the course of years of practice we see many fillings where extension has not been made and where recurrence of decay has not taken place, but the observation of men who have been in practice many years, and who during this time have kept careful records, go to show that these are the few, and it is the many that fail. The same conditions, if they are present, which produced the original decay, will pro-

duce a recurrence if there is a condition of susceptibility in that mouth, if the extensions are not made. Even the most enthusiastic advocates of extension for prevention have never advised its use in old people or others who have reached a condition of permanent immunity.

**Fourth. The cavo-surface angle should be a bevel from one-fifth to two-thirds the thickness of enamel, depending upon the location of the cavity wall and the condition and direction of the enamel rods.**

This should be a true bevel, never a rounded surface, and generally it is best made with a sharp chisel. The reason for this bevel is to take the strain from those enamel rods lying nearest the filling and to make oblique angles which are not easily chipped, either by the plugger or in mastication and to cut away all enamel rods, the dentinal ends of which have been destroyed by cutting or decay.

Fig. 21 Fig. 18 Fig. 19

All the cavity margins in the front teeth should be made in long, graceful curves for the aesthetic effect and should be carried far enough to the labial surface so that the gold will be plainly visible. (Figs. 13-15). If we see only the edge of a filling, it has a very dark appearance and looks more like a decayed spot or an amalgam filling than a gold filling.

**Fifth. Make the resistance and the retentive form so that the greatest retention is at the point of stress.**

Aside from the desirability of removing the occlusal margins beyond the point of stress so as to avoid chipping or danger of displacing fillings by having stress on the margins during mastication, they should be well seated and well anchored in the occlusal or incisal surface on account of the better resistance form that may be obtained, and also to take full advantage of the law of levers.

This law, as stated in proportion, is: Power is to resistance as the resistance arm is to the power arm. Let us consider the filling a lever: the fulcrum is the gingival wall, the power is the force of mastication, the resistance is that which holds the filling in place. If we anchor the filling in the occlusal or incisal surface at the point of stress the amount of resistance form need only be of equal strength to the force liable to be brought to bear upon the occlusal part of the filling. The equation would be thus (Figs. 16, 17): 200 : X : : 4 : 4 - X equals 200. If the filling is anchored in the lingual and buccal walls in the gingival half of the tooth the equation would be 200 : X : : 2 : 4 - X equals 400, showing that it requires twice as much resistance form to retain the filling when anchored in

Fig. 23 Fig. 22 Fig. 20

the middle third, as when the anchorage is at the point of stress.

In most cases it is impossible to secure this resistance form in the buccal and lingual walls because there is not sufficient width of wall mesio-distally, and should the dentin be deeply grooved in these walls, it will so weaken them that, under stress of mastication, the leverage employed will break them down and cause the early loss of the filling. It is only in exceptional cases, where the direction of the occlusion is favorable and the lingual and buccal walls of unusual strength, that it is good practice to use them for resistance and retentive form.

**Sixth. The interior of all cavities should be made with flat seats and square, definite angles.**

This is on the principle that a square pin in a square hole is more secure than a round pin in a round hole. With this square formation the filling is more easily made, there being no tendency to tip or slide out of the cavity under stress of

mastication. These walls should be either at right angles or parallel to the long axis of the tooth. All walls that are not parallel to each other should be as nearly at right angles to each other as possible, thus making the retentive form adequate, with very little undercutting.

With these general propositions in view, let us look rather hurriedly into the technic of the different preparations.

### TECHNIC OF CAVITY PREPARATION.

Pit and fissure cavities are usually caused by structural defects in the enamel. They are prepared by cutting out the entire length of the fissure, leaving the margins in sound, smooth enamel, the pulpal wall flat, the axial walls at right

Fig. 24

Fig. 25

angles to the pulpal wall and the enamel margins slightly beveled. (Figs. 18, 19, 20, 21, 22, 23).

Cavities in the labial and buccal surfaces are on smooth, accessible surfaces and are generally caused by an unclean condition of the teeth. If these cavities occur near the gum, the gingival margin should be carried under the free margin of it and the other margins extended so as to include all partially decalcified enamel. The floor should be flat, the side walls at right angles to it, the angle sharp and the enamel margins well beveled. (Figs. 24, 25).

Cavities in the proximal surfaces of the front teeth, not involving the incisal angle.

The gingival wall should be extended root-wise well under the gum. The lingual and incisal walls should be extended so as to include the contact point (Figs. 26, 26a), and to sound

enamel supported by the dentin; the mesio-lingual or disto-lingual ridge of enamel, if approached by decay, should be cut away. The labial wall should be extended so that the filling should be distinctly visible. (See Figs. 13-15). The gingival wall should be flat and at right angles to the axial wall, the labial and lingual walls should be slightly undercut at the labio-gingivo-axial and linguo-gingivo-axial angles, with an inverted cone bur, which should also be used in making the incisal anchorage. (See Figs. 27, 28). These undercuts should not be deep, as there is, after the fillings are finished, very little stress brought to bear upon them. The enamel margin should be deeply beveled in the incisal portion.

Fig. 26 Fig. 26a

**FILLINGS IN THE FRONT TEETH INVOLVING THE INCISAL ANGLE.**

These are, in my estimation, the most difficult of all gold fillings to make and retain. (Fig. 29).

The gingival wall should be flat and carried under the margin of the gum. (Fig. 30). The labial and lingual walls should be in sound enamel, well supported by dentin. The labio-gingivo-axial and linguo-gingivo-axial angles should be slightly undercut with an inverted cone bur enough for convenience in starting the filling, and to prevent the filling from being dislodged towards the incisal by sticky foods, candy, etc. The main resistance form should be in the incisal portion of the tooth, and is usually in the form of a step extending from the cavity across the incisal end of the tooth, stopping well in front of, or just beyond, the second developmental groove. (Fig. 31). If the tooth is of normal thickness or less at the incisal end, both the labial and lingual plates of enamel should

be cut away until dentin is reached, the lingual plate being cut more deeply than the labial. A square, shallow groove should be made in this dentin, with a depression at the end, also square in shape, with a slight undercut at its farthest point. (Fig. 32). If the tooth is of more than normal thickness at the incisal end, the labial plate of enamel may be left and the lingual plate and half the dentin cut away to make the step. The incisal end of the labial plate of enamel should be beveled and the gold brought completely over it to protect it.

In these cavities incisal anchorage should never be made by cutting a pit in the dentin between the labial and lingual plates of enamel, as such anchorage must necessarily be slight.

Fig. 27 Fig. 28 Fig. 29 Fig. 30

It weakens the incisal end of the tooth by taking away the supporting dentin and brings the joint between the tooth and the filling, where the leverage employed has the greatest tendency to dislodge the filling.

### CAVITIES IN THE BICUSPIDS AND MOLARS INVOLVING THE PROXIMAL AND OCCLUSAL SURFACES.

Cavities on the proximal surfaces of bicuspids and molars should always be made proximo-occlusal cavities when the proximating tooth is in position, for this reason: If the occlusal margin of a proximal cavity is extended to a self-cleansing surface, the enamel will either be broken away by the plugger or during mastication, or if the enamel is protected the filling material will be too thin to have good edge strength. (Fig. 12). If this margin is not brought to a self-cleansing surface, there will be a recurrence of decay if there is a condition of

susceptibility in the mouth. These cavities have long been the bugbear of the average practitioner, but when they are properly prepared and filled, are among the easiest to make and those in which permanent results are the most assured.

The gingival wall should be under the free margin of the gum (Fig. 33) and perfectly flat, both mesio-distally and bucco-lingually, and should be broad in proportion to the thickness of the tooth. (Fig. 34).

The buccal and lingual walls should be extended to smooth, self-cleansing surfaces, which usually bring them near the angle of the tooth. They should be as nearly at right angles to the axial wall as the strength of the tooth will permit, and

Fig. 31 Fig. 32 Fig. 33 Fig. 34

should be slightly undercut in the linguo-gingivo-axial and bucco-gingivo-axial angles.

The axial wall should be made at right angles to the gingival wall, and if badly decayed, should be built up with cement. The occlusal step should be made by cutting a dovetail through the enamel into the dentin, and should be broad enough for resistance and retention and to include within the cavity that part of the tooth which comes in cotact with the cusp of the antagonizing tooth. The walls should be nearly perpendicular and parallel, and the pulpo-axial angle sharp and well defined. The width and depth of this step should be in proportion to the strain that is liable to be put on the filling, and the occlusion and its landmarks should be very carefully observed before beginning to prepare the cavity. I have heard objections made to this form of preparation on the ground that we are not justified in cutting away so much sound tooth struc-

ture. But if you will remember that the strength of the tooth is in the dentin and not in the enamel, and that it is seldom necessary in extension either on the occlusal or proximal surfaces of a tooth to go very deep into the dentin and that we do little more than replace the enamel of that tooth with a gold enamel; and when you remember that it requires only half as much retentive form to retain a filling when the retention is made in the occlusal as it does when made in the buccal and lingual walls, the fallacy of this argument will be plainly seen.

It has been impossible in even this lengthy paper to give you every cavity preparation that can be made. But I have tried to give you the fundamentals and some typical forms which you can apply and modify as your cases present themselves. Good judgment must be used in their application. It

Fig. 35 Fig. 36 Fig. 37

would be the height of folly to make large extensions in the mouth of a person more than 50 or 60 years old in which a condition of permanent immunity seemed to exist. It would be barbarous to make large extensions for one of those extremely nervous patients to whom the least touch of the instrument is the keenest torture. These fundamentals apply to the ordinary case in which there is an intermittent condition of susceptibility and immunity, and for whom you desire to make operations that are permanent in their character.

## ESSENTIAL THINGS CONCERNING THE PROPER MANIPULATION OF GOLD FOIL.

I wish also to call your attention to some of the essential things concerning the proper manipulation of gold foil.

Never fill the gingival third of cavities in the bicuspids and molars with cohesive foil. Dr. Black tells us that in the hands of our best operators 10 per cent. of such operations are fail-

ures. Always fill the gingival third or half of these cavities with non-cohesive foil used in the form of cylinders (Fig. 35), with one end placed against the axial wall and the other end extending over the gingival margin into the interproximal space. (Fig. 36). Enough cylinders may be placed side by side to fill the cavity almost to the occlusal step, care only being taken to have the cylinders when condensed well to the gingival of the place the contact point will be, as it should be made wholly of cohesive gold. In condensing the cylinders, the plugger must be inclined toward the axial wall, and only that portion of the gold well within the cavity should be condensed (Fig. 37) until the cylinders have been tied in by condensing cohesive gold upon them.

When making a filling with cohesive gold, place the first

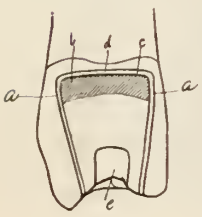


Fig. 38

Fig. 39

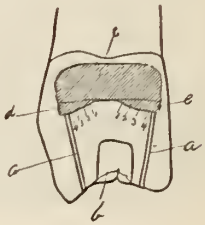


Fig. 40

piece in a convenient point angle (Fig. 38), and the filling should be started by laminating the pieces one upon the other along the line angle to another point angle, using rather thick, heavy pieces of gold. The gold should be built up in this line angle, making no attempt to cover the margin until it can be approached by at least an angle of 90 degrees. (Fig. 39). This is to avoid the curling of the gold on the margin. If you place a piece of plate or condensed gold on an anvil fasten it at one end (Fig. 41), and strike it in the center with a hammer; it will curl up (Fig. 42), and can by no manner of malleting be made to lie down flat again. This always occurs when we condense thin pieces of gold over broad flat surfaces. When condensing cohesive gold the plugger should be placed on the gold in a series of steps made in a regular way, each imprint of the plugger overlapping the preceding one. (Fig. 40) . A row of steps should be made across the piece of gold near the center of the cavity, and parallel with the wall to be approached. A second

row of steps should now be made toward the wall. The last row of steps should be on the gold adjacent to the wall. In this way the gold is fairly wedged against the wall, and no more malleting should be done on that piece of gold. If the gold is condensed next the wall first and in the center of the cavity afterward, it will be drawn away from the wall and a leaky filling result.

Plugger points should not exceed in size one-half or five-eighths of a millimeter in diameter unless very thin pieces of gold are used. Much better density is obtained by using thick pieces of gold and small pluggers than by using thin pieces of gold and large pluggers on account of the tendency of gold to "bridge" under large plugger points.

A summary might be given as follows:

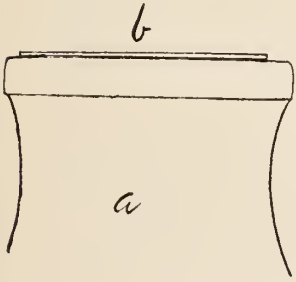



Fig. 41

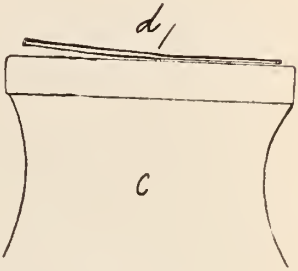



Fig. 42

Restore the tooth or teeth to be operated on to their normal position and occlusion, making a normal interproximal space and contact point.

Remove all enamel rods not supported by dentin.

Extend gingival margins under the gum and all other margins to such smooth surfaces that they will be kept clean by the excursions of food and the action of the lips, cheeks, tongue and tooth-brush.

The cavo-surface angle should be beveled from one-fifth to two-thirds the thickness of the enamel.

Make all resistance and retentive form so that the greatest retention is at the point of stress.

The interior of all cavities should be made with flat seats and square angles.

Use non-cohesive foil in the gingival third of bicuspids

and molars, and do not condense it over the gingival margin until it is tied in with cohesive gold.

Approach your margins with cohesive gold at least an angle of 90 degrees.

Use short, thick pieces of gold where possible rather than long thin ones.

Step the plugger from the center of the cavity toward the wall.

Use the plugger points one-half millimeter in diameter. Laminate the pieces of gold like shingles.

## DISCUSSION.

**Dr. Clyde Davis, Lincoln, Neb.**—I do not like to discuss a man's paper in his absence, especially when I don't agree with some things he had in that paper.

The paper, in the main, was a good one, and one with which I can heartily agree. It was quite a good exposition of modern teaching, and old teaching as well, because it develops all of the principles, or many of them, with but little modification.

There were some features in it that I could not understand. The first was his understanding of what is the cavo-surface angle. Had he made the statement but once I would have thought it was an error of speech, but he repeatedly said, "When I chisel the cavo-surface angle——." It is possible to chisel or make a cavo-surface and in making that cavo-surface we create an angle which is the cavo-surface angle.

The cavo-surface is that part of the tooth on the inside of the cavity of the tooth which reaches from the cavity wall to the external enamel surface. In some places it is extensive; in other places it can barely be detected. The cavo-surface angle is the angle that is formed with the junction of the cavo-surface and the external enamel surface, and that which finally becomes the margin of the filling. At the cavo-surface angle, the point where it meets the surface, is what you have to show when you are through. He spoke of the entire nomenclature at that point as the cavo-surface angle.

He made another remark: "We do not understand why we have to cross over a marginal developmental ridge when we come to it." I think that that is quite plain. I think it is quite well understood, because the rule for chiseling at that point is this: If you reach the crest of enamel, it makes no difference whether it be upon a triangular ridge, a developmental ridge, or a cusp of a tooth; you must cross over that and pass to the slope beyond and follow that along in the line of the cavity outline. Therefore, if the lingual surface, at the cavo-surface angle, where that angle is located, does not quite reach the crest of the mesial or distal ridges, it may be stopped, and extra excavation or chiseling at that point can be done away with,

because of the cleavage of the enamel; but if you must reach the crest of that marginal ridge, you should cross it as abruptly as possible, passing along the slope beyond to the developmental groove, and follow along without reaching that groove, if possible. But if decay has taken place there to such an extent that you must reach that groove, you must then cross that and carry your cavity outline along the slope axially from the ridge or the groove. This all comes from the study of resistance form.

You all know Dr. Black's "cavity procedure" for his cavity preparation. The "resistance form" deals with those enemies of the permanent retention of a filling, and this part of his paper dealt with resistance form as pertaining to stress. He made one good point in the paper, and that is about the beveling or chiseling of the cavo-surface on the occlusal of molars and cuspids. The study of that will give us a good idea as to where to carry the cavity outline with reference to pits, sulci, etc., but when we chisel the margin on the occlusal surface of bicuspids and molars, we want to get resistance form, as to stress, and those cavity walls, in many instances and in many locations on those surfaces, comes directly to the surface without any, what is commonly called bevel, because the last enamel rod will be a full length rod protected by the dentine.

I see he is particularly fond of Dr. Black—which is no discredit to him—but to the exclusion of Dr. Johnson. A nice study is to take up Dr. Black and then study Dr. Johnson and notice the slight difference. One of these differences he spoke of this morning, and that was the pulpo-axial line angle. Dr. Black insists on that being a sharp, acute angle, while Dr. Johnson says, "Round it." Dr. Johnson carries that out through all of his cavity preparation. All line angles which are prominences rather than depressions, he says to round them. For instance, I can illustrate it by a box. You get inside of the box and you can see the corners where they meet. Three of these meeting would make a point angle, and we will take the cover off of the box. The line angles and the point angles, Johnson and Black both agree, should be sharp, should be at least a right angle, Dr. Black, I believe, modifying it a little bit, and his enthusiasts are saying exactly a right angle. It is impossible to get it every time, and for safety, I say, the angle should be the least bit acute, so you are sure it is not obtuse. Dr. Johnson and he differ on that point. If you will come on the outside of the box and see the corners and lines where the sides meet you will have the line angles or the angles which represent the pulpo-axial angle, and the junction between the cavo-surface and the wall of the cavity proper, Dr. Black says, have that acute. Dr. Johnson says to round it, round each one of them. There is the main difference.

He gave Dr. Johnson a shot when he said: "I only put in one of Dr. Johnson's fillings in a year."

I think there should be a great discrimination in the use of these two fillings. This difference should be considered for the case that is at hand entirely. For if the teeth are eternally slaughtered,

like in Dr. Black's preparation, I think it is often an error, because if a tooth has a good, sound corner on it, it should be left many times. If you can leave the labial wall protected by an immense wall of dentine, why cut it away? Leave it there. Some of the enthusiasts who are forwarding Dr. Black's preparation are going, I think, a little too far. They are "Wedelstaedting" pretty nearly everything. Dr. Wedelstaedt is an enthusiast, and is a great teacher. But I had the pleasure of seeing 16 of his pupils or disciples preparing cavities in one corner of the national convention at Buffalo, New York, two years ago. In many of these cavities I would not even have removed the incisal angle, and the majority of these had the angle cut away—yes, most of them had both angles cut away, as well as the incisal edge, and were filled with gold as we saw Dr. Le Cron's porcelain tip put on last night. I do not think they were justified in doing that in most cases.

I think a mighty good rule to stand by for cutting in there is this: Having studied the cleavage of the enamel on the incisal edge of your central incisors, I think you will find this rule will obtain, and if adhered to will carry you safely through, and that is "that as your filling approaches the central axial line of the tooth, so increase your bevel. It is not very necessary to make a very extensive bevel, and a line can be approached wherein the gold comes very nearly to the incisal edge, provided there is heavy strong dentine under that corner. The corner does not have to come because the cleavage of enamel is in that direction, and the larger the filling the more must be the curve at the incisal edge as you leave it. The more your filling approaches the central axial line the greater the curve as you leave the incisal. When you come past or reach the central axis of a tooth with a large filling of that kind, you must cross over and involve the other angle due to the cleavage of the enamel. I think that that rule will, if adhered to, carry us safely.

The other matters in the doctor's essay with reference to extension for prevention I think were good.

## CARRYING CAVITY UNDER THE GUM LINE.

He made one statement, which he passed over quickly, which I believe, if you will hear again, it will be of value, and that is the carrying of the cavity under the gum line. When a filling is completed, when any filling is completed, we should be able to say that we can see the margin of that filling at all times, and when that passes under the gum line it should do so in full view. For instance, if you have proximal cavities in centrals and laterals, after they are completed, unless you have taken great care as to form and unless they have been completed right, decay will take place either incisally or gingivally, from the contact point. And the rule to adhere to in steering clear of that is this: "When you are through with a filling, stand above the case holding the glass below, and looking in the glass you can see part of the outline and from the labial surface with the unaided eye you can see the remainder and never have that line

so you can not see it except when it passes under the gum, and then you can see some of it in the glass, and the labial you can see with the naked eye.

One other question we are frequently asked is, **"How far below the contact point can one go, and towards the gum, without going under it?**

Now that will depend upon the distance the teeth stand apart and the festooning of the gum, but a majority of these cases, considering the contour of the teeth, the festoons of the gum, large or small, the length of the teeth, the majority of these cases will not be far from one millimeter. If you get within one millimeter of the gum line there are few cases that are sufficiently self-cleansing that should not pass under, regardless of the conditions of the gingival wall.

## SEAT OF THE CAVITY.

One other point is the seat of his cavity. He said that the gingival walls should be absolutely at right angles with the axial wall. Now, if he can absolutely do that, I will agree with him. If it can absolutely be done! But I must admit that I can not always do that; I wish to go just a little farther and pitch my gingival wall so that I know the angle there, the gingival axial line angle, is the least bit acute. If it is the least bit obtuse, you have a filling that will bring great stress on the lateral walls of that tooth, and therefore I want the gingivo-axial line angle an acute angle—minutely acute! I don't mean pitched like that (making sharp, acute angle with fingers), but so that I can see it is not a right angle. The forces brought to bear on that tooth will crowd it towards the axial wall rather than from it, and bringing the force of mastication on the occlusal surface, it brings stress on the walls in box cavities.

The latter part of his essay is **not** new; that is, the putting in of soft gold in a filling. If he was here I would like to ask him one question: if he will tell me why use soft gold to fill teeth in preference to cohesive. And I do not think he can answer me in any other way than that: first, to permit of its adaptation to the walls of the cavities, and second, the speed. They are the only two things I have ever been able to get out of it—adaptation to surfaces, and speed Now, of the speed proposition he did not speak, but only its adaptation. Now that being the case, if he is talking only about the durability of the filling, the best conditions that can be brought about for a good filling, in my estimation, can only be gotten by lining that cavity throughout with soft gold and filling the balance with cohesive. Line it throughout with soft gold only sufficient to take up that amount of indentation which comes from impact from an uneven surface. For that reason, then, the cavity, to be scientifically filled, should be lined entirely with soft gold, and especially at the cavo-surface, and only so thick as would be affected by the impact with the walls. Necessarily, that would not be any one-third of the filling.

I have seen gold fillings put in a cavity with the cavo-surface covered with soft gold, annealing part of it and putting the soft gold out over the margins, and it seems to me that that adaptation is greater and better than if you attempt to use a body of it.

Another proposition: He said, "I would take a foot plugger and I would mallet in between my interproximal spaces. I drive that into the space which would have a tendency to tighten my filling by more solidly condensing this one-third of the cavity with soft gold." Now, not under any consideration, or at any time, can I see that it is necessary to strike a cavity filling at right angles to its margins. I do not believe that a man can go in with a foot plugger between the teeth, after he has filled it, and strike between the teeth and better the foundation there. I would rather take a burnisher even if I fill it the way he did—but I would not do that—and cover the soft gold in on the margins, and then I should go in with nothing but a burnisher, and I should burnish and rub that to contour, and if I had too much gold, I should use a very fine file and then take the burnisher and burnish to proper condition rather than mallet it. I do not believe that I can conceive of a condition where I would strike a cavity margin at right angles. I would object to that point.

Of course, he would probably come back and say it was justifiable on account of speed. I will admit that he can fill a cavity one-third or one-half full of soft gold quicker than any one can with cohesive, but I do not think that was the point he was making. He was trying to make, at any expense, a perfect filling, and if adaptation is the only part, he must not only cover the gingival walls, but the whole surface with soft gold, the balance with cohesive.

**Dr. D. J. McMillen, Kansas City, Mo.:** I never like to discuss a man's paper unless he is on hand to defend himself, because the many things that I learn is in hearing the other man discuss it from his standpoint.

There are a great many things that I can not endorse as regards the preparation of the cavity. I have not learned yet to appreciate the cutting or shaping of the cavity the way it was shaped, according to the essayist. In other words, it seems to me that we have gone crazy on cavity preparation lately, or else I have been preparing cavities wrong all my life.

I do not care to discuss any question at great length, but the idea of preparing a cavity without any undercuts or without anything in the way of foundation that is going to hold my filling in does not appeal to me. I am unable to fill teeth that way and I want to say that all my life I have been filling teeth with undercuts, and with the best possible preparation that I know of, and with the most careful packing of gold, I have not always been able to keep them in the cavities; and without undercuts and with perpendicular walls, as he says, I am unable to keep the cavity filled.

However, there are a few points that I want to discuss a moment or two only as to the fact of cutting this in that shape and

bringing this margin down to a perfectly square point or sharp angle. (Illustrating at blackboard). To my mind, there is a place we do not fill. Now if you are going to crown three, or two, or one of six cylinders of non-cohesive gold into that place, I want to say that unless we lay a little bit of a cylinder down there, we are as certain to have a leaky filling there as we are that we put it in, for I have put in more than five thousand in my lifetime.

Now another point that we have to guard against—if we lay these cylinders in in this form, as Dr. Woodbury showed you this morning—but I think there is a better way—one is just as good as three, and two is better than either. You might build a filling with a step cavity at that point, but placing those cylinders in side by side, and then driving them down and wedging into position in that corner in that shape, and we are just as certain to have a leak as that we do it. I should certainly round out that corner at the margin. In the inner surface of the cavity, you may make your sharp angles if you please. I doubt whether they are filled or not, but it does not make much difference, but at this place, unless you are exceedingly careful, there is a leak. There are these two points that are to be cared for in the gold filling. If we were using tin we might use about a number three and could possibly adapt it as well to the wall of the cavity as the non-cohesive gold, but aside from that I do not believe that we can get any material that adapts itself as well to the cavity as non-cohesive gold.

Now, non-cohesive gold is a gold that one fold slides upon another, and every time that we touch that with a mallet it is pressed to the wall; in other words, every piece of gold that is put in must wedge itself into position, and whenever it does not wedge itself into position it is not put in properly, as non-cohesive gold, properly speaking, should be put in. Now, the adaptability and the ease with which we can handle this gold and the rapidity with which we can fill this portion of the cavity are the reasons for using it. It is certainly able to save the tooth if the cavity is in any way well prepared a little bit better than anything else on earth, I think. If we make a perfect filling with cohesive gold, that is not any better, but it takes much more time and skill to finish that portion. This vulnerable portion here of the filling should be filled with non-cohesive gold, but it takes three times as long to fill with cohesive gold here as with non-cohesive gold.

Now, just one word about this **"under the gum"** business. It seems to me that that is the craziest idea that I have ever heard in dentistry, to cut a cavity under the gum. Why, it gives me a chill to find one there, if I have to fill it! I can neither fill it nor finish it with half the ease that I can if it is not under the gum. I do not know that I understand the position of these gentlemen. In coming over from the hall with them this morning, I said, "Why do you men persist in cutting these cavities under the gum?" "Because it is immune from decay." It is not immune from decay! If the joint or juncture of that gold is under the gum, I say that it will decay

there quicker because the secretions of the mouth are held directly in contact with that joint more readily than any other place, and I am unable to finish that cavity at all to suit myself. Therefore, I am opposed to cutting any cavity under the gum, so as to disturb the pericementum.

Now, when we follow Dr. Woodbury up in regard to the placing of the gold, he does it exactly the way I have done it for many years, and the way, I think, is exactly right. He uses the instruments I do, except with the non-cohesive gold he uses a small-pointed instrument, which I think is wrong. The small-pointed instrument is decidedly right with cohesive gold. I don't think any man can condense it unless he use a small-pointed instrument with considerable force. He builds up at this point and he keeps building up in this direction, and then he comes across here in this direction, driving all the time towards the cervical margin, which is the proper thing to do, and not going back over it and curling his gold. I don't know— I couldn't have written a paper about this as well myself as he wrote it, and after he commenced placing his gold he does exactly the way that I do.

**Dr. Clyde Davis, Lincoln, Neb.:** Dr. McMillen, like myself, teaches operative dentistry. He evidently teaches it different than I do. Here is the proposition: I accept everything he said, with but one thing, and that I will ask him to explain. He says that he can not get along with a cavity wall going under the gum line. He says that Dr. Woodbury says that is an immune surface. Now, my understanding of immunity, or partial immunity, is that surface wherein we do not frequently find caries attacking sound teeth. Now, were I to find a mouth with one dozen cavities, carious cavities, in it, I would find them at the contact point, sulci, puts and grooves where the food lodges, and if I found one originating under the gum margin, I would find a hypertrophied and diseased gum. Now, if teeth do not originally decay without filling in this position, are we not justified in taking the position that it is practically an immune surface? And if I am to extend my cavity lines, creating my cavo-surface, I wish to run them as far as possible through those areas in tooth substance wherein I am not likely to find decay attacking the teeth primarily. Of course, I have seen many cavities occur under the gum line, and I have seen many fillings made under the gum line.

I believe he criticised the essayist on a proper point as to the rounded margins, but I think, if this is properly filled and prepared, it is possible for us to make them in as immune a condition as they were primarily. And, say your patient is 30 years old and the teeth have never decayed under the gum; that patient can carry the filling 25 years, and it will not decay under the gum if you put it in as good shape as it was before. Therefore, I must insist on the fact that places on teeth wherein the excursions of food and the tooth-brush and cheeks and tongue remove the albuminous coat which forms on the teeth, under which bacteria do their destructive work, and in iso-

lated places where they are protected from the saliva for the dilution of their acids in these places, if I can run my cavity lines in these places and go down under the gum where primary decay has not occurred, and where primary decay seldom, if ever, does take place; then I think I am reaching more immune surfaces than I am if I cross somewhere between the contact point and the gum. That is what I would insist on.

With reference to the cavity outline—coming back to that again —I think if Dr. Woodbury would follow out one injunction it would be better, and that is that the cavity inside should be a succession of flat walls coming together at angles the least bit acute, surrounded by enamel lines of the greatest curves permissible. If it was absolutely round on the outside it would be all right, if it was square inside, so as to eliminate all short curves and all angles, and on that point I would agree with Dr. McMillen. But I must insist that beneath the gum line of a healthy gum tissue is one of the most immune places that we have in the mouth excepting an absolutely flat surface.

**Dr. McMillen:** Until it is filled.

**Dr. Davis:** I believe that is true—until it is filled; however, I believe that the position between the free margin of the gum and the contact point is better before than it was since it is filled. I think they are in the same condition as long as you don't have a filling there. If you have to fill these teeth, and if you have to run that line somewhat root-wise between the contact point, where the primary decay occurred, and some place under the gum margin, I say pick out the best place, and I believe the best place is below the gum line.

**President Morrison:** I would like to bring out a point in defense of Dr. Woodbury. I think that Dr. McMillen has misunderstood, or else I have misunderstood, their interpretation of the teachings of Dr. Woodbury, Dr. Finn and others, and while I am a young disciple of those gentlemen, yet my understanding of the plugger point is this: that they do not use the small plugger point in placing the non-cohesive gold, but when they start in with the cohesive gold is when they use the small plugger point. If you would see the plugger points that they use and the long handles that they have to mallet with, you would see that they are a large instrument and large points, and the point that they use directly against the cervical wall is a large point. But when they come to the cohesive gold they use a small point.

**Dr. H. A. Shannon, Lincoln, Neb.:** There is no question but what we are all called upon to insert fillings, and it is our duty to insert them in the best manner possible to make them give the best service. That is what I try to do and I can heartily recommend what Dr. McMillen has said. Unfortunately, I did not hear the paper this morning, but on my own personal experience I condemn any cavity

formation without undercuts. I can not fill them to my own satisfaction nor to the satisfaction of my patients without undercuts, as well as with undercuts. We talk a great deal of extending the cavity for prevention of decay, extension for prevention, extending to immune surfaces. That is all right, but what do we mean by immune surfaces? That has been explained by Dr. Davis; but if we have teeth coming together, knuckling together as they should, with proper contact points, and not contact surface, over what surface of the tooth does that gum cover? It comes almost to the contact point, and in many cases absolutely against the contact point. Consequently, if you carry your cavity beyond the contact point, you carry it beyond the gum line. We have other cases of recession of the gum, and there are teeth with inter-dental spaces that you can see through. In those cases we have an exposure of the enamel below the contact point. We have an open space for the food to collect. And then where the food particles collect and remain for any length of time there will be an acid reaction taking place and a white line form on the surface of that enamel which will mean decay as sure as it is there. It means a failure to a filling. It means a failure to the tooth if there is no filling there, and in cases of this kind it must be carried—where the gum does not come up between the teeth—underneath the gum line. If the gum comes up nearly to the contact point it is only a matter of carrying it a short distance below, and there is usually free margin enough to admit of finishing every filling.

These are only minor points that we differ on, but they must be considered; and how many hundreds of cavities are prepared and no care taken and no attention given to that white line at the cervical margin of the cavity. At the margin you will notice a white line in your enamel, just enough that it will decay as sure as it is there. If necessary you have to remove every bit of enamel from the cervical portion of your cavity. You must go to the end of that white line. I would no more think of leaving that white line than I would think of leaving a blackened fissure on the occlusal surface coming in contact with the filling, either cohesive or non-cohesive gold or tin or cement, or an inlay, or anything else. There is no power on earth that will save that tooth. There is only one, and I don't believe you can call on that power to help you in that case.

**Dr. Davis:** I would like to make a statement for some who did not see the size of Dr. Woodbury's plugger points. He said one-half millimeter, I think. This is common bond paper, and by the gauge one-half millimeter measures just five thicknesses of common bond paper.

**Dr. Morrison:** That was the cohesive gold, doctor. There is one correction I would mention. I asked Dr. Woodbury if he did not misspeak himself in reference to this, and he said he did. In order to make a record of this, I will change it for him. He spoke several times of the nidus of food. The nidus is the nest, or spot

right below and inside of the two approximating surfaces of the tooth, and the nidus being the nest, it would be impossible to have a nidus of food there; and Dr. Woodbury stands corrected on that. He said he misspoke himself.

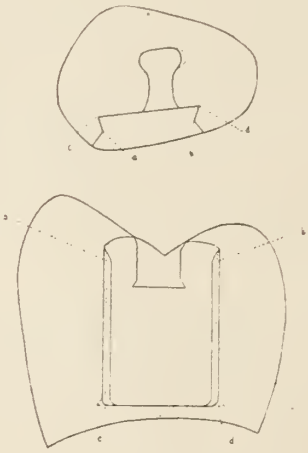
**Dr. J. H. Wallace, Omaha, Neb.:** I am sorry to hear anybody get up and say that he is not in favor of a cavity unless we have undercuts. Maybe he does not exactly mean the old style undercut, but I think the better way of putting it would be the retentive form. We can anchor a filling, or rather prepare a cavity without having undercuts, and retain the filling all right. That old phrase to "undercut" when we used to start into a cavity and undermine all around the whole cavity was of course wrong. I hardly think Dr. Shannon meant that form.

It is my duty and pleasure as a member of the state board to examine applicants on the branch of operative dentistry. It is amusing, sometimes, the different answers I get to the different operative dentistry questions. Of course, those of us who are disciples of any one man, or any set of men, in this part of the country, we understand, but you take an applicant that comes from some of our southern states or from east of the Alleghanies or probably not that far, and the answers we get are decidedly in opposition to any teachings that we as dentists have received in this part of the country.

**Dr. Shannon:** I might as well make myself clear where I stand on this subject of undercuts. I have been here a long time, and I am here to stay unless it is clearly shown to me that I am wrong. When it is demonstrated to my entire satisfaction that I can fill cavities without any undercuts, or anything to hold the filling in, I am ready to do it, because I can do it easier if I do not have undercuts; there is no question about that. I believe in having a retentive form to start my filling in, and I believe in having a place to retain my filling as I proceed with that filling. The higher up I build, I still want a retention for my filling, and I think that I can practically illustrate here on the board where I am in regard to that.

(At blackboard). We will take, for instance, this bicuspid, a cross section of it. I believe in having your bevel here. I believe in that, but when we get to this point, I don't believe in having straight parallel planes at that point. I believe in making a retentive form at that point like that, a retentive form, and I believe in not only having a retentive point at that place, but I believe in also having a retentive groove or divergent planes, extending up for at least a short distance from the floor of the cavity, both on the buccal and on the lingual wall. I believe in making it sufficient to keep my filling from moving or rocking, and by thoroughly condensing in those grooves it will prevent the rocking of my filling. Some men may be expert enough to build these fillings absolutely without any undercuts, but I find in my hands that I can put in gold fillings that look pretty fair to me, and that suit my patients pretty well, and they

have stood the test of eight years, and they still look pretty fair. It is true, some of them have failed, due probably to my own fault, perhaps to my methods of manipulating the gold, points that I have, maybe, passed over, or points in the cavity preparation that I have not prepared as I should have. We all overlook those at times, but I would rather have a slight undercut—not in the sense of a deep undercut—but you understand, this must come in the dentine. We must not have the enamel rods exposed at that point, but the enamel rods must be supported by the dentine at that point, so that in the movement of your plugger point in condensing that gold you are not going to fracture any enamel rods. But even if the enamel rods are powdered at that point it does a great deal less harm than it would



at the margins. That is what I mean by a retentive form, as you would call it, or undercuts, as I would call it. They are undercuts! Why? Because the distance from A to B is less than it would be from C to D, and a filling driven into those points and thoroughly condensed can be condensed over the margin without the danger of movement or rocking of the filling, and it is because of the success that I have had in this method of putting in my fillings that I still hang to it. When I am fully convinced and shown that I can fill cavities just as well without those grooves I will be glad to do it because I can do it quicker.

**Dr. Nason, Omaha, Neb.:** I would not let this go by without correcting the gentleman just a little bit. I have filled with soft gold for 15 or 20 or 30 or 40 years, more or less. Now I always round this out, but use the flat seat. I don't believe that you understood Dr. Woodbury's preparation for retention. For instance, now, his idea is this step, he calls it, underneath here; that is, where they

take a chisel or inverted cone and carry that up in this manner (Blackboard). It is not sharp. It comes from both sides, making these walls at right angles. Then, in placing those round rolls, as you pass on in there, if this floor is not perfectly flat it will be displaced.

**Dr. Morrison:** The size of that inverted cone would seem to be the principal point.

**Dr. Nason:** Well it would be about a 33½. With me I use a very small chisel to cut that down. It makes a decided bevel, and it is strong enough in there in the dentine. It is not what you claim is a sharp undercut. Now, I am not a Black man, and I do not defend Dr. Woodbury's talk here, but I understand the working of soft gold. I am like my friend over there; I am a little of a back number, but I use the large flat seat. And I don't have to hold my fillings in. I don't hold a piece. I place one there and I intend it to stay, and I place another piece there and the other there, and I go right along with my filling. After that I anneal the soft gold I use; as I get over those surfaces and get here, then I use cohesive gold and pack it with a small plugger.

Now, as far as going underneath the gum is concerned, I have followed the cavities as far as they go. If it is not deep enough for the contact point, I go a little deeper, but I am not an "under the gum" man at all, because you might go the whole length of the root of the tooth before you got a nice, satisfactory place to place your filling. Then you have to finish it.

**Dr. Woodbury:** I will say very little in closing the discussion on this paper, as the discussion is very long as it is. In the beginning I want to say that I have been "Wedelstaedting" a good deal in the past two or three years, and very greatly to my benefit as well as that of my patients, and I think from the text and volume of the discussion that some of the men who have discussed the paper would very greatly profit by a liberal course of the same treatment. Dr. Wedelstaedt probably has the closest personal friendship with Dr. Black of any man in the dental profession and is as nearly as is possible an exact follower of his teachings. To those who reach a close acquaintance with him only admiration and esteem remain.

Dr. Davis has said so much and has departed so many times from recognized professional nomenclature, using terms that he must have coined himself, that it is a little difficult to follow him, even when reading the discussion. The principal discussion seemed to be over the use of square angles at the gingival wall and the elimination of undercuts in the occlusal step. Dr. McMillen says that fillings can not be made tight nor will they be retained under stress when this preparation is used. He is mistaken, however, and it is capable of demonstration that when the proper technique is used in making the filling they will be not only moisture-proof, but so firmly retained that they can not be displaced without breaking the tooth.

The gold is driven into all the little inequalities of the surface of the cavity left by the chisel or the bur. The elastic dentin is compressed, gripping the gold with a tenacity not to be overcome. But mind you, this can not be done with either light mallet blows or large plugger points. The mallet blows should be about 15 pounds, delivered with a lead hand mallet or an automatic mallet, accompanied by plenty of hand pressure, and the proper stepping of the plugger, the mallet being used to drive the hand pressure home. A plugger one millimeter in diameter should be used on the non-cohesive gold and a plugger, one-half millimeter in diameter on the cohesive gold. In July of last year the C. E. Woodbury Study club held its first meeting. At that meeting about 20 fillings were made under this system the first time these operators had ever used it. As far as I am able to find out, every one of these fillings is still in use and not one shows a leaky margin; a rather remarkable record, considering the number of fillings and the inexperience of the operators, showing conclusively that where the proper technique is employed there is no trouble in making these fillings tight at the bucco-gingivo-axial and linguo-gingivo-axial angles, and sufficiently retained to resist the stress of mastication.

Gentlemen, I thank you for the courteous attention and interest you have given this long paper and the extemporaneous explanations which accompanied it. If I have but made one convert to those things which I believe to be right in regard to the filling of teeth, I shall feel amply repaid for the time spent with you.

## REAL REMOLDABLE PORCELAIN, INCLUDING MOLDABLE GOLD, SILEX, CARBORUNDUM, CLAYS, ETC.*

By Chas. H. Land, L. D. S., Detroit, Mich.

The title of this paper is in contradistinction to several commercial products which usurp the name, having no adequate foundation in fact to support them. In this instance, I refer especially to certain compositions which are in reality formed of oxide of zinc and a small per cent. of vitreous matter, combined with phosphoric acid; which, when scientifically nominated, are known as cements. In addition, I will include certain compounds, silicates of soda, potassium, etc., which are well established as glass, or semi-porcelains. Then we have the real pottery porcelain as distinct from china, stoneware, common pottery, pure clays, etc.

*Read before the Michigan State Dental Association, June 5th 1907.

In order to obtain a true definition of vitreous masses, it will be necessary to consider them both and to have a practical knowledge of their chemistry and peculiarities when variously compounded.

All vitreous masses, whether they are identified either as pottery, porcelain or glass, their natural origin is found in what is known as the feldspars, kaolin and silex. For example, the formula of fine French china and porcelain may be kaolin 48 parts, feldspar 48 parts, chalk 4. In dental porcelains we leave out the chalk, increase the quantity of feldspar and silex, and reduce the kaolin.

I will now describe a series that I have arranged in groups. Combined, they represent real moldable porcelains of glass, clay, sand, china, corundum or emery, carborundum, gold, silver, amalgam, and various other metals.

What I wish to convey is that all the above enumerated substances are put into a plastic form, so that with your fingers alone they can be manipulated into an unlimited number of forms. We can also impress them into molds of various kinds, and then when they are submitted to higher degrees of temperature they become hardened into durable and exceedingly valuable articles of utility, not only for dental purposes, but they cover a wonderful range of opportunities in various arts and manufactures.

I have made a series of specimens that I will undertake to describe in detail. Group A shows specimens of Brewster's body, shades 2 and 4; these show almost 40 per cent shrinkage and 30 per cent less of color as compared with a high-grade block body, both taken from the same mold.

Group B. Figure 14 of this group shows no loss of color when in a state of partial vitrifaction. Here I must explain what I mean by partial vitrifaction or fusion. It is when a substance is so highly fused that it will flow into a homogeneous mass, like metals and their alloys, and will readily flow or mix thoroughly together. Silicate of soda or glass will do this when very highly heated, and then become transparent. On the other hand, if the same silicate of soda was only partially fused or vitrified, it would be either opaque or semi-translucent. If opaque, it might be recognized as a semi-porcelain, or an incomplete glass, and would not be entitled to the name of dental porcelain. The latter should consist of a compound or mix-

ture of particles, one of which is difficult of vitrifaction at very high temperatures, and the other particles that flow at a slightly lower temperature. The lower fusion mass merely acts as a binder; for example, take it in the case of carborundum, as shown in several specimens exhibited. In this instance, 25 per cent. of the block body is added to finely-ground carborundum. These, when mixed together and fired, form a mass hard enough to grind porcelain.

Figure 42 is common red or brick clay. Sand and clay keep very sharp outlines throughout the fire and show very little shrinkage, and is hard enough to grind glass if converted into a suitable wheel. The red clay when fired keeps very sharp outlines, and shrinks but little, but can be cut and carved with an ordinary pocket-knife.

Group B represents a porcelain mold from which the casts of molar teeth were taken, one of them including a mold from the S. S. White block body, and the others are made from the high-firing Consolidated tooth body. All these keep sharp outlines through the fire, take a most perfect glaze, hold their colors, and are the most translucent of any on the market today. Another illustration shows the same tooth composed of carborundum submitted to over 3,000 degrees of temperature. This is substantially of the same combination as our carborundum wheels, and is as hard. Notice that the shrinkage is so slight as to be imperceptible.

A number of molded crowns are here shown which are molded in plaster of paris or brass molds. They are high-fired incisor teeth crowns, similar to the Davis, Whiteside, the Logan crown and common pivot tooth. In fact, with moldable porcelain, the day is fast aproaching when each dentist, from common plaster molds, can with the utmost facility turn out any form of manufactured teeth now on the market. I refer to the class that belong to the individual teeth, meaning not the rubber teeth or pin teeth for bridges and gold work, but the pivot class of teeth. I claim that we shall be able to do it better and cheaper.

Another illustration represents a silver mold from which cast forms were taken, made from ground high-grade French porcelain or chinaware. In one mold the French pottery porcelain shrinks about one-sixteenth, while the shrinkage of a cast made of the same pottery to which carborundum to the

extent of one-half its bulk had been added, shows no perceptible shrinkage.

These experiments are made to show that, by the addition of gum chicle to porcelains of all grades, they can be made moldable at pleasure or can be cast into definite forms and baked to vitrificaton without change of form or loss of detail, provided a true or high-grade fusing porcelain be used. The higher the fusing point the sharper the detail and better the form and the less shrinkage. The addition of infusible materials like carborundum, emery and corundum seems to materially lessen the shrinkage.

## DISCUSSION.

**Dr. J. M. Thompson:** Through the courtesy of Dr. Land, I have been enabled to witness some of these moldable demonstrations. I have taken pains to do a little of it myself. Two or three times I have demonstrated to some of my friends that have been in my office from time to time what could be done along these lines with this material. I cannot give you the information from my own experience, as Dr. Land can. In places where we have to make porcelain supports, or are called upon to assemble parts, this material can be used to advantage. I think as we become more familiar with the material we shall find it very helpful. The doctor says we can use it in almost any place we want to. We can take an impression of the mouth, or several teeth in the mouth. If we want two or three teeth joined together, we can do it. I am very sorry I have not had more time to experiment with it before coming to the meeting.

I wish that we all could have some experience with Dr. Land's work in this material, as I have had the last two or three weeks, and we should then realize its value.

**Dr. Worboys:** There is one question I should like to ask, and it is this: Supposing we have a root prepared and are going to put a crown on it; we have a post fitted into the stump, and after forming the moldable porcelain to that surface and baking it, will it shrink down or will it have to be remodeled?

**Dr. Land:** You must take the moldable silica and paint it over the surface of the porcelain.

**Dr. Roach, Chicago:** I wish to assure you that it has afforded me great pleasure to hear this paper and to have seen this magnificent floral work at the hands of Dr. Land. I have known Dr. Land for a great many years, known of him in his work a good many years, and have always looked to Dr. Land as one of our leaders in porcelain work. He has been an inspiration to me in my feeble efforts

along the line of porcelain work. This is along the line of work that I have been experimenting with for a number of years, and is in the same direction that others are working. Dr. Land has eliminated some of the objections that have been made to the use of porcelain. There have been objections that the most of us have been unable to overcome.

I think Dr. Land has made, perhaps a little unconsciously, in the title of his paper, a direct slap at me in the name of Moldable Porcelain. I don't think it makes much difference with the majority of us as to the name. I think I shall refrain from any discussion of the matter, but I hope to be able to convince Dr. Land that my moldable porcelain is a true name; that the materials are such as shall justify the name.

I have no question but that the material he has given us is a very valuable one. I am always willing to take off my hat to the other fellow if he gives us something better. I am of the belief that Dr. Land has given us an idea that will be very valuable in our practice.

## HOW TO INCREASE THE ANCHORAGE OF A PORCELAIN INLAY, Or, THE HOLLOW INLAY AND ITS ADVANTAGE.*

By W. H. Upjohn, D. D. S., Lafayette, Indiana.

A porcelain inlay is a work of art and beauty when properly shaped and shaded to suit the case as nearly as possible. The first step to be taken is to obtain a proper shaped cavity in view of making it easy to get a perfect-fitting matrix that can be easily withdrawn without distorting the same, whether produced by cement impression and counter die, or burnishing into the cavity. All this is done by not neglecting the results of the occlusion in the act of mastication, as to the permanency of the inlay.

The proper knowledge of cavity preparation is, of course, very necessary.

The intention of this article is to try and convey the proper idea of making the porcelain inlay more permanent than it would be in its glazed condition, etched with acid or ground into by a disk before inserting into its abiding place by inlay cement. Cement has its power of strength through its increase of capacity. Its adhesive properties have been proven by inserting into a dry cavity as on a surface, especially when pro-

*Read before the Northern Indiana Dental Society, 1907.

tected from the chemical reaction of the mouth as it is when covered over with a porcelain inlay. While the margins are expected to be as nearly as possible invisible, the inside of the inlay can be hollowed out considerably in proportion to its size, and yet not interfere with the proper shading to match the tooth into which the same is inserted.

The system of making hollow gold inlays has been adopted as the one most artistic and permanent in most cases.

The same system will be an advantage in porcelain inlays in the largest number of cases for several reasons, that will be given in this article. (In all cases referring to anterior teeth as the gold inlays are better suited to the posterior tooth than porcelain inlays).

First. When decay has nearly reached the nerve, a hollow in the inlay at that point is an advantage over the old system by giving room to properly treat the point nearest the nerve, and yet allow the free insertion of the inlay.

Second. With this system you can groove, pit, etch or hollow out the inlay in the process of construction, making the removal of the matrix easier, while the inlay is ready for cementing into the cavity without any further preparation aside from polishing the outer surface. And in a great many cases that can be done better a day or two after the inlay is cemented in, with a fine stone for the rough, and polishing with carborundum or sand paper disks and a small wooden polisher and wet pumice.

Third. The hollow porcelain inlay can be produced with any form of hollowing, to suit the taste of the operator, by the guidance of his judgment of what is indicated to suit the case best, for aesthetic effects and permanency of the inlay, which is the stock in trade for the porcelain specialist (not meaning that this bars him from the old reliable gold and amalgam fillings—when the amalgam is reliable); that depends upon the proper conscience of the manufacturer of alloys, and especially the demand for the good reliable by the profession. The best is not any too good to reap a harvest of professional reputation, which usually is followed by the proper compensation for our services rendered to an appreciative community, educated up to a high standard of the present requirements of the dental profession. Should you have an incisal corner produce a hollow in proportion to the size and form of the inlay

in the case indicated, using yur own judgment as to the size of the hollow so as not to weaken the inlay, but making the inlay and the cement of equal strength as nearly as possible for incising and occlusion.

The hollow can be made in any form you desire it: knife edge, flat iron, oval, tubular, pin head, etc.

Fourth. In restoration of an incisal edge, where platinum or other pins are indicated for additional anchorage with this system, it can be done without packing the same into the porcelain by producing tubular hollows the depth and size desired; after coupled and ready to insert, the pins can be adjusted and cemented in the inlay before or at the time the inlay is cemented on the tooth.

Fifth. Where small inlays are made, etching, grooving or pitting is produced by coating the matrix, using a brush (with the mixture that will be given later) and baked 30 seconds by the gold test where using a plain electric furnace.

To make a groove, build the mixture around the walls of the matrix, and to make pits, dot it on with the small round brush, and bake as above before applying the foundation body—otherwise the mixture or bisque and foundation would run together.

Sixth. The mixture (or bisque, we may term it) that is used in producing the hollow porcelain inlay, also for etching and grooving, etc., of the same when the hollow is not wanted, is certainly worthy of a trial, for it will give good results, as well as open the field for further experiments in the art of porcelain inlay work. The formula for the bisque is as follows for producing the hollow:

Half porcelain inlay powder to half porcelain foundation body. Mix with water to the consistency of thick cream to build up any form desired. For coating the matrix to produce an etched condition, mix quite thin—don't use too much water on the brush to get good results.

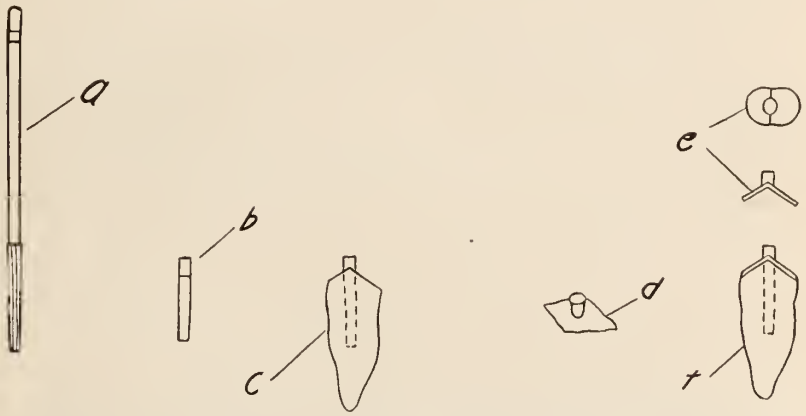
Seventh. Experiments show that the bisque mixture as above, when baked 30 seconds and mashed into a powder, will mix with the cement liquid and get as hard as the original cement powder and liquid in about the same length of time.

This being true, there is a possibility of a chemical, as well as a mechanical, union between the bisque baked on the inlay and the inlay cement in the cavity.

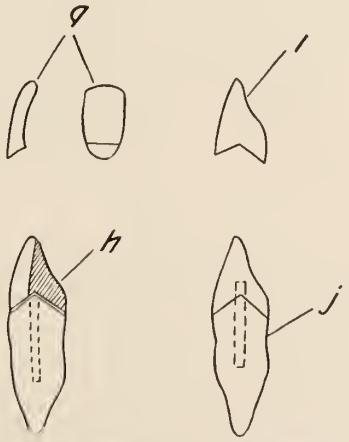
# THE MILLER PORCELAIN CROWN.*

By C. D. Peck, D. D. S., Sandusky, Ohio.

Two important features in the construction of the bandless porcelain crown of this clinic are the tapered reamer and double-tapered post, the long taper of which corresponds to




(a) Reamer. (b) Double taper pin (should be greater taper than cut shows). (c) Double beveled root showing pin in position. (d) "Puritan Hat" or matrix. (e) Matrix side and end view after burnishing and trimming to root. (f) Matrix in position on root.




(g) Side and rear view of facing after grinding back ready for attachment. (h) Facing waxed to matrix on root ready for investment. (i) Finished crown. (j) Completed crown cemented on root.

*Clinic at Northern Ohio Dental Association, June, 1907.

that of the reamer, and is inserted into the root of tooth to be crowned.

The "Puritan hat," or matrix, is made of 1-500-gauge platinum. Select facing from any stock of high-fusing porcelain teeth. Set post in root with quick-setting cement. Place "hat" on root and post and burnish carefully to end of same, allowing sufficient only to turn beyond margin of stump to indicate demarkation point.

Attach facing to matrix with sticky wax, remove and invest, and after burning out wax, build up with high-fusing porcelain to proper contour. Strip away the platinum, and after etching root end of crown, cement in its proper position.

This crown was first demonstrated by its designer, Dr. A. F. Miller, of Sandusky, O., at the Northern Ohio Dental Association, in 1905.

## ORTHODONTIA.*

**By Dr. E. G. Antrim, Lincoln, Nebraska.**

The points which should be most forcibly presented to the dentist of today relative to this subject are, first, the necessity of his doing some regulating in his practice, and, second, that he practice preventive measures as applied to orthodontia.

All of us, no doubt, realize how easy it is to put off a case in regulating, frequently from time to time, until the case is lost sight of, and a great deal of regulating is done in this way. However, I think this is the sad feature of the matter. The very fact that the patient is caused no suffering and in many instances no apparent uneasiness is the very reason they are neglected.

Another thing to be regretted is that so many of the marked cases of malocclusion are residents of rural districts. People who rarely consult a dentist, and if the dentist is consulted, unless the patient is very persistent he or she is put off the minute they open the subject of regulating; if very persistent they are informed that they had better go to Chicago. New York or some other place where there is a man who does nothing but straighten teeth.

Now, if these people followed the advice, well and good,

*Read before the Nebraska State Dental Society, 1907.

but they don't. On account of their natural antipathy for cities of metropolitan dimensions, and various other reasons (and, by the way, that is where we find the exclusive practitioner, known by us as orthodontist), these people prefer to go along with their deformities unless the home dentist will do the necessary work, and are glad to get it done. It is true, there are many cases that are too extensive and that require the skill and special training which only the specialist is qualified to do.

I think there is more harm done in neglecting the simple class of work than by attempting to do more difficult and complicated cases.

Secondly, every dentist should do all he can to assist nature in placing each individual tooth into its proper position.

Preventive treatment must be the watchword, as in other branches of dentistry and medicine.

Deciduous teeth must be retained until closely followed by erupting permanent ones.

The first permanent molars must be carefully preserved, and if any of the permanent teeth are determined to erupt out of the proper line of occlusion, guide them to place with as simple an appliance as can be employed.

As to age at which regulating can best be accomplished, I can only say that the younger the patient the easier will be the work, and the result more gratifying.

Last, but not least, in importance, "the retainer" keep in place a good long time, from 18 months to 2 years, and longer, and you will have less regrets.

## DISCUSSION.

**Dr. E. A. Hanna, Lincoln, Neb.:** I heartily agree with the essayist in saying there is too little orthodontia done by the general practitioners, principally on account of the time and patience it requires before results are obtained, and also patients, in ordinary circumstances, are, as a rule, unwilling to pay a nominal fee for the time and care it takes to bring about satisfactory results, but I think it is the duty of every dentist to be as careful regarding the normal occlusion of the teeth of his patients as in any other branch of our work. At any rate, we should pay more attention to the simple cases of little folks and prevent hard and complicated ones later.

**H. A. Shannon, Lincoln, Neb.:** I am in hearty accord with the

essayist when he said he was of the opinion that every dentist should do some regulating, and that he should practice preventive measures.

As to the preventive measures, I am sure that a large part of our profession extract deciduous teeth, in many cases, where they know full well the result that will nearly always follow too early extraction. We have many in our profession who never think of advising parents to have their children's teeth taken care of, but allow them to go, and as a last resort, extract several years before the permanent tooth will erupt. This state of affairs will continue until the laity becomes educated sufficiently to understand what should be done and demand it or change to some one who will render them the services they should have.

Many cases of irregularity that are easily handled, if taken at the correct time, are allowed to remain untouched until the case develops into a very difficult one and is then allowed to go through life in that condition when the entire difficulty could have been easily avoided if just a little work had been done at the proper time.

The retaining appliance is one of the important factors in securing permanent results. In the first place, a good articulation should be secured and then hold the teeth moved sufficiently long to allow the process to become dense around them. If the correction has been made at the proper time, there are very few cases that will require the retaining appliance remaining on more than one year; many cases can be removed in from two to three months. I will agree with the doctor, that he may have to leave the retaining appliance on two years if the patient is 35 to 40 years of age, but never for children.

## ANATOMICAL OCCLUSION OF ARTIFICIAL TEETH.*

By Dr. W. D. James, Tracey, Minnesota.

It is indeed a pleasure for me to be here today, and to meet with the members of this society. It has been my good pleasure, from time to time, to meet several dentists from Nebraska, and while attending this meeting I have been impressed with the fact as never before that the men from this state are truly up in line with the rapid advancement of dentistry.

Before taking up the subject of occlusion of artificial teeth, I wish to say a few words on what we see and hear as we listen.

*Read before the Nebraska State Dental Society, May, 1907

## THE IDEAL IN DENTISTRY.

I hear a great many dentists these days talking about ideal dentistry. Now, I want to ask one question: Does the ideal cover the whole or a part of dentistry?

There is nothing in the world equal to the power of an ideal. A man cannot hope to rise above the merest mediocrity unless he has an ideal planted firmly in his mind, and he cannot hope to attain to anything like his ideal without constant and untiring efforts. Moreover, just as a stream cannot rise above its source, it is physically impossible for a person to rise higher than his ideals. Now, from all I hear and see on this subject, I am led to believe that the ideal dentistry of today does not comprehend the whole. Each dentist seems to have his ideal along some particular branch, and oftentimes forgets the ninety and nine that are becoming lost.

Since I have been studying this subject, I have often asked the question, What is the standard of mechanical as compared to operative dentistry? As yet I have failed to find any one who considered it as high.

Now, I believe many reasons may be given for this. Operative dentistry seems to present a more attractive field for the profession, particularly to the recent graduate. It presents a greater variety of operations, and certainly more definite results. It seems to be more high-toned, and many seem to think a higher order of talent is required in operative dentistry than in prosthetics.

## VULCANITE HAS HELPED TO DEPRECIATE THE STANDARD OF PROSTHETIC DENTISTRY.

This I will never admit, and will try to justify my position later on. It will be admitted by all that vulcanite has been the one cause more than anything else that has depreciated the standard of prosthetic dentistry. The ease with which a vulcanite plate can be constructed and the cheapness of the production has undoubtedly presented an attractive field for incompetent persons to enter in times past, who have come into competition with more skilled and painstaking dentists, so that they have been compelled to turn to the operative field and let the prosthetic work go. It is not an uncommon sight to see women who wear their silks and sealskins wearing a poorly-fitting rubber plate, the teeth selected with apparent-

ly no thought of artistic taste. Cases like these certainly must make a dentist whose ideals are high turn to operative dentistry with a feeling of satisfaction that in this branch he can find a more appreciative field for operation.

It does not take long for a person of moderate ability and skill to construct a rubber plate that will work after a fashion, and I believe the dental parlors, and also the dental colleges, have pushed this class of work on the public until there is hardly anything but vulcanite demanded, and without doubt many teeth have been sacrificed on account of the cheapness that otherwise could, and would, have been saved.

Now, the point I wish to make is this: That in consideration of the fact that the necessity for artificial dentures will exist to the end of time, in spite of fillings, crowns and bridgework, why not, then, be able to turn to the prosthetic branch and supply the patient with a substitute that will make them look like themselves.

There are comparatively few dentists who possess the artistic ability to become experts in prosthetic dentistry. Surely, then, dental prosthetics should occupy as high a plane as the operative.

Most dentists consider the making of a set of teeth as purely mechanical, while, to my mind, it requires a finer eye, a finer artistic sense and as much mechanical ability to properly select and adapt a set of teeth to some patients who call for our services as to make a good filling. This expresses my idea perfectly and refutes the idea that operative dentistry requires the greater ability, as I have referred to previously in this paper.

### MORE ARTISTIC RESULTS IN PROSTHETIC DENTISTRY.

Now, then, let us lift dental prosthetics out of the mire into which it has fallen; let us study more diligently the requirements of each case we have, and study to produce more artistic results. Even with the limitations of the vulcanite plate, very excellent results can be produced by care in the selection of the teeth and the arrangement of the same. What looks worse than a small white tooth, be it ever so even, and worse on the upper jaw of a patient with dark complexion and a large jaw and wide face, and dark, yellow natural teeth in the lower jaw?

Gentlemen, I have seen this very thing many times, and what is worse still, many of them have come from dentists who make beautiful fillings. Is it any wonder, then, that dental prosthetics fall into disrepute when this kind of work is being turned out by those we look to for better things? There is, and always will be, a demand for artificial dentures; so I say we should meet the situation and put our thoughts, courage and skill into this kind of work, and I am sure if the results are pleasing the case will give as much satisfaction as any other dental operation. Again, I hold that every dentist, especially those located in the smaller cities, should put forth every effort to perfect himself along this line of work, as it will broaden and deepen his foundation principles, and if he can succeed in dental prosthesis he certainly will succeed in the operative, and the production of a fine, artistic, good-fitting denture does more than anything else to inspire the confidence of a patient, more than almost any other dental operation.

Dental prosthesis, properly speaking, should include crown and bridge-work, but the intent of this paper is to more particularly treat of plate-work. I do not care to say anything of crown and bridge-work, except this: If the character of a great deal of the crown and bridge-work of today is not changed for the better, and that very soon, the men who are doing some of it will see their finish almost before they know it.

Dentistry of today is not the dentistry of our fathers. By the word fathers I mean those noble men of our profession who laid the foundation upon which we today are building. "All reverence to their immortal names."

In all the liberal arts and sciences there are great masters. Music has its Beethoven, Wagner, Liszt, and others; sculpture its Canova, Michael Angelo; art its Correggio, Raphael, Landseer; literature its Shakespeare and Dante; law has its Blackstone, Kent, Cooley; medicine its Pasteur, Sayer, Koch, Gray, and others; dentistry has its Harris, Wells, Allen, Miller, Webb, but greater than all these, we have the immortal Black and Bonwill; and last, but not least, our own mighty Dr. E. K. Wedelstaedt. These men are all masters, and all those who are striving to follow in their footsteps are but apprentices.

Today, gentlemen, I invite your attention to but one, the

lamented Dr. W. G. A. Bonwill, who did more for prosthetic dentistry than any other man. It was he who first gave to us the idea of anatomical occlusion of artificial teeth, and perfected an instrument with which we are able to duplicate all the movements of the human jaw.

In 1895, Dr. Bonwill made a journey to St. Paul to demonstrate before our Minnesota State Dental Association. It was there that I received my first impression of what anatomical occlusion of artificial teeth meant. I at once became very much interested, and at the close of the session several of us were invited to spend the evening at his rooms, where he showed us many different skulls, and so thoroughly demonstrated the correctness of his theories and teachings that I have never since made teeth on any other principle.

In coming to you at this time I wish to say, I come not as a teacher or as one having authority, but rather as a humble disciple of my master; and if what I can say or do while with you is the means of helping any of you I shall feel that the time has not been lost.

### ANATOMICAL OCCLUSION OF ARTIFICIAL TEETH.

In consideration of the subject proper, "Anatomical Occlusion of Artificial Teeth," I wish to make a statement in order that I may not be misunderstood. As I said in the beginning of this paper, Dr. Bonwill has done more for prosthetic dentistry than any other man, and I believe most thoroughly in his theories and principles; but I do not exactly agree with him in all the details of his work. The points wherein we differ I will not take up in this paper, but will try to demonstrate them in my clinic in order that I may make them more clear.

Assuming that all steps up to occlusion have been taken, we will proceed with that. Before we can comprehend what constitutes true occlusion, we must know the anatomy of the human jaw and its function. I am fully convinced that the only way to learn anything about correct occlusion of the teeth is to make models of different mouths and study closely their general characteristics, also the abnormal conditions which present themselves. It is my practice before making operations of any kind to thoroughly examine the occlusion in

all the various movements of the jaw. In doing this I have received many valuable lessons.

To Dr. Bonwill we are indebted for an articulator which more nearly approximates the human jaw in all its movements than any other that has ever been produced. This fact I have proven to my own satisfaction, and you can do the same if you will search for the truth. It needs no argument on my part to convince you that an artificial set of teeth should correspond with the natural ones in every respect. Then let us take nature for our guide and see how nearly we can duplicate her works.

A study of the anatomy proves one thing, and that is, it is just the same distance from the center of one condyle to the center of the other as it is from the condyles to the point where two central incisors meet at the cutting edge, which forms a triangle of four inches, seldom varying more than a fourth of an inch.

Now, if we observe these points we will notice that law and order is the rule, and that the jaw, in forming this triangle, brings into contact the greatest amount of grinding surface of the bicuspids and molars, and at the same time allows the incisors all to come into action during the lateral movements of the jaw. You will also notice, in observing this rule, that from the cuspids the bicuspids and molars run in nearly a straight line instead of a curved one back toward the condyloid process.

In the normal jaw there should be an over-bite and also a corresponding under-bite, without which the incisors would lose largely their functions, that of incising food. Where the incisors strike directly upon each other the power to cut off food is very much lessened.

Where there is an over-bite and under-bite, just in proportion to their depth will be the length of the cusps in the bicuspids and molars. The curvature at the ramus must be made to conform to the depth of the over-bite, so that when the lower jaw is thrown to the right or left the buccal cusps of both upper and lower sets on that side come together at the same time. The curvature should be great enough to allow the lower second molar on the opposite side to move forward and meet the first molar in the upper. This also balances the plates during mastication and equalizes the action of the mus-

cles on both sides of the mouth at the same time. It may be a question with some whether, by this method of grinding and assembling the teeth, we can imitate the natural movements and expressions. I want to ask one question: Has there ever before been any definite rule or plan where we could regulate our beginning and ending in making a set of teeth? If there has been, I have never heard of it. It has been my observation that artificial teeth—I care not from whose hands they come —are seldom made after any definite rule. I will admit that there are many sets of teeth that do fairly good service, and there are many that look well, and the occlusion is good as far as the up and down movements are concerned, but when it comes to the lateral movements of the jaw they fail utterly. The regular horse-shoe shape, which we see so often, will not admit of the lateral movements, and at the same time bring the bi-cuspids and molars into a position where they will bear an equal amount of stress, and consequently is the cause of teeth breaking off and the double somersaults, excursions which teeth sometimes take. It may not be out of place at this time to give you a few simple rules, which, if followed, will be of service to you in following out this line of work. It is not necessary for me to say that perfect models and a perfect bite are necessary. After obtaining a perfect bite, mark the median line on both upper and lower models; then, with the dividers, mark the length of the bite. This will prevent any possibility of shortening or lengthening the bite in the arrangement of the teeth. In mounting the models in the articulator always place the lower so the median line is about four inches from the condyles of the articulator, and the wax or teeth line will stand about one-half inch from the floor of the articulator. Then place the upper model in position, and you are ready for the grinding and placing of the teeth. The first step is to grind the bi-cuspids and molars so as to form an ogee surface. The great advantage in this method is: We have presented at the occlusal line a broad surface contact instead of point contacts, as in the original teeth as we get them from the manufacturers.

In grinding up a full upper and lower the process is practically the same, only the position of the surfaces is reversed. In the upper the buccal cusp should be at a sharp angle, while

the lingual cusp should be somewhat rounded. The lower is just the opposite—lingual, sharp and buccal rounded.

In setting up a full upper and lower the six anterior teeth should be placed first, always taking into consideration the general characteristics of the features of the patient. The eye will soon tell one how much of an over-bite will be necessary to restore the natural expression. After this has been done, then commence with the bi-cuspids and molars on each side, first observing the necessary curvature at the ramus, which must always be as great as the over-bite. The lingual cusps of the upper should always strike between the lingual and buccal cusps of the lower when in repose. But when the lower is thrown to the right or left, the teeth upon that side should strike upon their cusps, while upon the opposite side the lingual cusp of the molars should strike upon buccal of the lowers. This will, as I have previously stated, equalize the action of the muscles on both sides of the jaw at the same time.

Gentlemen, in this brief paper I have tried to show to you that certain results can be obtained by following certain laws based upon the anatomy of the human jaw, and if by chance I have called attention to prosthetics in a way that will tend to elevate it to the standard of any other branch of dentistry, I shall be glad if it is only a beginning.

## DISCUSSION.

**Dr. Hunt:** It is a pleasure to discuss a paper on prosthetic dentistry. I have nothing but words of praise for the paper, because the sentiments expressed in it are absolutely correct. I would only offer one criticism in regard to it—rather not criticise, but make it a little stronger. I do not think the time has ever been, and I do not think it exists today, where one needs to beg the question as to the position that prosthesis occupies in the dental profession, because if it has any place at all it is the foundation of all practice of dentistry, whether it leads off into operative dentistry, orthodontia, or whatever you choose. The foundation must be laid in what is known and what is called prosthesis. It can not be laid anywhere else. There is no other place for it, and it may take many directions, and it does usually, but nevertheless the foundation principles that make prosthetic dentistry are also the principles that are governing nearly all the operations in dentistry. It is always a pleasure to me to pay a tribute to Dr. Bonwill. As the paper has said, he was the first man, and the only man, who ever presented a system of arranging artificial teeth in any manner so that it could

be understood by the average practitioner and be called a system. While, as the essayist says, in the use of it there are a good many times that it is not possible to follow all the details and extreme ideas that Dr. Bonwill presented and held, nevertheless that is nothing against the system. The system itself is the basis upon which to build the operation of arranging a set of teeth. This is not an easy matter to accomplish. One of the reasons why prosthesis does not command the attention of so many of the profession is because it requires more hard labor and more thought than any other part of the profession, in order to get a satisfactory result. If it were only dealing with the mechanics of the subject, in making the artificial dentures, we would soon be out of deep water, but the mechanical feature covers that portion of it which makes one successful in putting the materials together in a proper way, but to arrange a set of teeth, put these materials together, teeth, rubber, gold, whatever may be used in combination, in such a manner that when it is placed in the human mouth the artificial condition is not detected, that is far beyond anything that pertains to mechanics. It is a different field entirely, and it is something that with difficulty can be taught to the individual. It becomes a matter for each individual to work out for himself. But the system of articulation as discussed by this paper gives the basis upon which to start. Now, the measurements given there are approximately correct. It is an equilateral triangle from condyle to condyle and to the mesio-occlusal margin of the central incisor, and so long as you follow this or measure every set of teeth by this triangle of exactly four inches, why, you are going to have more or less of error; but take that as your basis because it is a perfect mechanical system to begin with; it is the starting point from which all other things may be done to better advantage, but without that starting point, without that principle and using that as a basis, you will be utterly at sea to accomplish anything later on. Now, the purpose of the equilateral triangle of Dr. Bonwill was to get the relation and location of the human teeth in the mouth. He found, like others who have investigated this subject—myself among the number—that there was no such thing as regularity in this matter. While in the general characteristics there were many things in common, just like one man looks like another man—all that belong to the race—all men look alike (man-like), but they are not alike, and this law of variation is a universal law; it is everywhere, in everything connected with the human body, whether it be the teeth or what not. But, as I say, you have a basis there that is approximately correct. It will vary from that, but that variation does not depreciate the system. It is the basis from which to work; you change or make any variation that the individual case may call for which is scientific and sure of the results.

Now, the paper speaks of the arrangement of the teeth so that anything outside of that would hardly be fair in the discussion of it. But there are one or two points in regard to this variation that I

spoke of that may perhaps not be out of place to discuss; for instance, nature began with the two lower incisal teeth to put them in place, and so should we, in the same way. From that starting point, nature built up the whole arrangement of the teeth, and so must we. Following out Dr. Bonwill's ideas about the occlusal—the o. g. surfaces of the teeth—if it had no other advantage whatever, the very fact that this porcelain on these surfaces is ground, that it is roughened, makes that a more efficient tooth to use, but the fact that they are ground in this form as an o. g., and the slight lateral motion that the jaw has—it does not have anything like the lateral motion that Dr. Bonwill always claimed for it—in fact it is so slight as to be hardly perceptible—but that does not matter; it is something, but no matter how much those teeth may move to the right or to the left, they are the same length, because these surfaces are the same distance apart all the time. Necessarily, if it comes in contact anywhere, why, then, they come to an even bearing on both sides of the mouth alike. So there you have a principle that is definite, and certainly there is nothing else that has ever been offered like it, and I don't know of anything else that can possibly take its place. No matter how much you might vary that, that substantial principle is there as a basis, and if followed and if used as a basis, which is probably all you can expect of it, it will give you good results. Now, all the work that Dr. Bonwill did was of a mechanical character. Dr. Bonwill was a great man as a mechanical man. This is not the only thing, by any means, that he presented: the dental engine, the dental plugger, and many things—any number of things. I have been in his office and know his home, and the things were without number that he was working on all the time, always doing something or other, but it was always of a mechanical nature. Now, he demonstrated this triangle. It is worth your while to read all that he has written on this subject; it will not be lost time by any means; but he demonstrated so carefully that the arrangement of the teeth and the position of each individual tooth, its position, is governed by the equilateral triangle, everywhere in the mouth; not considering that the law of variation exists everywhere, nevertheless his statement was correct, but from the mechanical side alone. Now, then, mechanics means something that is exact, absolutely straight lines, definite measurements, and so on. We can not have that altogether in the human body; certainly we cannot have it in the arrangement of the teeth in the human mouth. To call your attention to two or three items—for instance, the length of the lower teeth, the position of the lower teeth, the lower incisors as given by this equilateral triangle. The length of the lower teeth is not given by any mechanical measurements, nor can it be. The paper says inch and a half or inch and three-quarters, but that is approximate. I don't suppose he means for a moment that it is definite. There is a definite point outside of actual measurements that the length of the lower teeth is exactly the length of the lower lip everywhere, and there will be

no variation. Now, then, the length of the lower lip will vary; the peculiar conditions of the lip in a patient's case will vary, but the length of the lower teeth is always the length of the lower lip, whether that is an inch and a half or two inches; no question about it; it does not vary in any case. This field is outside of mechanics because there are no mechanical measurements that will do for each case; there is no way of getting at it mechanically. But with the articulator we are in the same difficulty all the while; it is exact; it is exact as to measurements and distances, and so on. That is not true in the mouth. For instance, in the same type of teeth or in the same individuals or same type, like individuals of a nervous temperament, the articulation of the teeth is not always the same; the overbiting of the teeth is not always the same; that is, the lower bite of the teeth is usually whatever is the length of the cusps of the bicuspid teeth, but there are many sets of teeth where the overbiting is considerably more than that; not that the bicuspids are responsible for that, but the growth of the teeth in the intermaxillary bones and a shortening of them brings on a lack of growth and the teeth are not the length that they should be in that particular mouth. At other times, they are longer slightly by an increased growth of the intermaxillary bones, so that these cases are outside entirely of the mechanics of the subject and are a part of our business to observe in each particular case. The paper spoke of taking models of natural teeth in the mouth. You have probably heard me say that before in this society, and it has not evidently impressed your minds very strongly, but without it you can never know anything about this subject. Why? Because you don't know what the condition of the natural teeth is in the mouth. You may find a skull like the doctor has here, that in its articulation is perfect. The growth of the bones in that head, the sutures, the sinuses, everything about that skull is absolutely as perfect as any one I have ever seen. Now, you might have a hundred skulls of this same temperament and not find another one like that. So that variation is the law that I want to get into your minds in addition, in using the Bonwill system. You can not follow exact mechanical lines and get the best results. You must study the work a little outside of that.

**Dr. C. E. Woodbury, Council Bluffs, Iowa:** I have very little to say in regard to anatomical articulation of teeth because all I have learned about it I have learned within the last two days. It was my pleasure, Monday and Tuesday morning, to take a course of instruction under Dr. James, and he has demonstrated, to my satisfaction at least, that it was a great improvement over anything that I have ever used before. I will have to take this home and see whether I can apply it. From my own knowledge, I am not in a position to make an intelligent discussion of this subject because it is so very new to me.

**Dr. F. G. Worthley, Kansas City, Mo.:** I have only a word or two to say in regard to this paper, which I have heard with a great deal of pleasure. I have noticed somewhere in the writings of some

orthodontist this claim: that 90 per cent. of mastication is done by the lateral motion rather than the up-and-down motion of the jaws. Now, there are two constructions that can be placed on that: if we call that the up-and-down motion, and that the lateral motion (illustrating at blackboard), it seems to me that if it was confined to the lateral motion you could not get any action at all. If you were confined to the up-and-down motion, you might just stab the food a little bit. If, however, he means that the jaw is 90 per cent. better and more efficient when it is so articulated that both the up-and-down and the lateral motions can be used, then I have no quarrel with the statement. There is one point in the paper that I think might possibly need explanation, and there is a question I wish to ask Dr. James. I have noticed clinically—and possibly a good many others have—that a large percentage of people who are wearing artificial plates—and this refers particularly to full dentures, upper and lower—chew with an up-and-down motion almost altogether—what has been termed a "Tom-cat motion" of opening and closing the jaw. Most people who use plates use them in that way. The question I wish to ask is this: Is that due to the faulty construction of the plates or is it due to the fact that they have not yet discovered a method by which teeth can be so formed and fixed in the mouth that they will stand the stress of the lateral motion, the tendency to tip the plate which exists when the lateral motion is used? It is obvious that when teeth are being used on one side of the mouth with food on one side only there can be no support between the plates on the other side, and there is a tendency to tip the plate. Whatever it is, people make that use of the plates; they seem to put food on both sides of the mouth at once and mash it by chewing up and down. What I want to know is, is that due to the faulty construction or articulation of the teeth, and can that be remedied by the Bonwill method? I have had the pleasure of seeing Dr. Bonwill articulate teeth; it was a revelation—it will be a revelation to any one to see a set of teeth articulated in that way if they have not seen it before, to see the amount of contact that can be gotten between the occlusal surfaces and in the carrying out of the laws set out by Dr. Bonwill, the measurements, the equilateral triangle, and so forth. They are all right and proper and necessary. Still the individual factor comes in the manufacture of every plate, because those rules have got to be varied. The anatomical articulator closely approximates the articulation and action and character of the human jaw, but not exactly; we are not exact; it is not an exact reproduction. The Bonwill articulator comes closer to it, in my opinion, than any instrument that has been given to the profession, and I say, let us use, of course, the very best that we have.

**Dr. M. E. Vance, Lincoln, Neb.:** Mr. President—I would like to ask Dr. James a question: In articulating a full upper denture, if the anterior teeth have an extremely long overbite, do you try to reproduce the natural condition there, or what would be your articulation?

**Dr. Newman:** I was very much interested in the discussion that has been brought out here of Dr. James' paper, and what Dr. Hunt has said; it has been familiar to me for a good many years—I have heard him advance the same theories long ago. Now, I was very much more interested in artificial dentures than the average young man, I believe, when I left college. It has been a good many years ago, although I am not very old now, and I have never followed this Bonwill method myself, but there is one point that I would like to have brought out: The doctor referred to an up-and-down motion, or an up-and-down method of using the plates; I have always called it a "pig-bite," and I have noticed this one thing, that a great many patients who have an excessive lateral motion of the jaw get very little use of their dentures. Now, I don't suppose that, although I have given the subject probably more attention than some, I have been more successful in constructing a denture that can be used than any one else, but I have noticed this one thing, that those who do chew up and down, those who divide the food and carry it on both sides, get as a rule the best service out of their dentures, and I have found that in cases where you could overcome that excessive lateral motion, that is, overcome the tendency in the patient towards that, that they would get so that they could use their plate. Of course, we all know that some use them with the greatest of ease and get a great deal of good out of the plate, even a plate that does not fit at all, and you cannot persuade them that you can make them anything different, but at the same time there are so many different rules followed out in making plates. I never could understand why a plate constructed on reasonable lines would be a failure where one just made any way would really work. I saw one that was ground absolutely flat and both impressions had been taken in wax. It was inserted in the mouth and the patient told to bite as hard as he could, and the cusps were ground off flat, absolutely flat; you could lay them on a table and all points would touch in that way if they were laid with the articulating surfaces onto a flat surface, and that patient got good service out of that plate, apparently. Now, that was constructed—the teeth taken out in the morning, the plate made in the afternoon—and I didn't do it! But I have seen that plate, and it is a success, so far as service is concerned. It is a hideous affair, from an artificial standpoint, but it works, so far as mastication is concerned. The paper has interested me very much. It has impressed me with the fact that I should investigate this articulation. I have never had much faith in that. I am a poor hand to leave off something old and take on something new, but I believe it is a good thing, and I am glad it has been brought out here today. I would like to have that point brought out, if you please.

**Dr. James:** I am very glad to hear this discussion. I am particularly grateful to Dr. Hunt for his generosity and kindly criticisms. I was glad to hear Dr. Hunt speak of some of the things outside of dentistry which Dr. Bonwill did for humanity. I wonder how

many here know that it was Dr. Bonwill who invented the hook buttons you are now wearing on your shoes. He was also the inventor of the Wellsbach burner for the kerosene lamp. I only mention these things to show you that Dr. Bonwill was not only a mechanic, but a genius.

Some doctor on my right asked the question, "How do you determine the distance from the chin to the incisal edge of the lower teeth?" I stated in my paper that the distance was from one and one-half to two inches, varying according to the size of the individual. My method of determining this is to take the measurement of patients who come under my care. In doing this I use either a large pair of calipers or the dividers. It is very easily done, and I feel sure, if you will do it, you will prove what I have said to be true. I might add, right here, if you want to be almost absolutely correct in mounting your lower model, you may take your dividers and take the exact measurements from chin, also from the angles of the jaw on either side, to top of the alveolar ridge, then place your model on articulator according to these measurements, and then you practically have the mouth in your hand.

Someone has said here this afternoon (I have not the slightest idea who it was), that a person can chew on both sides at the same time. Well, that was the old theory, years and years ago, but observations and clinical demonstrations have disproven that idea. I will challenge the gentleman to produce the man or woman who can regularly perform such a feat.

Now, relative to the equilateral triangle and the lateral movement of the jaws: It was my privilege some 17 years ago to visit the National Museum at Washington, and with a company of gentlemen we measured several hundred skulls of all the different races and tribes of men, and we found, aside from the anomalies, they seldom varied more than a quarter of an inch from center of condyle to center of condyle, and from center of condyle to the incisal edge of the lower central incisors, so we have adopted the three-inch equilateral triangle as the rule and guide in making artificial teeth.

The curvature of the lower jaw is to compensate for the lateral movements of the lower jaw, as it moves across the upper in the process of mastication, as I have tried to demonstrate to you in the clinic. It gives us the three points of contact which serves to balance the plates at all times and also equalizes the muscular tension on both sides of the mouth at the same time.

One gentleman spoke of the fact that we could not bite into a piece of food without tipping that plate. Well, it will do no good to enter into any argument over that point; but if we just stop for a moment and watch the process of mastication, we will notice that a bolus of food taken into the mouth is very soon divided by the action of the lips, the tongue and the teeth, into smaller divisions, and that we chew but one at a time, and that the tongue pitches them around just where they belong until each is properly masticated and ready to be transferred to the stomach. You may take one mouthful of

food and in the process of mastication you will swallow two or three times.

The method spoken of by the doctor, there on the second row, is the method known as the Pettit method. Dr. Pettit grinds his molars and bicuspids on a perfectly flat plane, so that they will articulate perfectly with a glass slab. I have seen this method demonstrated, but I have never found any one who has had very good results. There is one thing I have always believed in most thoroughly, and that is this: if we are going to duplicate nature, we must work pretty close to nature.

A man may meet with an injury and lose a limb. If he goes to a surgeon who is capable of making him an artificial substitute, that surgeon is not going to make one by guess. He is going to take measurements of the opposite limb, as to its length, size and all of its various movements. If he should say, "Here, I have a storeroom full of these; pick out one and take it home and wear it," I am afraid that man would not get along very well. The same principle applies in false teeth. You have got to take the individual case. You have got to use your judgment in applying the principle which I have tried to give you in this paper, and I think if you will follow them you will find that they are nearly correct. I do not claim that it is absolutely correct, because there is nothing absolutely perfect that I have ever found yet in the way of man's production.

Doctor Newman said that he had no faith in it; well, I can only say to the doctor, we must have faith if we are to accomplish the best results in any calling. We must apply principles, carry them to completion, carry out every detail, and the results will prove to you whether it is right or not.

I want to take this opportunity to thank the members of this society for their kind and courteous treatment towards me while among you. I want to assure you that it has been a great pleasure for me to be here, and I hope it may be my pleasure to meet you all again at some future time.

## REPORT OF STATE BOARD.*

**By Dr. Ladd, Lincoln, Neb.**

I was going to bring a communication to the state society from the state board. I wish to say to you that I am very glad to communicate with you. I asked the different members of the board what I should incorporate in my communication, and it seems that the communication will be a little indefinite unless there is something special to communicate. It seemed the main thing to say to you was to impress upon the members

*Read before the Nebraska State Dental Society, 1907.

of the state society that the board is very anxious that a close and hospitable feeling exist between the state society and the state board. Now, in some states it is required that the state board make a report to the state society. I believe in Nebraska that is not required, but I was to state to the members present that the board would be very glad to make a report to you if you cared to have a report, or to answer any inquiries that you might wish to make. We all know that the object of the state society is for the mutual benefit of its members, to promote our welfare, and the object of the state board is to promote and benefit the state in a professional way or any way that they can. Now, this reciprocity matter is not generally understood. In the different states in which it has been taken up the understanding is that if a man presents himself for a certificate from that board, unless he is a member of the state society, the chances are that he will have pretty hard sledding in receiving recognition from the state in which he seeks to take his certificate. Now, probably, if a man would make a test legally of his being turned down for the fact that he was a member of the state society, it may be that if he would make a legal fight, he might win out; but it is a pretty good idea to have the members know that the state board is back of them and that unless a man presents himself for a certificate from a state board to be taken to another state with which we have signed up reciprocity or an agreement of reciprocity, that he will not have recognition unless it is incorporated in the papers that he takes with him that he is a member of the state society. Now, if the state board is doing that much to encourage membership in the state society, why, the members of the state society should always say a good word for and back up the state board. Some people have a tendency to try and belittle the authority and importance of the state board, but I want to assure you that in this present age, which seems to be going along the lines of anti-graft, that the state boards are given a great deal of latitude by those high in authority, delegating to the members of the board, giving to them the power to rule on a great many matters that come up before them, and make rulings to cover a great deal of important matters, and in these matters and things of that character they will take the rulings of the board as final, and the main object I have in making this communication to you today is to have

the members of the state society feel close to the state board. If you have any complaints to make, why we would be glad to hear them. It would surprise you to see the different communications that have come to us, especially along the advertising line. Now, unless you have taken special pains to read the new law, you may be surprised to know some of its provisions. Now, a great many of us don't care so much about the advertising business. It is not hurting our business, but it is a disgrace to the profession—some of the literature that is thrown out broadcast as to dental work. Now, the board has a great many communications to them asking what can be done with certain parties who are sending out some of this literature. I want to say to you, that there is a provision in the law that a man's certificate may be revoked for several reasons, and one of the reasons is unprofessional conduct, and the law is kind enough to define what unprofessional conduct shall be. It says for advertising, or claiming to be able to do impossible of improbable things or gaining a fee under false representations or fraud, and when a man makes some of the statements that we see advertised, it borders very closely on fraud and misrepresentation. And if any one is specially obnoxious to any of you in your immediate neighborhood, if you will mail to the state board the literature that you think is of the character that should be brought up and possibly be grounds for forfeiting the certificate of the one in question, why, the state board will be very glad to notify the one that his case has been brought to the attention of the state board and give him a warning, and very often a warning of that character is enough because it does not cost the state very much to get the machinery in motion against any man who has performed a trespass of that character. The state board has a great many requests to stop a certain man practicing, and I want to say that the county attorney is the one to bring that action. The state board is not the one to do that. The getting of a new law in running order in a state we find is a pretty hard proposition. The law has been in force now only two years, and we are really just beginning to appreciate a good many of its good qualities, and we feel that we have now one of the best laws in the country in Nebraska. The state board hopes it will receive the co-operation of the state society and help us in all the ways that you can. The state board and its members

are going to do all they can to help the society along the lines which I have told you about, and I hope that the communications I have given you today will promote the intimate and cordial feelings we hope will exist between the state society and the state board.

## A GOLD INLAY, MESIO-OCCLUSAL CAVITY IN AN UPPER BICUSPID WITHOUT INVESTING.*

**By Dr. Beeson, Beatrice, Nebraska.**

I will say that there was nothing special about this. I prepared the cavity as for any inlay and burnished the gold into the cavity with a large round burnisher first, next a smaller burnisher, and then with the smallest round burnisher that is used for that work and flat instruments to burnish the matrix into the cavity. I used 36-gauge gold. In putting in the gold you can use any fibre gold. This I packed quite firmly with hand pressure until it was well filled; then round the margins and remove the matrix and foil very carefully. For soldering use 22k. solder. Finish the proximal surfaces and the cervical portion of the inlay before it is set, and finish the occlusal portion after it is set.

*Report of clinic at Nebraska State Dental Society, 1907.

## NON-COHESIVE GOLD FILLING, OCCLUSAL CAVITY.*

**By Dr. C. E. Brown, Emerson, Nebraska.**

The clinic yesterday was a non-cohesive gold filling. The cavity was in an occlusal of a superior first molar. The preparation of this cavity was almost as the preparation of any other cavity, with the exception that there was no beveling of the margins because we want almost parallel walls. We have just the least little bit of undercut; practically none; I do not believe it is necessary to have any. My method is to have the gold rolled up into pellets about one-third longer than the depth of the cavity. I start with pellets almost large enough to

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fill the cavity half full and cram the first one in, and after that another in the opposite side until I have it full. Then I have a wedge-shaped instrument, and I insert little gold wedges rolled tight in there, and keep the operation up and get in as much as I can and mallet it down good and hard. That is about all.

### DISCUSSION.

**Dr. Farrell:** I am inclined to think that this non-cohesive gold filling, particularly for occlusal cavities, is one of the coming things. I think we can better preserve the teeth with the non-cohesive gold filling in an occlusal than you can with the cohesive foil. If the filling was going to be a large one I would say put in a gold inlay. With a small one, I would say put in non-cohesive gold.

**Dr. Vance:** One thing I would like to criticise Dr. Farrell for: the larger the cavity, it seems to me, the more need of making a non-cohesive gold filling rather than an inlay. Yau can make it quicker and have a better adaptation with less time than you can with a gold inlay.

## A CASE OF ORTHODONTIA.*

**By Dr. H. A. Shannon, Lincoln, Nebraska.**

This was the case of an impacted cuspid that had not erupted owing to the fact that it had been interfered with in its direction and during its formation. The root laid off at perhaps an angle of 45 degrees of what it would naturally; didn't stand in the arch as it should. This was apparently giving no trouble. I made a plate for the young man who wore it for about a year. He then took the plate out, and for a period of three or four months the case was allowed to stand in that condition. No progress was made. Then I used an appliance, and the appliance that I made, I don't know whom to give the credit to for it, but at any rate, it was an affair that I made myself. I know I got the idea from some place else, but I don't know where or who. It consisted of a band around the central. You understand, there was no lateral incisor present. A temporary lateral had existed there at one time, but had been struck by a baseball and loosened so that it dropped out. That left the cus-

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pid in position, and this tooth was to be brought down in the place of the lateral and cuspid. I made a band for the central incisor of German silver banding material. In the first bicuspid there was a filling in the distal surface covering the occlusal fissure, and in this amalgam filling I drilled a hole, using a round bur, going down to perhaps the depth of one-eighth of an inch, not allowing the bur to go through the filling, but so that the entire point would rest in the filling and not touch the margin of the filling. To this band, which I placed around the central incisor, I soldered a piece of tubing. In this tubing I placed a piece of gold spring clasp wire just fitting the tubing. (It does not need to be heavy—the thinner the better.) It was not more than 18-gauge; I think that was the size of the wire. I bent it from the tubing to an angle of about 90 degrees, bringing it across the open space made by the absence of the cuspid, and I produced another angle and a point extending down, which I allowed to enter the hole in the alloy filling which I had made. In the cuspid I went under the margin of the gum, of which there was but little of the tooth showing. I drilled a hole and placed and cemented in this hole a piece of spring clasp wire, bending the point as it came out at nearly right angles to the surface of the tooth, making a hoop so as to hold the wire. I used that brass wire then that is recommended in the regulation of teeth and I proceeded from day to day to tighten this wire, and drawing it down from day to day, putting pressure on the teeth until the crown was exposed. This tooth was rotated slightly and I drilled another hole and set another pin and put another angle on and put a wire on, the same wire that I had used, and by tightening that from day to day I have rotated the tooth and it has come now pretty nearly to place.

## TREATMENT OF PUTRESCENT ROOT-CANALS.*

By Dr. J. W. Puckett, Geneva, Nebraska.

My method of procedure was to cleanse the cavity and the pulp chamber and canals as much as I could conveniently with instruments, and washing them out, then packing the canals with cotton moistened with oil of cloves, and placing a

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small quantity of that preparation about the size of a number six or eight bur in the pulp chamber, wrapping them in a little cotton, making a pellet of it and sealing it with temporary stopping. This preparation is made from solidified formaldehyde, oil of cloves, oil of eucalyptus and glycerine, just enough of the oils and the glycerine to form it into a paste of a consistency to work conveniently. I have used it for more than five years and used it in all cases where I put a dressing in a canal preparatory to filling the canal afterwards.

I do not claim that this preparation will cure an abscess or a putrescent canal, where it is in very bad condition, in three days. I seldom ever treat a tooth with it, and remove the treatment in three days. My object in removing this treatment tomorrow that I put in yesterday was simply to give the doctors present a chance to see what progress had taken place at that time, not expecting, however, that this tooth would be in condition to finish at that time. But if that same dressing I put in yesterday is left for a week or ten days or two weeks, that tooth will be ready to finish permanently when it is opened, without any further treatment. I use that treatment and place the one single treatment in and leave it anywhere from one week to three weeks, any time it is convenient to have a second appointment to finish the tooth. Formaldehyde is a good thing, we all know, but a dangerous thing to use indiscriminately in pulp canals and pulp chambers. I experimented with formaldehyde two years before I finally got this preparation so that it was successful. I want to say here that there is not a manufacturer in America that makes a formaldehyde that is satisfactory. The formaldehyde that is used is made in Berlin, Germany, and that solidified formaldehyde, after being combined with the essential oils as used there does not germinate formaldehyde and allow the gas to escape up the canal at all until it is subjected to heat higher than 98 degrees Fahrenheit. It would stand for years and no formaldehyde escape from it, not enough so that you could scarcely get an odor from it at all until it got above that heat. A piece the size of a number six bur placed in the pulp chamber would continue to generate formaldehyde for a year, and if enough heat is applied it entirely evaporates, if it is the right kind of formaldehyde, and it is simply placing a gas plant in that pulp chamber that continues to generate gas, not fast enough to

produce pressure or cause irritation, but fast enough to go up that canal slowly and through the fistuli, into the tubuli, and find all the germs there and destroy them.

## HIGH-PRESSURE ANESTHESIA FOR REMOVAL OF PULP.*

By Dr. A. J. Cobb, Lincoln, Nebraska.

The method I used, or attempted to demonstrate, was the high-pressure syringe. My operation of procedure was somewhat at a disadvantage. I had a carious tooth, an upper second bicuspid with a large filling in it, and the mesial wall was well decayed away. I have often made my boast that I can take this syringe in a normal tooth and expose the nerve and remove it in 50 seconds from the time I start. However, I did not accomplish this yesterday; I was at a disadvantage. In using the syringe I use one-third to one-sixth grain tablets of cocaine, with one to three drops of ammonium chloride, to prevent the flow of blood, and some water or witchhazel. You can apply any amount of pressure that is necessary and it will not burst the tooth. The touch of the operator will demonstrate when he has pressure enough; simply by the turn of the handle he knows when to apply it, and in removing the syringe it comes away with a crack, demonstrating what pressure you have. If we think it advisable to crown a tooth and not extract it, I think the syringe could be recommended for that more than anything else. Simply make your preparation and crown the tooth without any injury to the tooth whatever, or any pain to the patient. A number of doctors asked me if they have a sore tooth from the effects of the high-pressure syringe; I will say that occasionally they do have a sore tooth, but not any more often than they would from pressure anesthesia, and not as often as they would from a careless application of arsenic. I think it is as safe, and more so, and a great deal quicker, than the arsenic treatment.

### DISCUSSION.

**Dr. Warren:** I want to raise my feeble voice against this high-

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pressure syringe, because I think it has done far more harm than good. It has destroyed pulps in teeth where the cavities were very small, where it was not any more necessary to destroy the pulp than it is to destroy the pulp in taking off the tartar. And while it is perfectly proper to use them undoubtedly in these cases in order to take out the pulp, it is not proper to use it in these cases wherein the tooth is to be crowned to obviate that pain. Nor is it proper to use it in those cases where a filling is to be made. At the February meeting in St. Paul, Dr. Conzett made a gold filling for a patient for which case Dr. Jackman, of Cleveland, had used one of these syringes. Dr. Conzett was not accustomed to the syringe at all, and he said it worked very nicely, that the pain was obviated entirely. But, he said, "I would like to see what the result will be, however." Dr. Jackman said he had not had any bad results. That is very strange, that he had not had any bad results. If a person watches the results of that syringe very long he will see a good many injurious results; he will see a good many pulps destroyed by injections into the dentine. It is absolutely unnecessary, and it is going to destroy a great many pulps by pushing something into them, and I don't think it is correct practice at all.

**Dr. McCleery:** I think it is all right to use that where I want to devitalize a tooth, but I think it is bad practice to use anything of that kind where you want to save a pulp. My experience has been, even with the pressure anesthesia for sensitive dentine, that rubber will destroy half your pulps. I say that has been my experience, and I have quite it. I am not ashamed to admit it—that I have quit work along that line any longer.

**Dr. Wildman:** I would like to ask some of the gentlemen who are not in favor of this syringe why it is any worse for the pulp to drive the blood out of it than to drive the blood out of the gum and then expect it to come back?

**Dr. H. R. Hatfield:** There is only one disadvantage. The pulp, strictly speaking, is embryonic tissue, and when you drive the blood out of that pulp you destroy its power to rebuild itself. It has only one power in protecting itself, and that is forming secondary dentine. When you drive the blood out of that pulp you destroy its ability to rebuild itself, and it has no power. It has no power of recuperation. It has no power to overcome injury. When once injured it is what you may term dead, or it will suppurate. That is the trouble with driving the blood out of any pulp. When you do that you can then take the pulp out and fill the canal. That is the only resource you have left.

## AMALGAM FILLING, MESIO-OCCLUSAL, UPPER FIRST MOLAR.*

By Dr. M. E. Vance, Lincoln, Nebraska.

The filling was in a mesio-occlusal cavity of a second bicuspid, and there was nothing peculiar about the preparation of the cavity, but my method was demonstrative of a covering of cement underneath an amalgam filling, and it was suggested to me by my use of it in the inlay to prevent thermal change, and, as I feel, making a better filling than just using the alloy.

I don't use cement for strengthening the walls. If I have a weak enamel wall I cut it away except in exceptional cases. I am like the average dentist; I do the best I can in every case. In some cases I will leave a weak enamel wall rather than to destroy the pulp or to make a sort of a temporary operation with the expectation that in time the pulp will have to be destroyed. I invariably tell the patient that I expect this to happen. I mix my cement reasonably thick. I use a slow-setting cement and a quick-setting alloy, and the cement I cover over the entire surface of my cavity, and then build the amalgam down against all surfaces that are covered with the cement before placing my matrix. Then I have all of my walls and all of my margins covered. One thing I did not say about my method was the use of Dickinson's wedge matrix, which I find absolutely indispensable to my office equipment. I don't see how I practiced dentistry and made amalgam fillings before I procured this valuable little instrument. The object of it is to separate the teeth sufficiently so that you can get the proper point of contact with the adjoining tooth.

### DISCUSSION.

**Dr. Roseman:** I commend that method of using the cement for lining a cavity. It prevents the discoloration of the amalgam. It is a hobby of mine, as I brought out in my paper yesterday morning of lining the cavity first with a preparation that I suggested then. Then you have the cement in place, and there is no chance whatever for any moisture or anything to get in between the filling and the tooth. Therefore, there is no chance for discoloration and no chance for decay.

**Dr. Beeson:** I will state that I have been using this method

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for some time, and always in large fillings where the pulp has not been removed. It protects the tooth from thermal change, preserves the color of the tooth, and I believe adds very materially in the retention of the filling.

**Dr. Puckett:** I have used the method for more than two years of lining all cavities of any size with cement whether I used amalgam filling or gold filling, and I am satisfied that I gave my patients better service since I adopted that than I ever did before. As has been suggested, it prevents discoloration to some extent and insulates the sensitive part of the dentine from thermal changes and strengthens the weak walls where there is not much dentine to support the enamel. I know that in my work it is a great deal better done that way than it ever was before.

**Dr. G. R. Woods:** Cement is a fine thing in inlays; if it is such a benefit to it there it is a benefit in our filling.

**Dr. Farrell:** It seems that every one here has been using this cement. I have not. I do not believe in putting cement close to a pulp. If I wanted to protect the tooth from thermal shock, I would use a pulp preparation there is for that purpose. There is some virtue in cement holding up weak walls, but altogether I am not in favor of putting cement close to the pulp. You have all had experience of having the pulp die on account of the cement being too close to it.

**Dr. H. R. Hatfield:** Sometimes I use it and sometimes I do not. I believe that in some cases it is all right. I believe that in a great majority of cases it is just the wrong thing to do. When it comes to thermal changes I doubt very much if cement really insulates the filling to any great extent. I imagine that a thin mixture of chloropercha or gutta-percha will do just as much good as the cement, and I rather favor hard gutta-percha for capping rather than cement alone. For strengthening walls I like cement; I believe I will use it. Ordinarily, when a wall needs strengthening by cement, I rather favor breaking it away. I believe the only support for enamel walls, the ideal support rather, is dentine. I don't think cement would be an ideal support for enamel.

**Dr. Van Slyke:** I would like to ask the doctor if he allows the cement to set before he proceeds with the amalgam, or is the amalgam worked right into the cement?

**Dr. Vance:** Place amalgam before the cement sets.

**Dr. Van Slyke:** That is the method I have used for some time with amalgam fillings. Cover the cavity with a thin layer of cement and work the amalgam right into it, and let it stand until the cement is partly set and finish the filling. You can put an amalgam fillings into a cavity without any retention at all, and you can't pull

it out. If you have a flat seat you don't need any other retention except the seat. You don't need to weaken your cavity by undercuts as you would with amalgam alone. I think that is the only way to put in amalgam fillings.

**Dr. Vance:** As to the using of pulp capping, I see no need of embalming the pulp, and I don't believe that there is any cement in the market that will destroy the pulp. I have used this method and I have placed cement close to pulps practically in all of my professional career, and I have yet to have a case return to me with the pulp destroyed from the effects of the cement.

**Voice:** Maybe they went some place else.

**Dr. Vance:** Probably they did. My method of cavity preparation is similar to what Dr. Van Slyke has described, and I followed out Dr. Black's cavity preparation as far as my conscience would permit. If I have a flat base and parallel walls my filling will stay in there.

**Dr. Hatfield:** Will it stay without the cement?

**Dr. Vance:** Yes, sir; it will stay in there.

**Dr. Hatfield:** You don't need to have an undercut like a lead pencil to hold it in.

**Dr. Vance:** Yes, but there is no amalgam on the market but what will expand, and with a cement lining it acts the same as it does with an inlay.

**Dr. Roseman:** I want to ask him one question, and that is this: Do you permit the cement to come clear to the margin of your filling?

**Dr. Vance:** I do, yes sir. I aim to have it there.

**Dr. Roseman:** And not cover it up with your amalgam?

**Dr. Vance:** And not cover it up with my amalgam? Yes. I aim to have the cement come clear to the margin and then I force my amalgam clear over the margin, making an amalgam joint there.

**Dr. Hatfield:** I use this in all amalgam fillings, small, large or indifferent.

## ADJUSTMENT OF THE LOGAN CROWN.*

**By Dr. Cross.**

The Logan crown can be used and made nearly a perfect joint, and I might say further that I got my pointers from Dr. Hatfield that he wrote something like a couple of years ago. I go just under the free margin of the gum all around except on the lingual portion, and I don't go any farther down than just to hide it, and it is a very easy matter to take the explorer and push the gum down. If you haven't got it finished, keep on grinding; anybody can grind it that can handle an engine stone. Probably it is not necessary to use foil of any kind, although I believe the foil is an advantage. As to getting the teeth the correct shape, a man using Logan crowns should have a set of trays and pick one as nearly as possible, and then grind it. Slip your explorer down and grind away to the point you want. In my clinic yesterday I only had four crowns brought down here with me, and the one nearest to it was just a line smaller than the root. I did not grind down the lingual portion any farther than where the band of that tooth comes, or that bulge, you might say. Then that joint is self-cleansing. If you have a whole lot of cement in there to form that joint, that cement is going to wash out, and in a very short time you will have an imperfect joint, but they can be gotten perfect by grinding.

### DISCUSSION.

**Dr. McCleery:** I have used the same system that Dr. McMillen stated—not for 30 years, however—but I use gutta-percha instead of gold foil. I just want to throw that suggestion out so that if you don't happen to have any gold around you can very materially improve your joint by using your gutta-percha. After I have prepared my root and crown as nearly as I can, I take a piece of sheet gutta-percha or white gutta-percha and punch a hole through and trim it off, and then warm with the alcohol lamp, and press it into place, and let it stand there for just a minute until it hardens so that it will withdraw. Take it out and trim it off with warm, sharp instruments around the crown, and then warm it again and press it back in place, and it is ready to cement. You have a gutta-percha joint, and you have the tooth fastened with cement. I think it has been a great help to me in setting Logan crowns. Where I have used that I have not had the cement wash out.

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**Dr. Thomas:** I was to open the discussion on Dr. Cross's crown. I watched the work with interest and I want to compliment the doctor on his thorough work and the union between the crown and root. But in order to bring before the convention a few points that I would like to hear discussed, I want to criticise his method of root-preparation—simply to bring before the convention a few points that I want to hear discussed, and that is, I have seen very few crowns on the labial or anterior portion with a calculus deposit at the junction of the root and the crown, and when the root was not ground down to the gum margin on the posterior or lingual portion, in a few instances I have seen at the junction of the crown and the root as it enters the free gum margin decay taking place, and I would advocate their grinding—not in all cases, but in the case Dr. Cross had—the lingual portion below the free margin of the gum.

**Dr. Shriver:** I wish to say that I watched the doctor with the clinic, and I would say that I was very well pleased with the operation, though I differ with him somewhat in my own practice, and yet I am not quite certain that I would be correct. I want to criticise Dr. Hatfield when he gets up here and says that the home-made crown will beat the manufactured crown. There are very few dentists that are expert porcelain workers or carvers; there are very few of them. A manufactured crown, and especially a Logan crown, will beat anything any dentist can conceive of for a crown. It is the most natural crown and the best shape. It is true some of them have to be sharpened, but I think the Logan crown is a splendid crown, and in fact the dentist need go no further. I have set a great many and I never use much but cement. It works first rate and I don't need either gold foil or gutta-percha.

**Dr. Smith:** I would like to ask the doctor if he grinds it any different in setting with cement than he does with gold foil.

**Dr. Beeson:** I at one time thought that I could grind a Logan crown just about as close as anybody else, and by examining carefully could examine the joint with an explorer by placing a small piece of carbon paper in there and pressing it firmly down after I have made the joint, and I would find possibly two small places where I hadn't got it right. Take it off when you have found out this way, grind again, examine it again with carbon paper and keep on grinding until you have discovered and corrected all the marks disclosed by the carbon paper.

**Dr. Shriver:** One word I want to say in regard to this: I use a small hatchet-shaped spatula, very thin, and in passing it all around, if you get to a little point that it sticks out, by using that spatula you can generally locate it by feeling carefully around. I use that a great deal for finding the places.

**Dr. Cross:** The point that I brought up in my clinic yesterday

was one of the very objections that I hear mentioned about getting a perfect adaptation. It doesn't need any beeswax, carbon paper or anything else. I borrowed a method of Dr. McMillen. Keep the stump of the root wet. Whenever you touch that crown there, when you place it on and take it off, there is a wet place on that crown where it touched the root. Grind that wet place and keep on grinding it, and if you have too much saliva on that stump brush some of it off with a piece of cotton. But there is the point all the time.

## LOGAN CROWN, DEMONSTRATING FOIL JOINT.*

**By Dr. D. J. McMillen, Kansas City, Missouri.**

I have not very much to say in regard to this matter. I don't know that there is anything special, any special reason for this, except long years ago in the Missouri State Society we had a discussion as to how to prevent the cement washing from the joint of a porcelain crown, and in talking that over it was said that if we could devise some plan to keep that cement in the joint, or keep it in position where it couldn't wash out, where the secretions of the mouth would not wash it away, or devise some plan by which something else could be put in the position where the secretions of the mouth would not wash it away, we would have an ideal crown. In thinking over the matter after going to bed that night, I couldn't go to sleep, and I devised the plan of placing between the end of the root and the crown this gold foil and forming a gold foil joint, and I have used that to some extent all these years. That was 28 years ago. I don't know that there is any very great advantage in doing it for the reason that the Logan crown or a porcelain crown of any description well set with good cement without any foil makes an excellent piece of work. With the foil I believe that I can possibly make a water-tight joint or a joint from which the cement does not wash away or wash out, and which holds itself in position so that it is possibly a little better than the cement alone. We lose the stickytiveness of the cement between the crown and the end of the root, and we gain a little possibly by not allowing the secretions to penetrate that joint. I believe that the joint is water-tight. I had quite a discussion with a gentleman up there today, saying that it was not possible to make that joint waterproof. I don't know

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whether it is water-tight or not, but I do know that it serves the purpose well. I have heard a great many men say that Logan crowns were temporary and not fit to insert. To my mind, the Logan crown is the best crown on top of the earth. There are various ways of setting these crowns by baking the porcelain in them, or in many other ways, but if I were setting a Logan crown of any description, or any crown of any description, I should certainly not build the crown up with porcelain. I have worked porcelain for more than 30 years, too. I believe that the Logan crowns are better than the ones any of us can make. If you want to add to it for the purpose of making a joint add porcelain and bake, all well and good, but I can grind to my satisfaction a crown if the end of the root is in good condition, and I can get perfect satisfaction out of the work.

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### DISCUSSION.

**Dr. S. J. Cunningham:** I would like to ask the doctor how many thicknesses of foil he uses to make that joint.

**Dr. McMillen:** In the joint I made today I folded the sheet of gold over so that it represented a sheet 96 thicknesses. Through the center I punched a hole, and after grinding to fit for accuracy, not as accurate as I might have possibly ground it if I had had a better engine and a little more time, I placed that between the root and the crown, put the cement in the opening and a little on the pin, driving the two—or should have driven it—solidly together. I used a pencil not having a pine stick, but it should be hit a couple of sharp raps with a pine stick, driving it up as thoroughly as possible until the cement sets, and then the surplus gold that stands out can be cut off with a sharp instrument of any kind and burnished and polished and disked.

**Dr. Shannon:** I would like to know whether it was cohesive or non-cohesive gold.

**Dr. McMillen:** Non-cohesive. I think it makes little difference. I usually use the non-cohesive gold because it adapts itself very readily to any purpose.

**Dr. Meservey:** I would like to ask the doctor how much he grinds his tooth up under the gum margin.

**Dr. McMillen:** In grinding the root of the tooth for a porcelain crown—any kind of a crown, whether it be a Richmond or a Davis or a Bonwill or a Logan crown—I grind it concave from back to front. The stone is about the size of a quarter I do the grinding

with, and I grind it as much as the surface of the stone grinds it concave from the back to the front, holding the stone directly against the end of the root, and from side to side I concave it, leaving the center of the root the least little bit concave from back to front and considerably concave of course from side to side following the gum festoon. In other words, I want the edge of my crown and the edge of my root to come together, and I don't care anything about the center coming together. The center will take care of itself if you take care of the margins and grind just so that the joint is hidden by the free margin of the gum, just so that I may see that joint all the way around by putting the glass behind and pushing the gum up. I can see whether I have a joint or not. I have been fighting bands, gentlemen, for 25 or 26 years, or more, in all the state societies, five or six a year. Bands ought not to be put on teeth. There might be an exception to that, but that is pretty good doctrine, and I don't like any kind of a band on any kind of a front tooth, and I don't like any kind of a band on any kind of a back tooth, if we can get rid of it.

**Voice:** Why?

**Dr. McMillen:** Because it destroys more roots and teeth than anything and everything else combined in dentistry, and I can prove it.

**Dr. T. J. Hatfield:** I am glad that Dr. McMillen said one thing that I can agree with him about, that is in regard to bands; but I don't believe he produced one particle of argument that I would call argument, so far as this crown is concerned, that will stand. Now, I believe that I am allowed three minutes?

**President Morrison:** Two minutes.

**Dr. T. J. Hatfield:** It is absolutely impossible for me to say one-half or one-third of what I have got to say in regard to the crown or the setting of a crown, in three minutes. Consequently I won't undertake to do it, but I want to say that there isn't a man in this room that can grind a root preparatory for setting a crown and grind a Logan one time in a hundred that will be anything like a mechanical piece of work. I don't care if he does put tin foil—gold foil—in the joint. There is nothing that is any more important than adjusting a crown. We find roots every day that can be made serviceable if a good and substantial crown is placed upon it, but I want to tell you that the Logan crown has two or three very bad objections, and one is—now, I can take half an hour explaining to you why the Logan crown is absolutely inefficient. The greatest trouble is that there is not a man on earth that can grind that crown. If it was the natural formation of the teeth, you could do it, but the Logan crowns, or any other manufactured crowns, are made of a kind of a special shape. They are not of various shapes. We know we find roots of uniform shape. The periphery of the root will not correspond with the shape

of the Logan crown, or any other manufactured crown, consequently we will have a shelf, a shoulder, one place on the crown and on the other side we will probably have a shoulder on the root, and we have an imperfect condition.

**President Morrison:** Time is up, Doctor.

**Voices:** Go ahead; go ahead.

**Dr. Hatfield:** Another objection to the crown, the manufactured crown, is, they are just like the manufactured teeth, artificial teeth. They have an artificial appearance, and in a young person, a person of tender years, you can match the teeth very nicely with a manufactured crown, for instance, but you take a person up in the middle age or past the middle age, those crowns do not give expression, and you cannot get the expression. We have cases where there is a peculiarity of the mouth—there is always some peculiarity of the mouth. You take a manufactured crown, and you can not overcome that. I can tell it as far as I can see the person; I can detect it. If you can make a crown—if you have a plan by which you can make a crown, when you make it to take in all of these peculiarities of the mouth, and to get your adaptation, to get your expression, and when you have your root prepared, and prepared in the right way, and as it should be, by grinding a Logan crown, I would like to see it done. I would like to ask Dr. McMillen one question. He says he uses a stone about the size of a quarter of a dollar, and he cuts the end of the root with that, but he does not make it complete. I want to know how he is going to cut that root below the free margin of the gum with that stone and not make the gum bleed.

**Dr. McMillen:** You misunderstood my statement, Doctor; you did not mean to, but I did not say that.

**Dr. Hatfield:** It should not be below the gum. I am afraid I am talking too much, and I would talk an hour longer if you would permit me to do so.

**Dr. McMillen:** The gentleman asked the question, if I grind the root any different if I was going to set it with cement or gold foil? I do not; I grind it just the same. Is this the closing?

**President Morrison:** Yes.

**Dr. McMillen:** I guess we have occupied too much time already. I would like to take a shot or two at Dr. Hatfield.

**Voices:** Go ahead; go ahead.

**Dr. McMillen:** Well, I am surprised at Dr. Hatfield having had the practice that he has, and giving him the credit that I do for knowing what he does, for him to say in this day and generation that

he grinds the root beneath the gum for the purpose of saving the crown. Now he would be ashamed to stand up and say that he shut his eyes and undertook to fit a crown, but he grinds the root down under the gum margin, where it is impossible for anybody to see what he is doing.

# EXCHANGE OF PRACTICAL IDEAS

[This department being an exchange of practical ideas, it depends upon our readers furnishing material to keep it going. Just a few practical ideas from each subscriber will make it of mutual benefit and practical worth. Are you willing to do your share? Help the good cause along by sending the editor a few practical suggestions. Send something today. Address Dr. L. P. Bethel, 1255 Neil Ave., Columbus, Ohio].

## A COMBINATION FILLING.

**By Dr. R. L. Spencer, Bennettsville, S. C.**

There are many reasons and excuses given for the failure of so many gold fillings, but the two main causes of such failures are improperly prepared cavities and a lack of perfect adaptation of the gold to the walls of the cavity.

In order to make a perfect gold filling, prepare the cavity without undercuts, the same as for an inlay. Take a piece of No. 4 soft foil and fold it several times until it becomes thick enough for the making of a matrix, and with this make a matrix same as for an inlay. When the matrix is properly adapted, carefully remove it from the cavity, and make two undercuts in the cavity, one directly opposite the other. Now mix a small quantity of soft cement, and with a smooth broach smear it over the bottom of the cavity, allowing it to flow into each undercut, but not entirely filling them.

Replace the matrix in the cavity and gently move it into proper position, and with a small instrument punch two holes in the matrix, one at the point of each undercut of the cavity.

Push a pellet of cohesive gold into each undercut, and lay another pellet of cohesive gold across the bottom of the cavity. (Of course, the third pellet must be long enough to reach from the pellet in one undercut to the pellet in the other). Now, just wait a minute or so until the cement hardens, and then

condense the gold in the bottom of the cavity, and in the undercuts, and continue to fill and finish the same as for an ordinary cohesive gold filling.

The characteristic points of a filling made by the above methods are: 1st. A properly prepared cavity. 2nd. Bottom of cavity lined with cement. 3rd. Walls of cavity lined with non-cohesive gold, which was burnished into the cavity in the formation of the matrix, and hammered against the walls and margins in the condensation of the cohesve gold. 4th. The filling is anchored both by undercuts and the adhesive quality of the cement. 5th. The cohesive gold will stand the stress of mastication. This filling combines the good qualities of the cement filling (bottom lined with a non-conductor), and the good qualities of the non-cohesve filling (perfect adaptation to walls and margins), with the good qualities of the cohesive filling (stress of mastication).

This method makes an ideal gold filling for labial and buccal cavities, and also for approximal cavities where the cutting edge has not been lost.

## A QUERY.

**By Dr. H. E. Craddock, Montpelier, Ohio.**

Within the past six months I have had two very troublesome cases, in the form of paralysis of the face, due to extracting inferior left third molars. At first this paralysis would extend along the whole left side of inferior maxilla, but would finally center in the lower lip at about the region of inferior cuspid. I have tried many different remedies, but without much success. Can some brother suggest some treatment that will benefit this? If so, will be glad to hear through The Summary, or otherwise.

## HOW TO PREPARE YOUR OWN LIGATURES OR WAXED FLOSS.

**By H. W. Reader, Rochester, Pa.**

The following may be of some avail to our exchange brothers in The Summary:

How to prepare your own ligatures or waxed floss: Go

to the dry goods store and obtain some white silk twist (3 skeins for 10c, most places); take ordinary bite wax and wax it up as needed to suit yourself, and you will have floss that is not only reliable, but is clean, strong and cheap. Two skeins equals about the amount on five spools of the ordinary waxed floss.

## TWO PRACTICAL SUGGESTIONS.

**By Dr. Rob. S. Booth, Warrenton, N. C.**

I saw a method of cleaning carborundum wheels in a recent issue. My method is to run the stone or point for a second or two in $H_2O_2$; then run for a few moments against soft cloth and you will be pleased with the result. Of course, this should be done just after they have been used.

To clean cotton from a barbed broach hold it a few moments in fuming sulphuric acid; the cotton will be destroyed almost immediately; then hold the broach a second or two in soda water.

## A SUGGESTION REGARDING DISKS.

**By A. W. Jamison, D. D. S., Toledo, Ohio.**

Instead of discarding a paper disk after once using, hold a sharp-pointed instrument to the back of disk while revolving rapidly. You can instantly cut off a section of the outside, giving you a practically new disk.

## METHOD OF SWAGING INLAY MATRIX.

**By N. W. Hiatt, D. D. S., Marion, Indiana.**

I take my impression with gutta-percha base-plate. This impression is imbedded into the Melotte's Moldine. The impression is then oiled with any thin oil, and I usually blow the impression after oiling to insure that no great amount has accumulated in any of the deeper parts, thus preventing the metal from flowing in. A ring is placed over this impression and the S. S. White inlay metal is flowed into it.

I contend that the gutta-percha takes a more accurate impression than dentallac.

# SUGGESTIONS

## REPAIRING A JACKET CROWN.

Dr. Capon.

The repair most likely to be needed is re-attaching a veneer. This, if not well attached, generally comes free from the metal, but if the metal tears away with it a new crown must be made. If the framework is intact and firm in place, loosen all the free edges with a thin, sharp, flat instrument, getting out the cement as much as possible, and then use an old scaling instrument as a hook at the neck, and in many cases the frame will come away, and with a little straightening be as good as ever. Sometimes a pair of pincers, nipping the free point of the platinum will draw it off when other means fail. When removed, clean all the cement out of it and put under the blowpipe, making it clean for new porcelain. If the same veneer is used, all of the old porcelain should be ground away and the metal framework be put in front of the furnace for a few minutes to burn out any impurities; then proceed as if the crown were new. The time usually for this repair is an hour.

An unusual cause making repair necessary is the cutting away of the palatine surface by the occluding teeth. I have several cases which have required this mending after several years' use, and in every case the porcelain was intact. If they are worn sufficiently to be easily taken off, clean out the cement, burnish thin platinum or gold foil on the tooth where the cap has been worn through, replace the crown and attach the two with wax; then withdraw them and invest. Solder with 20 or 22-k. gold, and recement the crown. It will be none the worse for the repair, and will probably last many years longer if ordinary care is given in the soldering process.—Dominion Dental Journal.

## LOCAL ANESTHETIC FOR PYORRHEA.

J. D. Patterson, Kansas City, Mo.

| | |
|---|---|
| Chloroform | ounces 1 |
| Cocaine | grains 20 |
| Oil Cloves | drops 8 |
| Oil Cassia | drops 8 |
| Menthol | grains 8 |

Before removing deposits from roots saturate pellet of cotton with solution, crowd gently into pockets and allow to remain for a few moments. Take care to keep cork in bottle, as the chloroform will evaporate rapidly.—Western Dental Journal.

## CEMENT AS A FOUNDATION FOR GOLD FILLINGS.

In the February, 1907, Cosmos, W. Thompson Madin, D. D. S., of Birmingham, England, gives a method of using cement under gold fillings that seems to solve the problem very nicely, and it places the gold filling ahead of the inlay as a tooth-saver, according to the ideas advanced by the inlay advocates. His method is to prepare the cavity as for a gold filling and cover the walls with cement as for an inlay. Into this he forces thirty (30) gold foil, as if for a matrix for an inlay. The filling is then inserted into this matrix in the usual manner. This gives a practical and expeditious method of using cement under gold fillings. I have inserted a number of fillings after this method, trying to make the line of cement around the gold as slight as possible, and I find the originator's claim of invisibility is correct. In my later cases a good reading-glass would not show the line at all. The rule given is that the cement will disintegrate or wash out to a depth equal to the width of the line around inlays, and if the rule holds good for fillings, there is surely no reason to fear for the durability where the line of cement cannot be seen. The suggestion made by Dr. J. Foster Flagg so many years ago that all fillings that are inserted should have a cement lining seems today to be one of the wisest of all the wise things he gave us.

Note.—Since writing the above paper, I have learned that Dr. Cochran, of Burlington, Iowa, has used cement lining under gold fillings for six years in a manner that is very satisfac-

tory to him. A matrix of 45-gauge pure gold is formed to fit the cavity, and after adjusting the rubber, Ames' slow-settling cement is placed in the cavity and the matrix forced to place. Then the gold filling is inserted, using a band matrix if indicated. Dr. Cochran uses Pack's pellets or non-cohesive gold, finishing with heavy foil. I have found that some form of crystal gold works to good advantage in many cases.—Dental Review.

## DON'T PROMISE.

A prolific cause of trouble with artificial dentures is the rash promises made by the dentist when the work is started; or, if not promises, at least a neglect to warn the patient of the difficulties to be encountered before the plate will be worn with comfort and satisfaction. It is so common to hear a patient say, "Well, I am glad to be rid of those old snags at last; I will have a set of teeth now that won't ache, anyhow." It is a wise precaution to assure the patient, at this time, that while the new teeth will probably not ache, they will give trouble of another kind that may make the wearer wish, for a time, for the old "snags" back again. A plain explanation of the difficulties to be encountered, and the time that must elapse before the plate will cease to annoy, may save a lot of explanation later, at a time when it will not be accepted so readily. If the plate, as sometimes happens, gives little or no trouble, so much the better. You have done better than you promised and left a pleasant impression. It is always better to have work of any kind prove more satisfactory than promised than to have it prove less. An artificial denture is but a poor substitute for the natural organs at best, and it is unsafe to promise very much in the way of service.—Western Dental Journal.

## MENDING PORCELAIN.

**H. L. Harlan, Boonville, Mo.**

Every dentist, either by accident or otherwise, will break or chip porcelain crowns, facings and teeth, which they cast aside as useless. Many such breaks, or chips may be repaired and rendered as serviceable as ever by fusing low-fusing por-

celain over the defect with a gas, alcohol or gasoline blowpipe. After fusing, grind and polish down to the original contour. No investment is necessary. Pin holes in detachable pin crowns may be protected by inserting in the hole a pellet of gold, and fusing porcelain on the defective side up square around it, afterward removing the gold pellet with an excavator.—Western Dental Journal.

## DIE METAL FOR MODELING COMPOUND IMPRESSIONS.

**O. H. Simpson.**

In cases where it is impossible to secure a plaster of paris impression, a die can be obtained from modeling compound by using the following die metal; Bismuth, 48 per cent.; cadium, 13 per cent.; lead, 19 per cent.; tin, 20 per cent. This can also be poured into wet plaster of paris with little or no risk.—Dentist's Magazine.

## AMALGAM INLAY.

**W. G. L. Spaulding.**

So-called because the filling is attached to the tooth substance by a cement union, in addition to the dovetail form.

The materials being plastic, there is no need to sacrifice tooth tissues to form a "draw" cavity.

The cavity is prepared as for gold or amalgam filling, except that, when expedient, mechanical anchorage may be sacrificed, and the cement attachment plus resistance form of cavity be trusted to hold the filling. Resistance form is essential in cavities in which the filling will be subject to stress.

With an approximal cavity prepared and matrix adjusted, mix a medium-setting amalgam, and also a quick-setting cement. Pack enough amalgam into the cavity to cover the matrix wall and adjoining cavity margins, packing firmly and leaving the deeper cavity surfaces uncovered, that the cement may be placed on clean dentine. This first portion of amalgam excludes moisture and prevents cement exposure. Carry the cement to place with a small spatula having a small shank to

avoid back-flow, covering deep portions of cavity and the floor of step, if there is one. Finish with amalgam, removing any cement which may squeeze up, from the margins, and complete as you know how.

A Rhein's trimmer ground smooth makes an excellent spatula for such working of cement.

Advantages claimed: 1. Security of a locked plus cemented filling. 2. Complete distribution of attachment to all parts of cavity. 3. Thermo-insulation between filling and sensitive dentine. 4. Avoids darkening tooth with amalgam. 5. Minimizes danger of leaky fillings and secondary caries. 6. Supports weak walls preserved for esthetic reasons.—Dominion Dental Journal.

## CHOICE BETWEEN INLAY AND FILLING.

J. E. Nyman, Chicago, Ill.

As for indications for gold inlays, there are so many points that enter into that consideration that I hardly dare begin to discuss them. In the first place, there is the consideration for the patient—that is to say, frequently very sensitive teeth must be excavated to quite a considerable extent for actual mechanical retention of a gold filling, which is entirely avoided in the insertion of gold inlays. Another consideration is, we get extensive cavities which have walls left which we may permit to remain if we use the inlay method, but which we would not dare to allow to remain if we used the gold filling. Furthermore, we damage seriously many of the teeth we treat by keeping them so dry for from two to four hours; many of the pathological conditions found around gold fillings may frequently proceed from the drying out of the tooth during treatment and keeping it dry so long.

We find ourselves among environments in filling teeth where there is no certainty of the operation. You and I, and all of us, have fillings that we never think of but with feelings of apprehension and a prayer that nothing serious has happened to them since we last saw them; and I would far rather trust to an uncertain gold inlay than to an uncertain gold filling. There will be no more failures with the gold inlay process than with gold filling; the careless operator will be

just as careless with gold fillings as with inlays, and I believe he will do more damage to the community with his careless gold fillings than with careless gold inlays.—Items of Interest.

## GOLD FILLINGS IN PORCELAIN.

**Chas. Every Brown.**

To put a gold filling in a mineral tooth, grind an impression in the tooth where the filling is required, then cover the ground surface with a little Jenkins' inlay body, and on this press a piece of sponge gold the same size. Fuse this in furnace, and then condense gently with engine mallet, add gold and finish in the same way as with a gold filling. If required, a tooth may be entirely faced with gold in this manner, giving the appearance of an all-gold crown, the inlay body holding the first layer of gold quite firmly, if ordinary care is taken, as with a gold filling.—British Dental Journal.

## TO CONSTRUCT A REMOVABLE BRIDGE FROM SOUND CUSPID TO SECOND OR THIRD MOLAR.

**A. T. Sawyer, Manchester, N. H.**

First, remove pulp in cuspid, fill canal, burnish No. 30 pure gold to cover the palatal and approximal surfaces of this tooth; enlarge the canal and make platinum tube of No. 30 gauge.

This is passed through the gold, already burnished to the palatal portion, and into the enlarged canal, and the tube and crown plate, as we will call it, soldered together and reburnished and then reinforced with more solder, cemented into place and finished on tooth. The end of the tube in root is of course closed. Into this tube an iridio-platinum wire is adjusted and this is soldered to a smaller crown plate, which has been burnished to fit the one already cemented on the tooth. This wire, when slightly bent, makes a secure attachment for the anterior end of the bridge, with no gold in sight.

A saddle is then swedged to fit the ridge, of either gold or platinum No. 30, and the molar is crowned with gold, and attachment is made to it by any of the well-known attachments, such as the Griswold; or what I think is better, make sides of

crown straight and then make a band of clasp metal to fit accurately around this crown, and from this band down to the gum have a supplementary band soldered to the crown, thus forming a shoulder on which the clasp metal band can rest. To this clasp metal band the other end of the bridge is attached and held securely.

Now grind into position on saddle plain plate teeth and pack with No. 35 pure gold, allowing this backing to extend down lingual side and under tooth until it meets saddle on the ridge. Invest, solder and finish, and bridge is complete and ready to go into the mouth, and will prove a joy to the patient and a satisfaction to him who made it.—Items of Interest

## VENEERING VULCANITE PLATES.

**W. J. Robinson.**

Pack in the usual manner, open flask, and if there should be all the rubber needed, take a sheet of the vulcanite used for veneer and stretch it until quite thin, and place it over the vulcanite in the flask, close flask, and vulcanize. This can be used to produce beneficial and beautiful vulcanite plate. To line a plate, for instance, with black rubber, it can be done by stretching a thin sheet of black rubber over the surface of the case, or by painting the plaster model with a solution of black rubber, then pack the flask and vulcanize.—Stomatologist.

## CAVITY PREPARATION FOR PORCELAIN INLAYS.

**F. E. Roach, Chicago, Ill.**

The following rules should be observed in all cavity preparations for porcelain inlays:

1st. Obtain free access.

2d. Cavity walls should slightly diverge from base to orifice in the direction the matrix is to be drawn.

3d. The margins must be sharp and well defined, and **not beveled.**

4th. Avoid all undercuts.

5th. The general outline of the cavity should be free from sharp angles.

6th. Cavity must be so shaped that some form of anchorage will supplement cement adhesion.

First—**Free access.** Matrix can not be properly burnished and drawn nor the inlay inserted unless free access is obtained.

Second—**Diverging walls** facilitate removal of matrix and insure a better fitting inlay.

Third—**Margins** must be definite in order to get good joints and continuity of inlay with tooth. The bevel will yield an inlay with a feather-edge, which is always an element of weakness and must be avoided.

Fourth—**Undercuts.** It is impossible to draw a matrix where undercuts exist. Cut them out or fill with cement.

Fifth—**Sharp angles.** While it is not impossible to produce sharp angles in porcelain, it is easier and more artistic if the general outline of the cavity is straight lines merged with rounded corners.

Sixth—**Anchorage.** All inlays must have one or more of the following means of anchorage supplementing that of cement adhesion; either positive or frictional planes of resistance or some form of pin anchorage. By positive planes of resistance we mean the self-retention form of cavity such as the dovetail or its equivalent. The straight mortise joint of the builder's lap of the brick serve as an example of frictional resistance for anchorage. By pin anchorage we mean baking a pin into the inlay to correspond with a hole in the tooth, into which the pin is cemented for anchorage.—Dental Practice.

## BAKING OF PORCELAIN.

**F. E. Roach, Chicago, Ill.**

Since the bodies furnished by the different manufacturers vary materially in fusibility, likewise the heat produced by the different furnaces, it is impossible to bake by any set rule. The bake, like that of harmonizing the color, can be learned only by actual experience. It matters not how expert you may be with a certain body baked continuously in a certain furnace, you cannot take up some strange body and furnace and accomplish good results at first. You must, by repeated tests, become familiar with your material and appliances. Ascertain by repeated bakings the exact time required to produce a perfect

vitrification of the body you are using. By the gold test is meant the placing of a pellet of gold in the furnace with a piece to be baked and continuing the heat a certain length of time after the gold melts. The body to be baked should always be placed in the center of the furnace and the pellet of gold in the same relative position each time. While this may seem to be a trivial matter, it is an important factor in the uniformty of your bake. An overbake, which is always irreparable, may often be the result of a failure to observe this apparently insignificant precaution. The heat being so much more intense at the center of muffle than either end, and especially near the door, it is obviously important that the position of the body and gold in the furnace be at all times relatively the same.

After the first bake and the matrix has been reburnished around the margins, should the inlay be one of considerable size, it is well to place a second layer of foundation body and draw a thin layer of same well up to all margins. This will form a thin film of higher fusing material along the margins and will prevent the enamel layer from drawing away from this surface, where it is so desirable to have perfect adaptation.

In placing the last layer the body should be built up in excess of the desired contour to allow for shrinkage and all overlapping body should be trimmed off to the margins. Otherwise the feather-edge thus formed is very liable to break off when the matrix is being removed, and should the break occur outwardly, the margin of the inlay will surely be injured.—Dental Practice.

## MAKING GOLD BANDS, CAPS, AND CROWNS WITHOUT SOLDER.

**Charles Keyes, Rio de Janeiro, Brazil**

Recognizing the principle that a thin piece of metal will melt in the flame before a thicker, led me to solder bands for crowns by slipping a very thin piece of gold—say from No. 60 to 120 foil—between the edges of the approximating ends of the band, after the ends have been sprung together; then with the blowpipe heat to almost the melting point, and then direct the flame steadily on the thin piece of gold in the joint until it melts. Of course no flux is used before attempting to melt.

**For making a cap.** Fit the band snugly to a thin plate of gold, leaving an edge all around like the brim of a hat; then flux with the band down and plate on top, heat up as before, and run the flame all around, melting the rim up to very nea the band, when it fill be found that the two pieces are firmly melted together.

**For joining a cap to a band in all-gold crowns.** Adjust the cap to neatly fit the crown by beveling the inner edge of the cap and the outer edge of the band—thus as it were telescoping one into the other; then cut a piece of very thin plate, having it large enough to extend a little all around the joint after it is adjusted between the band and cap, making a large air-hole in the center of the plate; flux and melt as for the cap.

With a little practice this process will be found easier than soldering, and it is almost needless to say it produces a vastly more sightly and stronger result.—Dental Cosmos.

## PARTIAL CROWNS.

**E. J. Perry, Chicago.**

That a partial crown should be used wherever it is possible, instead of a gold-banded crown, there can be no doubt. Every conscientious operator seeks to have engrafted upon the roots of molar and bicuspid teeth gold crowns. Wherever possible, he avoids putting a band around the root of the tooth, so that an inlay attachment is a substitute for this, and it is my opinion, after some experience of that kind, that it is firmer than any full gold crown.—Dental Review.

## TO RELIEVE THE SENSITIVITY OF SHALLOW EROSION CAVITIES.

**Geo. Gow.**

In sensitive superficial cavities due to erosion or abrasion, a warm solution of trichloracetic acid in full strength applied two or three times, the cavity being dried between applications, will often enable one to penetrate to sound, non-sensitive dentine, when the cavity may be prepared as desired.—Dominion Dental Journal.

# OBITUARY

WITH PROFOUND SORROW WE CHRONICLE THE DEATHS OF

MR. THADDEUS F. RANDOLPH, PRESIDENT,

IN TOLEDO, DECEMBER TWENTIETH, AND OF

MR. JOHN R. B. RANSOM

IN SAN FRANCISCO, DECEMBER SEVENTEENTH

NINETEEN HUNDRED AND SEVEN

THE RANSOM & RANDOLPH CO.
TOLEDO, OHIO


## AN EXPRESSION OF SYMPATHY FROM THE TOLEDO DENTAL SOCIETY.

The members of the Toledo Dental Society wish to express their extreme sorrow on account of the removal by death of Mr. John R. B. Ransom and Mr. Thaddeus F. Randolph.

They extend to the friends and relatives their most heartfelt sympathy in this, their great bereavement, and assure them that they will long hold in grateful remembrance the many kindnesses extended to the profession, and the sincere interest in its members on the part of these who have gone from us.

BURT ABELL,
A. W. JAMISON,
D. A. ALLEN,
Committee.

Toledo, O., Dec. 23, 1907.

## ODONTOTECHNIQUE SOCIETY.

The regular monthly meeting of the Odontotechnique Society will be held at the Elks' club, 37 Greene street, Newark, N. J.

Thursday evening, January 2nd, Dr. D. A. Webb, of Scranton, will read a paper entitled "Malignant Growths of the Jaw, Fractures, Etc."

JOHN A. VOORHEES,
Journal Correspondent.

## THE ST. LOUIS SOCIETY OF DENTAL SCIENCE ANNUAL MEETING.

The St. Louis Society of Dental Science will hold its annual meeting at the Jefferson hotel, 2:30 p. m., January 21, 1908.

Lecture on "The Life Work of Prof. Miller," by Edward C Kirk, D. D. S., Sc. D., Philadelphia.

Discussion opened by Dr. N. S. Hoff, Ann Arbor, Mich., and Dr. Louis P. Bethel, Columbus, O.

The annual banquet will be given at 7 p. m. of the same day in honor of Prof. Edward C. Kirk, dean of the dental department, University of Pennsylvania and editor of The Dental Cosmos. The speakers will be Rev. Dr. Henry Stiles Bradley, pastor of St. John's M. E. church, St. Louis; Hon. Arthur W. Sager, circuit attorney, St. Louis, Mo.; Dr. Louis P. Bethel, editor The Dental Summary, Columbus, O.; Dr. Neville S. Hoff, editor The Dental Register, Ann Arbor, Mich.; Dr. Chas. H. Darby, St. Joseph, Mo.; Dr. F. G. Worthley, associate editor The Western Dental Journal, Kansas City; Dr. W. L. Whipple, St. Louis, Mo.; Dr. Burton Lee Thorpe, associate editor The Dental Brief, St. Louis.

The profession are invited to attend both the lecture and banquet. For reservation for same and other information, address Dr. Richard Summa, Oriel Bldg., St. Louis, Mo.

W. L. WHIPPLE,
E. E. HAVERSTICK,
HERMAN F. CASSELL,
Executive Committee.
D. O. M. LeCRON, Prest.
C. O. SIMPSON, Sec'y.

## ALUMNI ASSOCIATION, DENTAL DEPARTMENT, MILWAUKEE MEDICAL COLLEGE.

The second annual clinic and exhibit of the Alumni Association, dental department, Milwaukee Medical college, Marquette university, will be held in Milwaukee, Wis., January 21 and 22, 1908.

Preparations are being made for an excellent program.

Members of the dental profession are cordially invited.

EDWARD C. WACKLER, Sec'y.

## INDIANA STATE BOARD OF DENTAL EXAMINERS.

The Indiana State Board of Dental Examiners will hold its next regular meeting in the state house at Indianapolis, January 14, 15, 16, 1908. At this meeting all applicants for registration in this state will be examined. For further information apply to the secretary,

F. R. HENSHAW,
Middletown, Ind.

## THE G. V. BLACK DENTAL CLUB CLINIC.

The G. V. Black Dental Club of St. Paul, will hold its annual midwinter clinic in February, 1908. It is our intention to make this meeting the most interesting and profitable of all which we have held.

A cordial invitation is extended to the members of the profession to attend and assist us in making this meeting the best that has ever been held in the northwest.

Dates and program will be published later.

For further information address R. B. WILSON,
Secretary,
Am. Nat. Bank Bldg. St. Paul, Minn.

# AFTERMATH

**Fire** destroyed the dental offices of Dr. Bennett, Newburgh, N. Y., Nov. 29. Dr. Bennett's loss is covered by insurance. Dr. Farm, Ardmore, Okla., office effects lost by fire, Dec. 4th.

**State Dental Examinations.**—Connecticut, 28 candidates, 14 passed; Washington, 53 candidates, 14 passed; Rhode Island, 14 candidates, 5 passed.

**Dr. Brand Reappointed on State Examining Board.**—Dr. H. D Brand has been reappointed a member of the Washington State Board of Dental Examiners.

**Dr. Whinery Will Recover.**—Dr. J. L. Whinery, the prominent dentist of Marshalltown, Iowa, who underwent a most peculiar operation for tumor of the brain at a Rochester (Minn.) hospital a short time ago, gives promise of a complete recovery. A later examination developed that he was suffering with a clot on the brain.

**Change of Location.**—Dr. C. A. Maher, Ottawa, Ill., leaves in January for Buenos Ayres, S. A., to practice dentistry. Dr. F. M. Willis, Ithaca, N. Y., gives up practice January 1st to move to Williston, S. C., where he has extensive cotton plantations.

**National Capitol Dental Society.**—Officers elected were: President, Dr. Chas. W. Cuthbertson; vice-president, Dr. Wm. B. Daly; recording secretary, Dr. J. P. Devlin; corresponding secretary, Dr. J. W. Hollingsworth; treasurer, Dr. W. F. Heyser; librarian, Dr. C. H. Howland.

**Diet and the Teeth.**—Sir Edward Treves, in a recent address to the students of the Royal Dental Hospital and the London School of Dental Surgery, reminded his audience that this was an age of crazes. "Everybody is on a diet," he said. "Some people drink at meals, some drink before meals, some drink after meals, and possibly some drink under other circumstances. Some eat meat; others do not touch it, and some live on a diet of water and nuts. If these people were a little more careful about their teeth they would not need to be so careful about their diet."

**"Nashville Dental College" Chartered.**—Application was filed Nov. 12 for a charter for the "Nashville Dental College," Nashville, Tenn. The incorporators are Drs. J. Y. Crawford, J. T. Meadors, S. L. Rich, H. A. Holder, J. S. Ward, Wm. D. Sumpter, R. O. Tucker, D. B. Blake and Mr. Campbell Pilcher. A majority of the above-named gentlemen have for some time been connected with the dental department of the University of Tennessee.

**Minnesota State Dental Board Appointments.**—Governor Johnson has appointed Dr. R. W. Berthel, of St. Paul, a member of the State Board of Dental Examiners, succeeding Dr. F. H. Orton, who was ineligible, having served two terms. Dr. George S. Todd, of Lake City, was reappointed to a place on the board. Both were recommended by the State Dental Association. Dr. W. A. Moore, of St. Paul, was named as alternate.

**Marriages.**—Dr. George A. Lynch, Valley Falls, R. I., and Miss Bessie S. Donnelly, Providence, Oct. 20. Dr. Asa E. Severance, Milwaukee, Wis., and Miss Sophia Kah, Milwaukee, at Chicago, Nov. 7. Dr. Charles M. Webb, Attleboro, Mass., and Miss Irma Sadler, Mansfield, Mass., Nov. 14. Dr. Louis C. Webber, Muskegon, Mich., and Miss Janet M. Rodgers, Muskegon, Nov. 26. Dr. John F. Clark, Springfield, Mass., and Miss Minnie C. Sullivan, North Adams, Mass., Nov. 28. Dr. Charles A. Street, Austin, Ill., and Miss Ellen Moore, Chicago, Dec. 3.

**Ohio State Dental Society.**—Officers elected were: President, Dr. C. I. Keely, Hamilton; First vice-president, Dr. W. H. Whitslar, Cleveland; second vice-president, Dr. M. H. Fletcher, Cincinnati; secretary, Dr. F. R. Chapman, Columbus; treasurer, Dr. W. A. Price, Cleveland. Directors for three years—Dr. C. R. Butler, Cleveland; Dr. C. R. Converse, Springfield; Dr. L. L. Barber, Toledo, and Dr. G H. Wilson, Cleveland.

**Robberies.**—Drs. Huff and Schoefield, Kankakee, Ill., $35 worth of gold and platinum. Dr. H. D. Moorman, Aurora, Ill., $50 worth of gold fillings, platings and bridges, Nov. 11. Drs. J. H. Dalbey and R. A. Atkins, Elgin, Ill., gold fillings and crowns, valued at $40, Nov. 13. Dr. G. N. Keeling, San Antonio, Tex., Nov. 19. Dr. E. C. Hansom, Racine, Wis., $25 in gold, Nov. 20. Dr. Schmeckebier, Chicago Heights, $200 worth of supplies, Nov. 28. Dr. H. W. Boone, Champaign, Ill., Nov. 29.

**Identified Sweetheart by Her Teeth.**—It is reported that an Illinois dentist fell in love with one of twin sisters, pretty Chicago girls, and not being able to tell them apart, nor always tell which one was his sweetheart, he induced the one he liked best to let him fill her teeth, which he did in such a way that he could identify her thereafter. So he was sure he was getting the one he loved when he married her.

**Deaths.**—Dr. Wm. H. Perkins, Baldwinsville, N. Y., Nov. 8, aged 80 years. Dr. James Reynolds, Eau Claire, Wis., Nov. 14, of heart failure. Dr. R. H. McDonald, Buffalo, N. Y., at Clarksburg, Ont., Nov. 16. Dr. S. T. Beale, Philadelphia, Pa., Nov. 22, aged 63 years. Dr. R. B. Donaldson, Washington, D. C., Nov. 22, of acute indigestion, aged 81 years. Dr. D. W. Ainsworth, Ware, Mass., Nov. 24, of spinal trouble, aged 64 years. Dr. Edward Galbraith, Plainfield, N. J., died Dec. 9, aged 30.

**New Rule Established by Royal College, Dental Surgery, Ontario.**—According to to a new rule adopted by the Royal College of Dental Surgery of Ontario, no company or corporation shall hire or employ a dentist who is not a member of the college. The rule is operative through the control of the college over its own members, who are forbidden to work in the employ of any one who is not a member of the college.

**Licenses Are Revoked in Minnesota.**—Eighty licenses were revoked at the regular fall meeting of the Minnesota dental board, held at the state university, Nov. 15, and 10 licenses were granted to practice. The reason the above licenses were revoked was because of the non-payment of fees. Upon the payment of a certain sum these practitioners may be reinstated.

**Million to Evans Institute Society.**—After litigation of more than ten years, the affairs of the estate of Dr. Thomas W. Evans, a Philadelphia dentist who died in Paris, where he became a millionaire, have been adjusted in the courts of Philadelphia, New York and Paris. As a result, the Dr. Thomas W. Evans Museum and Institute Society of Philadelphia, will come immediately into possession of property in New York worth more than $1,000,000, and property in Philadelphia valued at $100,000. The residue, in Paris, worth $800,000, will be distributed among the heirs.

**A Campaign Against Illegal Practitioners in Oregon.**—Dentists practicing in Oregon without holding a license from the State Board of Dental Examiners will have to go to jail, according to the determination of the members of the board of examiners. The regular dentists of the state have raised a fund of $5,000 with which they will commence proceedings against the dentists practicing illegally in the state.

**Dentist Loses an Eye.**—An operation for the removal of his left eye was performed on Dr. D. J. Reese, the well-known dentist of Harrisburg, Pa., at the Shope hospital, Nov. 13. Dr. Reese was struck in the eye by a fragment of tooth that he was treating, and the slight wound developed into blood poisoning, which grew so severe that he was taken to the hospital. An operation was rendered necessary through fear that the injury might affect both eyes.

**Tannin in Neuralgia of Dental Origin.**—Knev, a dentist of Ischl, recommends the use of tannin in neuralgia of dental origin. He contributes a paper to the Wiener Med. Presse, of March 17, in which he states that the most universally useful application is a lotion of 2 parts tannic acid to 10 parts of rectified spirit. When painted on the gums and around the teeth, this will relieve almost any kind of dental pain. It is also an excellent application in alveolar pyorrhea, and under this treatment loose teeth soon become firm and capable of performing their function.

**Will Stop Dental Practice by Students in Maryland.**—Because a number of dental students not qualified to practice are thought to be trying their skill on patients, members of the State Board of Dentistry conferred with the police board recently with a view to stopping it. The penalty for practicing dentistry without being registered is punishable by a fine of from $50 to $300 or a term of imprisonment not exceeding six months.

**Dr. Scholl, the Recipient of a "Penny Royal" Plant.**—A number of the members of the Reading, Pa., Dental Society and their wives were entertained Nov. 22 at the home of Dr. W. R. Scholl, in honor of his 69th birthday anniversary. Dr. W. D. DeLong gave a short address, complimentary to the host, after which he was presented with a "flowering plant," consisting of 69 new pennies mounted on wires and stuck in a dish of smilax and ferns. It was termed the "Penny Royal" plant.

**Don't Take Your Nerves to the Dentist.**—Helen Vail Wallace gives her sisters the following bit of advice in the columns of the New York World: "Sisters, when you enter the dentist's chair lay aside not only your hat, but your nerves, your sentiment, your aesthetic feeling, your vanity. Resort to entire self-forgetfulness. Also if you have anything to say to the dentist say it before the "ceremony" begins or "hold your peace."

**Protective League for Physicians and Dentists of Iowa.**—A mutual protective association of physicians and dentists is being bruited about in Davenport. Abuse of self-sacrificing charity may at last culminate in preventive action. No class of professional men suffer more loss from "dead beats" than do physicians and dentists. The matter has been discussed time and again, and it has been estimated that doctors of general practice lose anywhere from 25 to 40 per cent. of their gross earnings every year by being unable to collect on all of their outstanding bills. Action is being taken in Omaha toward a curtailment of this evil, and a "credit guide" is to be furnished physicians and dentists there. All persons whose names are reported to the association will be required to pay cash for medical and dental services.

**Physicians and Dentists Organize Protective Association in Omaha.**—Omaha, Neb., physicians and dentists are organizing a mutual protective association, the chief object being to provide each member with a reliable credit guide compiled from the names of delinquents furnished by the members of both the medical and dental professions in the city. This is for the purpose of shutting out dead beats. All persons whose names are so reported to the association will be required to pay cash for medical and dental services until such time as they are reported as having settled back accounts.

**Two drops of camphor on your tooth-brush** will give your mouth the freshest, cleanest feeling imaginable, will make your gums rosy and absolutely prevent anything like cold sores or affections of your tongue. The gums, by the way, are barometers of our condition. If they are clear, bright red, we are in good health, while if our blood is thin and wanting in the mysterious red corpuscles that make us healthy, the gums will be pale pink, or if we are in a very bad way indeed, and much in need of a course of dialyzed iron, they will be almost white.—Exchange.

**American Degrees Recognized in Germany.**—After ten years of campaign in the German courts against American dental degrees, the United German Dental Association has received what is probably a knockout blow in the decision of one of the highest court authorities of the empire that the American degree of Dental Surgery may be used in Germany when issued by a reputable American college of dentistry. American dentists practicing here are also authorized to use, if they desire, the word "approben," that is, that one is "approved," or his been graduated, upon which much stress has been laid by graduates of German dental colleges. Still, the sacred term "zahnarzt" (tooth doctor) remains taboo to all sane German graduates. An American dentist established here states that graduates of American dental colleges make more money in Germany by using American degrees than any foreign ones; so the concession is just what they require.—Consular Reports.

**State Board of Dentistry, After Practicing Students.**—Members of the Virginia State Board of Dentistry called on the board of police commissioners, Dec. 2, with a view to enlisting the police in a campaign against individuals who are practicing dentistry without being registered. A number of dental students at the various colleges, it is said, are in the habit of practicing dentistry and charging patrons whatever they will give for the service. As many of the students are not qualified to practice, and their work has frequently resulted in their patrons being not treated properly, thereby causing a great deal of complaint, the State Board of Dentistry has resolved to take up the matter. President Willis of the police board said the police would co-operate in every way with the state board. The penalty for practicing dentistry without being properly registered is a fine of $50 to $300 or a term of imprisonment not to exceed six months.

**All Dentists Must Register in Oklahoma.**—To give the dentists of Indian territory a chance to register under the Oklahoma laws, as provided by the constitution, the state dental examining board at its first meeting, Nov. 25, decided to meet again at Muskogee on January 26, 29 and 30. All dentists who were practicing in Indian territory at the time of the passage of the enabling act are required to register without examination, but, under the ruling of the board, must submit affidavits of two citizens of their town to prove their residence at that time. All dentists who have come into Indian Territory since that time, except graduates of reputable colleges, must stand examination. The board organized by the election of Dr. W. Bryan, of Claremore as president; Dr. F. C. Sieds, of Perry, treasurer; Dr. A. C. Hixon, Guthrie, secretary. The other members of the board are Dr. W. M. Murray, of Tishomingo and Dr. A. E. Connell, of Muskogee.

**Dentists in Germany Establish Miller Memorials.**—A memorial meeting was held at the Berlin University in honor of the late Willoughby Dayton Miller, the well-known American dental surgeon, who had been a professor of the university for 22 years. A year ago Professor Miller resigned from the university to accept a position with the University of Michigan, but he died at Alexandria, O., of an operation before beginning his new duties. Professor Dieck, who succeeded Professor Miller in the University of Berlin, delivered a memorial oration to a large gathering of German dentists who had been trained under Professor Miller. He announced that the dentists of Germany had established a Miller fountain in Berlin, and that the dentists of several countries had united and taken steps to establish a Miller medal, which is to be conferred regularly in recognition of achievements in the promotion of dental science.

**Death of Mrs. J. M. Walker (Mrs. M. W. J.).**—Mrs. Jeanie Mort Walker, who was well known in New Orleans for her earlier literary efforts and as an authority on dentistry, died at her home Thursday, Nov. 7. She was born in Canandaigua, N. Y., of English parents, in 1836. After graduating from the seminary in her native town at the age of 17, she accepted a position in Baton Rouge and became a resident of this state. During the civil war her sympathies were wholly with the south. She rendered what service she could to the cause. At the close of the great struggle she married Dr. J. R. Walker, who had served in the confederate army with the rank of captain. Dr Walker brought his bride to New Orleans, where she resided from that time till her death, with the exception of a few years at Waveland, Miss., where she had a country home, known as Magnolia Grove.

Besides being a devoted wife and mother, she made time to gratify her literary tastes, contributing largely to the city papers and editing the book reviews of the New Orleans Times, the New Or-

leans Bulletin and the Banner of Life. Besides essays, stories and verse over her own name and her nom de plume, "Mrs. M. W. J." and "Eureka," she was the author of two volumes, one "The Life of Captain Frye, the Cuban Martyr," published for the benefit of his orphans, the other entitled "Letters from a Mother to a Mother on the Formation, Growth and Care of Children's Teeth," which was published in three editions and has been used extensively by the dental profession in instructing patients. No woman and but few men were better versed in dental literature. She wrote much for the profession, and at the time of her death was still editor of "Practical Points," in the Dental Brief, a journal published in Philadelphia. For several years Mrs. Walker reported various society proceedings for The Dental Summary. Mrs. Walker was an honorary member of the State Dental Associations of Mississippi, Alabama and Georgia, and also of the Southern Dental Association. At one time she was active in the W. C. T. U., when she was state superintendent of hygiene and heredity.

# REGULAR CONTRIBUTIONS

## ARRANGEMENT AND OCCLUSION OF ARTIFICIAL TEETH.*

By J. H. Prothero, D. D. S., Chicago, Illinois.

Studies of the movements of the mandible in mastication have established certain facts that are of vital importance to the prosthetist in the construction of artificial dentures. Many in the profession today are familiar with these facts, but fail to profit by or put them to practical use. Others, again, have given this subject but little consideration, principally because its importance and value have never been impressed upon their minds.

Bonwill labored long and earnestly with the profession in encouraging the study of normal occlusion of the natural teeth, and urging the necessity of following nature's methods in the arrangement of artificial teeth. He was a pioneer in this field, and practically worked alone without the sympathy or assistance of any one for many years; therefore, it is not strange that he should have failed to complete the system in all of its details, nor is it strange that he made some erroneous deductions. The bulk of his work, however, stands as a monument to his memory, which compensates in a small degree for the lack of appreciation of his efforts by the profession while he was living.

I have brought with me a skull in which the full complement of the teeth is present, and which I hope to exhibit at your clinic. One need but to glance at it to appreciate the

*Read before the Indiana State Dental Society, 1907.

beauty and utility of arrangement of the organs of mastication. A close study of this particular specimen will, I am sure, inspire in the minds of those who examine it a desire for greater light, and prove an incentive to higher, larger and broader efforts in the field of prosthesis. From its examination one can also readily understand why Bonwill, who examined thousands of such specimens in his research work, became the enthusiast that he was.

Within the last decade a few men have taken up the work where Bonwill laid it down, with the result that more accurate occluding frames have been devised, appliances for recording the normal movement of the mandible have been invented, and new terms and expressive phrases have been introduced for simplifying the study and carrying out more accurately the practical details of this subject.

The lower jaw, on account of its peculiar attachment to the base of the cranium, and of the direction traversed by the muscles controlling it, is capable of a great variety of movements. Mastication, however, is accomplished by the jaw movements being carried out along certain definite lines. There is no haphazard "catch-as-catch-can" condition prevailing. Every movement is for a purpose and is carried out with almost mathematical precision.

### MOVEMENTS OF THE LOWER JAW IN MASTICATION.

The facts I wish to present will be rendered clearer by giving a brief description of the movements of the lower jaw in the act of masticating food on one side of the mouth. We will suppose the food has been introduced into the mouth and carried between the upper and lower teeth on the left side by the tongue. The right side of the mandible is then drawn forward and downward a short distance, the condyle passing onto the eminentia articularis, and following what is known as the "condyle path," while the other condyle is slightly rotated, but remains practically at rest in the glenoid fossa, thus becoming the pivotal point around which the mandible rotates. This movement brings the marginal ridges of the buccal cusps of the lower bicuspids and molars on the pivotal or working side of the mouth, in alignment with the buccal cusps and marginal ridges of the corresponding upper teeth, while their lingual marginal ridges occupy a similar relation to the corresponding upper teeth and surfaces. The distance traversed by the buc-

cal marginal ridges of the lower teeth in passing from normal occlusion in the central grooves to the buccal marginal ridges of the uppers in partial occlusion is most expressively termed the "differential" by Dr. T. W. Pritchett.

This differential movement brings the teeth in such relation as to form a long rectangular groove extending from the third molars to the first bicuspids, into which the food is forced and prevented from lateral displacement by the tongue and cheek muscles. On the opposite or projected side the buccal cusps of the lower third molar engage with the lingual cusps of the upper second or third molar, and sometimes both, depending upon the mesio-distal relationship of the teeth in the two arches. Anterior to this contact, the other molars and bicuspids are not in occlusion, and consequently are not in correct relation to masticate food. The lower incisors are usually in contact with the upper incisors between the central and cuspid on the working side of the mouth.

It will therefore be seen that contact of the lower with the upper teeth is secured at three widely divergent points, triangularly located, and hence the term, three-point contact, has been applied to both natural teeth and artificial substitutes exhibiting such contact. This term expresses a condition that should be present in either natural or artificial dentures in order to insure the most effective results in mastication, and prevent the tipping of dentures and the jaw under stress. Under normal conditions, the simple opening and closing, or hinge-like movement, is only employed when lateral motion is not possible, or when food of the softest variety is being triturated and is not nearly so effective as the lateral movement.

When the upper anterior teeth over-bite the lowers, the bicuspids and molars are arranged so that their general occlusal surfaces present a curved line, with convexity downward, more or less prominent, depending on the depth of overbite. This line if projected backward passes just anterior to or through the condyle. The center of this curve lies in the region of the upper anterior margin of the orbit under normal conditions, and correspondingly higher as the arrangement approaches a plane. This curve has been called the "compensating curve," or "curve of Spee," so named from the man who first described it. The inclination downward and forward of the condyle path coincides with this curve and varies from a

horizontal plane to an angle of 45 degrees, the average being about 25 degrees.

Occasionally in the same individual there is a difference in the angles of inclination taken by each condyle. This curved arrangement is a provision of nature to preserve contact of the teeth at various points in the arches, by compensating for the dropping down of the condylar processes as they move forward on the eminentia articularis. The lower third molars, which are placed in a higher position in the curve, when brought forward come in contact with the upper second molars, which are placed correspondingly lower. At the same time the incisal edges of the lower anterior teeth are carried downward and forward, and usually come in contact with the corresponding upper teeth and surfaces, although contact in this location is not an absolute necessity, thus equalizing the force exerted by the muscles of mastication, and enabling them to exert their maximum effort.

Many other interesting and important facts relating to normal occlusion and mastication might appropriately be mentioned in an essay of this character, but time forbids.

## DETAILS TO BE OBSERVED IN ARRANGING ARTIFICIAL TEETH.

An effort will now be made to describe a few of the many important details to be observed in arranging artificial teeth as near to nature's methods as possible.

The mission of the prosthetist in replacing the lost natural teeth by artificial means is two-fold; first, to restore the function of mastication, and second, to meet aesthetic requirements. In order to arrange and occlude artificial teeth correctly an occluding frame must be used which is capable of reproducing the masticatory movements of the human jaw. A number of good appliances fulfilling such requirements more or less accurately are now procurable, some of which are decided improvements on the Bonwill. The second adjunct is an appliance for measuring the relation of the alveolar planes to the condyles, while the bite plates are in position in the mouth and of sustaining them in this relation to the hinge of the occluding frame while the models are being fixed. The face bow fulfills these requirements efficiently. Some means of registering the inclination of the condyle path is also necessary.

A method outlined by Christiansen and an appliance suggested by Dr. Snow can be applied with fairly satisfactory results for accomplishing this step.

The proper appliances at hand, the steps of construction of a full upper and lower denture are as follows:

The models having been secured, a rigid unyielding base-plate is conformed to each and trimmed to correct peripheral outline. Borders of wax are built up to correspond in length to the natural teeth and absorbed tissue. This can only be done approximately at this time. The wax rims should be trimmed nearly flat occlusally, the outer buccal margins of the lower being slightly higher than the lingual to correspond with the bucco-lingual inclination of the occlusal surfaces of the teeth, while the upper rims are trimmed correspondingly. The labial and buccal surfaces of the wax rims should be built out to represent such restoration as may be deemed necessary. When this has been accomplished the base-plates are introduced into the mouth. The length of the upper rim of wax is determined by the length and position of the lip and should show about 1½ millimeters below the lip when the latter is at rest and facial contour restored. The length or height of the lower wax rim is determined after the length of the upper rim has been secured by noting the position of the lower lip when closed, and the external orbicular contour. Too long a rim is indicated by the effort on the part of the patient necessary to obtain contact of the lower with the upper lip. A rim deficient in height is indicated by the lower lip being crowded down and consequently shortened, resulting in a disturbance of the general facial contour.

If absorption of tissue in both upper and lower arch has been uniform, the line of contact of the two rims should be about midway between the upper and lower borders. Where but slight absorption has occurred the wax rims will represent a thickness but little greater than the length of the crowns of the natural teeth. The facial contour should be noted and wax added to or trimmed from the rims as aesthetic conditions indicate. Usually, it is necessary to build out the cuspid eminence to a considerable extent in order to obliterate the wrinkle which extends from the alae of the nose over the angle of the mouth in those cases where loss of tissue is marked.

Care should be taken to see that uniform contact of the

wax rims throughout is secured while the base-plates rest solidly upon their respective borders. This is tested by having the patient close the mouth firmly; then, with a thin, flat instrument inserted between the rims in the region of the second bicuspid or first molar, attempt to pry them apart. If they do not yield at this point, repeat the step on the opposite side.

Should the base-plates separate on either side, the other side remaining in contact, or on both sides while contact is maintained in the anterior portion, more wax should be added to the deficient rim until uniform contact is secured anteriorily and on both sides at the same time. Failure to correct this error would result in the teeth on the deficient side failing to occlude.

The high lip line should be marked, which will give some idea as to the length of tooth to use to avoid the exposure of a large area of artificial gum material, and yet allow a reasonable amount to show n laughing. The median line should be marked on the base-plates at this time. One of the best methods of doing this is to place a straight edge along the median line of the face, striking an average between the point of the chin, the philtrum, and a point midway between the inner termination of the eyebrows. The result will be harmonious, and as a general rule more accurate than if the frenum labae is taken as a guide.

The upper base-plate is now removed and the stem of the face-bow heated and forced into the wax rim two or three millimeters from the incisal plane. Having been forced deeply into the wax, it can be removed to facilitate the carrying out of subsequent steps and replaced in position later when the base-plate is in situ.

The next step is to secure the correct or normal relation of the lower to the upper jaw. The method about to be described has been followed by the writer for a number of years with uniformly accurate results.

### METHOD OF SECURING CORRECT RELATION OF UPPER AND LOWER JAW.

Both base-plates being in position, the patient is instructed to relax the muscles of the jaw so that the operator may open and close the mandible at will. The tips of the fingers are then placed on the point of the chin, moderate but not excessive

pressure upward and backward exerted, and the mouth opened and closed several times, pressure as indicated being maintained at all times. The fingers of the other hand are employed to hold the lips apart and careful attention given to the striking of the wax rims together. It will frequently be noticed that they do not at first strike uniformly in the same place, but after a number of trials with maintained pressure on the point of the chin, the correct position will be found. Excessive pressure on the chin will compress the tissues in the glenoid fossa and result in backward displacement of the mandible.

When the normal closure is established, the base-plates being in contact and pressure being still exerted on the chin, the patient is instructed to "keep the lower jaw closed." This is readily done without any tendency to disturb the secured relation. Two four-pointed staples should be at hand which can now be forced into the wax rims to hold the base-plates firmly together. The stem of the face bow is now inserted into the upper base-plate in the opening previously made for it, care being taken to see that it is firmly imbedded in the wax and immovable. The face bow is then placed in position, the center clamp passing over the stem projecting from the base-plate, and the side rods carried to a point about 12 mm. in front of the external opening of the ears, and on a horizontal plane with it. They are then pressed firmly against the sides of the face and the clamp nuts tightened. Care should be taken to see that the face bow is evenly balanced before tightening the clamp nuts. This can be done by slipping the bow sideways on the rods, as indications require, until the same number of graduations show on each rod between the face bow and face.

The clamp nut on the stem is next tightened firmly, when the base-plates are ready for removal. This is accomplished by loosening the side clamp nuts and drawing out the rods The patient is then instructed to open the mouth and the base-plates are removed by grasping the rods attached to the upper plate. Reasonable care should be observed to prevent the relationship of the two base-plates and that of the face bow with the upper plate from being disturbed.

### MOUNTING THE MODELS.

Mounting the models on the occluding frame is the next step. The side rods of the face bow are pushed inward to their

limit, and the clamp nuts tightened. This brings their inner ends, in which there is a slight depresson, in proper relation to receive the projecting lugs of the frame hinge. The upper bow of the frame is thrown open, the face bow adjusted in position, the upper model placed in position in its base-plate, and the bow dropped back to position again. It might be well to secure the model to the base-plate with a little hot wax to insure stability while being attached to the frame. Plaster is now mixed and applied to the model, and around the bow as usual, to hold it in place.

The entire frame, with face-bow, base-plates and upper model, is now inverted, the lower bow of the frame thrown back, the lower model placed in position in its base-plate, the bow dropped down upon it, and the model attached as usual. When the plaster is firmly set, the face-bow can be removed from the frame and base-plates.

The models now occupy such a position upon the occluding frame that their occlusal planes bear the same relation to the hinge that the natural alveolar planes bear to the condyles. This relation is not procurable in any other way known to the writer than by means of the face-bow mentioned.

### REGISTERING THE INCLINATION OF THE CONDYLE PATH.

One other step of importance remains to be carried out before proceeding to arrange the teeth. This consists in registering the inclination of the condyle path and setting the hinge slot of the occludng frame at a corresponding inclination. The staples are removed from the base-plates and on either side of the lower base-plate on the occlusal surface, near the distal termination, is placed a small U-shaped appliance having a projecting tapering pin. The "U" portion is pressed into the wax, leaving the pin projecting above the occlusal plane.

The base-plates are now inserted in the mouth and the patient instructed to project the jaw forward and then return it to normal position. This may be done a number of times before final attachment of the two plates, to insure against lateral motion. When the patient can move the mandible evenly forward, he is instructed to close while the jaw is projected. The base-plates, instead of being in normal position, will usually be separated at their distal extremity, relation being maintained by the projecting pins, which have passed upward into

the opposite base-plate. The lower plate will also be considerably advanced beyond the upper. The incisal rims of wax, however, should be in contact.

On removal, the base-plates are returned to the lower model on the frame, the hubs of the hinge slots released, and the spring controlling the lateral movement of the frame thrown off its attachment. This releases the upper portion of the frame so that the upper model can be moved up or down, forward, backward or sideways without restriction. It may now be placed in the upper base-plate, and its correct position found. This adjustment, it will be found, will cause the hinge slots to assume approximately the same angle or inclination or the condyle path, in which position they are permanently fixed by tightening their respective clamp nuts. The base-plates are separated, the U-shaped appliances removed, and the hinge spring thrown into action, which brings the base-plates back to their original relation as when first mounted on the frame. As before stated, however, when lateral motion is produced, the lower bow of the frame is carried downward and forward at aproximately the same inclination as that of the natural jaw.

The frame should now be subjected to the lateral motion and the occlusal planes of the wax rims modified so as to remain in contact in the lateral motion, as well as in normal occlusion. This modification, it will be found, will usually necessitate the curving upward of the occlusal planes, the amount of curvature depending on the angular inclination of the condyle path.

### SELECTION AND GRINDING OF TEETH.

Teeth of good form appropriate to the requirements of the patient should be selected. The molars and bicuspids should be as nearly normal in their bucco-lingual diameter as is possible, to secure a good working differential in mastication.

The principal object in the grinding of teeth, and which should never be lost sight of is to so modify their occlusal forms as to increase the contact area of those surfaces involved in mastication to the greatest possible extent. In other words, it is the developing of surfaces from what would otherwise be mere contact points in the teeth as supplied by the manufacturers.

With a little experience and skill, the development of correct occlusal areas on bicuspids and molars can be accomplished without marring appreciably their general outline form, thus rendering them capable of food reduction with minimum effort.

As a general rule, the central groove should be deepened somewhat and broadened materially. This treatment not only reduces the mesial and distal marginal ridges, which usually are too prominent, but it reduces the lingual inclination of the buccal and the buccal inclination of the lingual cusps, which are too rounded and tubercular in form, to broad planes so necessary for accomplishing the desired results.

The modifications just mentioned may be made before beginning the arrangement of the teeth, and when properly carried out the teeth will need only occasional touches here and there in the final adjustment. These preliminary steps having been carried out, the teeth are ready for arrangement.

### ARRANGEMENT OF THE TEETH.

Since the facial contour was restored by carving the labial and buccal surfaces of the wax rims, the teeth should be arranged progressively in such manner as to take their proper alignment without destroying any more of the contoured surfaces than is necessary. A section of wax adjoining the median line on the upper base-plate is removed from the rim, of sufficient length and depth to admit one of the central incisors. This is placed in proper alignment labially and incisally, and firmly attached by melting the wax lingually. Another section large enough to admit the adjoining lateral is then removed and this tooth dropped into position, the tooth already fixed and the adjoining margin of the wax to the distal serving as a guide in securing the correct labial alignment. The cuspid, and then the three opposite anterior teeth, are similarly adjusted, then the bicuspids and molars, the occlusal surfaces of which are arranged to correspond to the compensating curve previously developed in the wax rims.

Two methods are in vogue for arranging the lower teeth. First, the second bicuspids are set in position to occlude with their opposite fellows, the teeth anteriorly and posteriorly being arranged from this fixed point.

The second method, and the one recommended by the writer, is to arrange the six anterior teeth first, allowing the upper incisors to overbite the lowers slightly, and when the first bicuspid is reached, correct the disproportion in width as far as possible between the uppers and lowers by grinding the proximating surfaces of the cuspid and bicuspid. This method usually requires less modification of the anterior teeth than the one first mentioned. As a rule, disproportion in the relative mesio-distal diameters of the lower bicuspids and molars, compared with the uppers, nearly always exists. In such cases the larger teeth should always be reduced by grinding on their mesial or distal surfaces or exchanged for a set of proper proportion, which, however, can seldom be done with exactness. The mesial and distal planes of the various cusps are modified as conditions require, so as to secure positive contact with the correponding planes of the opposing teeth.

Beginning with the placing of the first lower tooth, the frame should be moved from side to side to test the correctness of the position of each tooth placed, and modified, or its opponent modified, as conditions require. Further remarks along this line are unnecessary. To those who have never attempted a case of anatomical occlusion, I can say that if you will undertake one with a careful determination to succeed, you will learn more from that one case than can be derived from a paper ten times more explicit than this.

As one gains experience, enthusiasm grows, and a class of procedure shunned by some and a bugbear to many more because of unsatisfactory results, becomes a pleasure.

Let me quote a paragraph from an unpublished paper by Dr. T. W. Pritchett, to whom I owe much for many hints in this field. "There is fascination in the thought when edentuless persons, helpless as to the function their lost organs perform, present for our service, we can, in a measure, by our art restore the lost function and make them presentable to their friends again. The romance comes in when we succeed beyond our and their expectations."

My friend Pritchett succeeds, and so do many more whom I could name, and so can every one who makes the effort. It is the only way. Get into the front rank and help the work along by doing it yourself and helping the other fellow. If all would put their shoulder to the wheel and follow nature's

methods, the plain line articulator and barn door hinge would be relegated to the scrap heap, where they should have been cast years ago.

## DISCUSSION.

**Dr. H. D. Weller, Indianapolis, Ind.:** I believe that in the last few years, or in the past years, that there has been too little said on prosthetic dentistry; that is, on the making of dentures. There is no doubt in my mind but that Dr. Prothero has gone into this subject in a very scientific way, and there is no reason why, in the state of Indiana, each of us should not go into this subject in the same way, because he has started us out on the right track, and he has given us a very valuable paper this evening.

In the past years I have had a great deal of experience in setting up teeth and in taking "bites," having been connected with the Indiana Dental College for a number of years. Students come to college, and Dr. Byram starts them out as Dr. Prothero has outlined here tonight. The next year they come under my charge, and I try to follow out Dr. Byram's theories, but some of them will say, "Why Dr. So and So, my preceptor, does not use an anatomical articulator; he uses a plain line articulator; neither does he take a base-plate 'bite'; he takes a biscuit 'bite'; and he does not pay any particular attention to the arrangement of the teeth from an anatomical standpoint."

There are a good many dentists who do not understand these theories, and there are a great many others who say that this method of taking a base-plate "bite" takes too much time. They say they can pick up a hunk of wax, throw it into the patient's mouth and tell him to close on it, and dismiss him in five minutes. The patient goes away, comes back in the course of a week, and they have a full upper and lower done. The chances are that they will have to take a stone and grind each of the teeth in order to get them to articulate half way decent.

Now, it is true, to a certain extent, that it does take some time, but I am sure that when they are finished they will give much better service. Of course, a great many dentists do not get enough money for making teeth, and therefore cannot put the time on them, but I believe that every "bite" taken should be a base-plate "bite," and it should be taken as Dr. Prothero has indicated here tonight. It is a very simple matter, after one becomes accustomed to it, to take a "bite" in a reasonable length of time, and to set up the teeth anatomically. It is very little more trouble than if we set them up without having any of those lines, and I hope, gentlemen, that in the future, we will all think about the subject of setting up teeth anatomicaly. I do not believe the manufacturers supply the dentists with the proper moulds for articulating teeth anatomically, because

we have to grind a great many teeth to make them articulate as they should.

I remember a few years ago I called on a friend of mine in a small city. He was at that time articulating a full upper and lower set of teeth. He was swearing at the manufacturers because they were sending out teeth that would not articulate. He told me that he could never make the bicuspids articulate in the right place, and that he could never make the cuspids hit right. I said to him, "Doctor, if you will permit me, I think I can show you how to avoid that trouble in the future," and I proceeded to articulate the teeth as Dr. Prothero has instructed us here tonight. This man had been in the habit of articulating the upper teeth first; then he would start with the lower central incisor and articulate the incisors and the cuspids. If the first bicuspid came in the right place, he was tickled to death; if it didn't he did not know what to do. I suggested that he articulate the first bicuspid first, and then grind the distal surfaces of the cuspid and the mesial surface of the bicuspid. Then, if you have to grind more to make these six anterior teeth articulate, grind them on the mesial and distal surfaces. Now, I do not pretend to be able to set up teeth like Dr. Prothero, but I was able to show this dentist how to get rid of his difficulty.

In the first place, his teeth were too small for the case he had in hand, and right here is a point that I wish to impress upon you. A great deal of trouble is caused in setting up teeth by not using the proper judgment in the selection of same. A great many men try to set up teeth that do not any ways near fit the case they have in hand. The cuspids come too near the front of the mouth, and therefore the bicuspids do not articulate at the proper point.

**Dr. F. R. McClanahan, Rushville, Ind.:** Very recently I heard a prominent speaker make the statement that anything in this age that is not practical is worthless. There is evidently much of truth in the assertion, and we see it every day in the profession of which we form a part; and in the very practical paper of the evening we have not sacrificed art and beauty for utility, but rather has Dr. Prothero combined the two into perfect completeness.

The work, then, of the prosthetic dentist, is to successfully bring together works of art with practical results. I have no sympathy with the dentist who is a blacksmith and nothing more; or, as the Indianapolis Star puts it in this morning's issue, "When we get every tooth carpenter into our society," etc.

In looking over my work, I fear I have been about as much the carpenter as the artist, and it really takes years of hard study and many papers and demonstrations like we have had tonight to educate us up to the standard we must finally achieve.

Nowhere on God's green earth is there an association of men who do as much for humanity as the dentist; and this truth, though in rather a hazy way, is forcing itself upon an unsympathetic public. Knowing ones are casting aside the Cheap John, advertising quack,

who has done so much to hold our profession in (if not actual disrepute) very ordinary standing.

The knowing public is surely finding out that the conscientious, aesthetic dentist must have a place as high in the educated professions as any other.

Now, the paper this evening is not only full of practical suggestions, but contains much that will lead us up to the realization of the beautiful, of the art side of our work. Do you know, I have a belief that a dentist who is not only practical, but a dreamer as well, will not reach the highest plane that is intended for him to attain. Had Dr. Prothero and the many good men of his kind not been dreamers, how could they project themselves into the future and bring to us the many improved methods we have? Dr. Bonwill had a dream, and in that dream he saw his articulator and brought it forth as the first great and distinct improvement in prosthetic dentistry in years. I heard some one the other day speak about clover fields for the dreamer. If you want a real inspiration, go out into the country, climb upon a rail fence to the windward of a forty-acre clover patch and drink in its wonderful beauty and rich perfume; and as you dream, what is it that places you above the cattle across the brook?—they, too, are enjoying the clover; but do they see its beauty? Do they enjoy its sweet perfume? Then the thought comes to us, shall we be like the cattle in the field or shall we make practical our dreams and thereby uplift humanity and bring credit upon our profession?

**Dr. J. H. Morrison, Connersville, Ind.:** I feel that perhaps one of the most valuable features of the paper this evening is the pointing out of some of the results of setting up teeth regardless of or without any sight of the proper occlusion or character of the teeth. I have followed the literature upon this subject some little during the past ten years, and I believe that I can easily say to you that one of the greatest joys that comes to the dental worker comes to him when he is successful in setting up a set of teeth and has attained the results that are possible by the methods outlined in the paper read before you tonight. I do not, by any means, consider those things as matters of theory, and to disregard them is to disregard a practice that is worth your while when pursuing the profession from a practical standpoint. It is the one thing that will save a person more trouble than any other. We used to set up a set of teeth, and if the patient found one spot where she could masticate, we considered that a successful job, and I suspect that many of you have made artificial teeth with which the patient could chew only on one side of the mouth, and could do nothing with the other side. The patient did not know the reason for this, nor did we ourselves, but when we study the motions of the mandible we see the reasons for the defects and are able to correct them. A set of teeth articulated properly come together and operate on one side just as well as they do on the other.

Some complain of the manufacturers because the pins are so

small, when perhaps the whole trouble is that the teeth were not articulated properly, and were not in the proper position to resist the forces that were to come against them. You may discover something of the fault of teeth in setting porcelain crowns on the anterior teeth. You know what trouble you get into if you make the articulation too strong, and it is the line of this force that we sometimes overlook.

A good many of us look upon these things as a matter of theory only, things which are too difficult to work out, and are not worth our while, so far as practical results are concerned, and this is where we make a great mistake.

I am very glad to have heard this paper, and very glad to know that our society is giving attention to this subject. Dentists used to think that it was beneath their dignity to discuss artificial teeth.

**Dr. D. A. House, Indianapolis, Ind.:** I believe this is the first time I have asked the privilege of the floor at this meeting. I do not know any other reason for it than the piety of which I am often accused, but a man who can listen to a paper like that and not get up and express his feelings as regards the good he has received from it, shows that his sense of appreciation is very shallow.

The first gentleman discussing the paper made a remark to the effect that the subject of prosthetic dentistry is discussed and written about entirely too little. I very heartily agree with that. I believe if we had a little less of gold crown, crown and bridge-work, a little less of porcelain inlays, and a little less of some of these other things, of which you can use one, two, three or four other things, and a little bit more of the prosthetic side of the work where you have to use one thing, and cannot substitute anything else, I think we would be better off. I have made quite a few artificial dentures; I have made very few that I can positively say I feel proud of; I have made a number that have worked with reasonable success, but I believe I can go to my office tomorrow and make a better denture than I ever made before.

**Dr. J. Q. Byram, Indianapolis, Ind.:** Those of you who have had the misfortune to listen to my melodious voice within the last eight or nine years know that I have said a great deal upon the subject of the arrangement of artificial teeth. I have contended ever since I made a study of this subject that the dentists who rely upon the plain line articulator for the arrangement of artificial teeth do not comprehend the laws of occlusion. I grant you, Mr. President, that a number of dentists of good reputation, and dentists who are skillful in the arrangement of artificial teeth, use the plain line articulator. But the question is, do they do as good work as they could do if they would change and use the anatomical articulator. If the results obtained by the use of the plain line articulator appear satisfactory to a dentist who has never used an anatomical articulator, let him use the anatomical articulator, and I am quite sure he will be much more gratified by the results obtained.

The first point in Dr. Prothero's paper to which I wish to call your attention is the manner in which he looks out for details. If there is any work which necessitates caring for the minute points, it is in the arranging of artificial teeth. I do not doubt but that a number of you, when he showed the slide on the screen, where he cut out in the wax to arrange one central incisor, and then the other central, then the lateral, and so on, thought, "That is all foolishness; why not cut off enough in that wax at one time for all of those teeth instead of bothering with each tooth separately?" I wish to say that we as dentists get in the habit of hurrying our work. Let us bear in mind that in the arrangement of artificial teeth we are working in a negative way. The sculpture selects his model; the landscape artist studies the landscape before he begins to paint; and unless we can get an exact model—if you please to call it a model—of those teeth, I believe that the majority of us cannot give to our patients the best arrangement, and I wish to lay particular stress upon that point. It is time lost, and it is not all foolishness to care for the minutest detail.

The next point to which I wish to call your attention is this: that he who saves time in the beginning of the operation by using a simpler form of "bite," if you please to term it that, usually loses time at the end of the operation when he grinds the teeth to occlusion. And does he give his patients as good service? After all, I believe that the total amount of time consumed in the arrangement of the teeth with an anatomical articulator, and the use of the base-plate "bite" is but little, if any greater, than the time consumed in the arrangement of the teeth with a plain line articulator.

Another point to which I wish to call your attention, and one which Dr. Prothero only mentioned indirectly, but I think he will bear me out in it when I say it is almost impossible to get a mechanical device in the way of an occluding frame that is an absolute imitation of the natural jaw. The idea is to get one with which we can as nearly as possible imitate the movements of the jaw, and then do the final arranging in the mouth, but I believe I am safe in saying that he would not have you believe that he relies upon the articulator altogether, but does the final arranging of the teeth in the mouth, and that, it seems to me, is a point overlooked. The method of obtaining the condyle path, it seems to me, is a very valuable point, and one which I hope to take up at once and try to perfect myself along that line. Another valuable point is the use of the Snow face-bow. I agree with Dr. Prothero that the only way to get the casts upon the articulator accurately is by the use of the Snow face-bow. I have tried every form of measurement and I have never been able to do it in the same accurate way that I have by the use of the face-bow. It seems to me that this is a valuable adjunct. An anatomical articulator is of very little value, however, if you get the casts turned laterally, because you have not the planes of the surfaces of the ridges in relation to the planes of the surface of the jaws, and

you spoil what you started out to obtain. One other thing so often overlooked is the arranging of the casts upon the articulator. It is essential that the bows stand parallel to each other.

I cannot praise Dr. Prothero too highly for this paper. I feel that this association is to be congratulated upon having him with us, and I feel that his paper is one that we have all enjoyed. The one thing I regret is that he stopped so soon. I was in hopes that he would carry the subject a little further.

**Dr. R. I. Blakeman, Indianapolis, Ind.:** I feel that I cannot let this paper go by without giving a word of thanks to Dr. Prothero. It is certainly a beautiful thing to see the way Dr. Prothero has handled the subject. Until one has become an expert in this line of work, it is a very up-hill job to do it, and what seems very hard to us has worked out very easy and beautifully in Dr. Prothero's hands I shall never forget my first experience in trying to mount a set of teeth on the Bonwill articulator. It was in the office of the man for whom I worked at the time. He had met Dr. Bonwill, and Dr. Bonwill had given him instructions for the use of the articulator, and he was giving me the details of the operation. I placed that set of teeth on the articulator in a sort of a haphazard way, and then ground on them until there were no teeth left. I worked as hard as I possibly could. I had been raised up in a Christian family, and in a Christian community, but the thoughts that came to me when I realized that I had used that set of teeth up in grinding, I must say, would not go in Sunday school. I worked for a long time, and finally gave up in disgust. Of course, the whole trouble was lack of knowledge in placing the model on the articulator.

Another point in Dr. Prothero's paper that interested me very much was the manner in which he obtained the length of the "bite"; that is, raising the lip to full height to get the size and length of the teeth. That is a very important point, and one which should not be overlooked in order to get the proper length of the teeth. There were so many points in his paper that were interesting to me that I do not feel that I can take them up separately, but I do want to thank Dr. Prothero most heartily for his paper.

**Dr. S. T. Kirk, Kokomo, Ind.:** I have the pleasure of having had the acquaintance and friendship of Dr. Bonwill, and through him I got to using his articulator a great many years ago. I have always recognized the fact that we need a certain rule of action to place our models on the articulator. I have studied that point a great deal, but never understood the facts as I do tonight. I feel so incapable that I believe I shall just have to go back home and learn it all over again. Still I have some work that I am not particularly ashamed of.

**Dr. J. A. Dinwiddie, Lowell, Ind.:** I am an enthusiast in this work, but there is only one thing I wish to say, which I hope will make you a little more appreciative towards prosthesis, and that is

this: That the operating men of our day shed buckets and buckets of tears for the loss of a tooth, while there is not one tear shed for the poor, toothless being.

**Dr. J. H. Prothero, Chicago, Ill.:** I have always heard that the gentleman from Indiana was a pretty fine fellow. I am going to use the plural now, and say that the gentlemen from Indiana are pretty fine fellows, but I never knew that they were capable of throwing so many bouquets as have been cast tonight.

As has been intimated, I met with an accident the tenth of May, which disabled me and put me to bed for some time. As a result, I missed our own state society meeting, at which I was to deliver a paper on another subject, and I was pretty badly discouraged. Then came the closing of our school, and the preparation of this paper, which I had already begun, was still incomplete. I finished it today, which accounts for the gentlemen who were to open the discussion not receiving a copy, and I hereby tender them an apology for my seeming neglect. I am disappointed in the effort here presented for the reason that there are so many interesting things that I could not even touch upon.

There is not a man in this room who cannot get an occluding frame and the appliances that go with it and get to work. While he may meet with failure at first, anything that gives such results is certainly worth striving for. The teeth on the denture I will show you Thursday morning, if I am able to stay that long, were ground and arranged one by one in the wax, just as described, in 20 or 25 minutes, and I am not particularly expert either. I have no more ability than most of you gentlemen have. You can do the same thing. I always hold that what one man can do another man can do, and if this first man does it well, the other man can do it just as well if he has the right spirit in him. This is what I am trying to arouse among you tonight. I want to say that the profession in Indiana has just as many following this line of work as it has in Illinois. I know that this is a fact from reliable information. The number of plain line articulators sold, as compared to the anatomical occluding frames tells the story. The plain line articulator should have no place in the laboratory whatever, not even for crown and bridge-work. The construction of crowns calls for the reproduction of the movements of the human jaw, so that the occlusal surfaces of the bicuspids and molars, when the lateral motion is used, will occlude, and not interfere, and for this reason you should use an anatomical articulator. There is not a man in this room who cannot construct dentures that are occluded anatomically, and almost perfect. This system enables you to get from $50 to $75 for full upper and lower dentures, instead of $25 and $30. There is not a profession today whose members, on the average, are paid so poorly as in the dental profession; there is no class of men who give their time and energy for the benefit of suffering humanity for so little compensation. Now, if you are able to give your patients better service, if

you can make a denture with which they can chew beefsteak or any other food properly, so that it can be taken into the stomach—as can be done by this system—you have a right to charge them more, and patients will be willing to pay better fees. It means better health to them. I have constructed dentures for patients for whom impractical dentures had been constructed, other dentures for some who were using dentures only partially successful, and dentures for some who had only recently lost their teeth. In every instance satisfactory results have followed the use of this system.

**A Voice:** Do you make any attempt to use the anatomical articulator in the construction of partial dentures?

**Dr. Prothero:** Yes. There is not much variation in the steps in the construction of a full upper or lower or partial cases. It is a very easy matter to get the key to the occlusion.

Two or three have mentioned the method outlined as my method. The method I have presented to you was taken from the writings of Bonwill, Walker, Snow and Christiansen, and others I could name. What I have tried to do is to gather the best from each of them, giving each man credit when it is possible. If I have been able to assist you in this good work, I shall feel fully repaid for my trouble.

## HYPERSENSITIVE DENTIN.*

**By H. B. Tileston, M. D., D. D. S., Louisville, Ky.**

Dentin, in its normal state, protected by an unbroken covering of enamel, is said to be only slightly sensitive, a statement based wholly upon theory, since its truth cannot be tested unless the enamel is penetrated, when the conditions are at once changed.

As proof of the contention that dentin is not sensitive until it has been for some time deprived of its normal protection, it is pointed out that fractured teeth are not immediately sensitive.

The lack of sensitiveness of dentin in fractured teeth, however, may be attributed to temporary paralysis of the pulp from the shock of the blow that produced the fracture, sensitiveness returning when the pulp recovers from the shock. It is noted that in grinding vital teeth to prepare them for telescoping crowns, sensitiveness of the dentin is excruci-

*Read before the Kentucky State Dental Association, Louisville, Ky., May, 1907.

atingly apparent immediately that the enamel is passed and the grindstone impinges upon the dentin. In such cases there is no time for pathological changes to take place, which would account for the sensitiveness of the dentin. It would appear, therefore, that dentin in its normal state is sensitive, varying in degree in different individuals just as individuals themselves vary in their susceptibility to painful impressions.

### HYPERSENSITIVE DENTIN.

But there is a condition known as hypersensitiveness of dentin, or a state of exalted sensitiveness, which occurs in the presence of caries and which frequently embarrasses the dental surgeon in the preparation of cavities for fillings, a condition that has long been recognized as the bete noire of operative dentistry, but never fully understood as to its etiology.

The presence of nerve fibrils in the dentinal tubules would account definitely for the sensitiveness of that tissue, and doubtless an efficient specific remedy would long since have been found applicable to all cases alike. But nerve fibrils have never been demonstrated satisfactorily in dentin, and as a consequence numerous theories have been advanced to explain its sensitiveness, and remedies almost without number have been suggested, based upon one theory or another none of which are efficient in all cases, and many seem to be successful in no cases.

### PRESSURE ANESTHESIA.

Remedies which, by means of pressure, act directly upon the pulp of the tooth with more or less profundity, are usually efficient as obtundents of hypersensitive dentin, but the unknown and consequently uncertain extent to which they may affect the pulp makes such methods dangerous to use. To this class belongs the use of cocaine hydrochlorate solutions forced through the dentinal tubules into the pulp, either by means of cataphoresis or the high-pressure syringes recently introduced. If it were possible to definitely limit the penetration of the cocaine with either instrument to the dentin alone, there could be no objection to their use. Cataphoresis being slow in its action, and hence more under the control of the careful operator, might be safely used in the majority of cases.

but the apparatus is cumbersome and the paraphernalia surrounding the patient is somewhat disturbing to one of a nervous temperament, and the time required to anesthetize the pulp is prohibitive, for which reasons this method has become practically obsolete.

### HIGH-PRESSURE SYRINGE.

The high-pressure syringe in vogue in recent years with many operators acts with a power and suddenness that precludes intelligent control, and as teeth vary greatly in their histological structure, some having tubules of large caliber and direct communication with the pulp, it is quite likely that in many instances the effect produced upon the pulp would prove fatal to that organ.

In all probability, neither of these methods obtunds hypersensitive dentin, except as the pulp is more or less profoundly anesthetized, and Dr. J. P. Buckley very properly says that "we are never justified in completely anesthetizing the pulp of a tooth for the purpose of painlessly preparing a cavity therein."

### GENERAL ANESTHETICS.

The employment of a general anesthetic such as chloroform, nitrous oxid gas, somnoform, etc., or of general anodynes, such as opium, the bromids, etc., for the purpose of painlessly preparing cavities in teeth, is justifiable in such rare instances as to be practically removed from the list of remedies for hypersensitive dentin.

### LOCAL APPLICATIONS.

Due consideration, then, for the safety of the tooth pulp and of the patient reduces us to the employment of such remedies or means of obtunding hypersensitive dentin as are applicable directly to the tissue to be operated upon and confined in their action to the dentin alone.

In the theoretical absence of nerve fibrils in the tubules, the employment of the alkaloid cocaine, which acts so promptly upon sensation in soft tissues, is absolutely without effect when applied to dentin without pressure. When pressure is applied, however gently, if continued long enough to affect the dentin, it does so through its effect upon the pulp. Co-

caine solutions or the oleate of cocaine, 5 per cent. as suggested by Dr. Buckley, confined under a temporary filling for several days, or a cocaine solution under pressure of a pellet of soft rubber placed over it in a cavity, if successful at all, are so, not by any anesthetic effect upon the contents of the tubules, but by conveyance through the tubules to the pulp itself. The anesthetic effect upon the pulp by such procedures, not being profound, would not be likely to be followed by unfortunate results.

### THREE WAYS OF OBTUNDING SENSITIVE DENTIN.

Assuming the contents of the tubules to be a fluid, unaccompanied by nerve fibrils, through which fluid, by means not understood, sensation is conveyed to the pulp, there appear to be three ways by which we may hope to obtund hypersensitive dentin, viz.:

First, by forcing the contents of the tubules back into them and towards the pulp.

Second, by destroying or disorganizing the contents of the tubules for a short distance within them by powerful escharotics or caustics, or,

Third, by means of desiccation withdrawing the fluid for a short distance within the mouths of the tubules. In each instance, it will be observed, the telegraphic communication between the surface of the dentin to be operated upon and the pulp, is interrupted.

### FORMAGEN, ARNODA, FORMAPERCHA, OXPARA.

The first-mentioned, driving the tubular contents back into the tubules, may be accomplished by sealing into the cavity some material containing a volatile gas. Formagen, Arnoda, and Formapercha all contain a small quantity of formalin. If any one of these preparations is sealed with a cement stopping in a cavity having hypersensitive dentin and left for twenty-four or forty-eight hours, a marked improvement will be noted, and in most instances a complete disappearance of sensitiveness to a sufficient depth within the dentin to permit of painless preparation of the cavity. I can explain such results from the use of these compounds only upon the hypothesis that the formaldehyde gas, being confined in the cavity, exerts pressure upon the open mouths of the tubules, forcing their

fluid contents back into them for some distance. Vapocaine probably acts in the same way, the ether exerting the necessary pressure while the action of the cocaine is nil. Oxpara may also be employed in the same way, but as this preparation contains a larger proportion of formalin, it is quite irritating for the first hour or so, and in deep cavities is contraindicated. I have used it in some cases, however, with very good results.

### ESCHAROTICS.

Remedies having a cauterizing or escharotic effect upon the contents of the tubules are apt to be so irritating as to cause considerable pain when first applied. Fairly good results may be obtained in many cases of shallow cavities, notably those occurring at the gingival of labial and buccal surfaces, by the use of equal parts by weight of carbolic acid or phenol and caustic potash. This preparation was introduced some years ago and known as Robinson's remedy, originated by Dr. Jerry Robinson, chiefly as a remedy for Rigg's disease, as pyorrhea alveolaris was then called.

It is quite painful when first applied, but the pain is of a character that is more readily tolerated by most patients than the pain of cutting the dentin, and soon passes away. The desensitizing is seldom complete, but the suffering is brought within the bounds of toleration for patients who could not endure the touch of an instrument before its employment If used in deep cavities it is apt to produce prolonged odontalgia.

### OXYCHLORID OF ZINC.

A thin mixture of oxy-chloride of zinc spread in small quantity upon the cavity walls and sealed in with cement for twenty-four to forty-eight hours, will completely desensitize hypersensitive dentin. The chloride of zinc coagulates the albumen in the mouths of the tubules, and also because of its affinity for water, withdraws some of the fluid from them. It is not safe to use this mixture in deep cavities.

There are other powerful caustics that are sometimes recommended as remedies for hypersensitive dentin, such as trichloracetic, chromic, sulphuric, nitric and arsenious acids, which are quite effective, but too irritating to the pulp and dangerous to its vitality to be considered as proper agents to be employed for the purpose.

### DESICCATION.

Perhaps the simplest, safest and most widely-applicable remedy for hypersensitive dentin, and the one that gives the most immediate and satisfactory results,is desiccation of the dentin to be operated upon by means of a stream of warm air, aided in some instances by the use of some volatile material having an affinity for water, such as absolute alcohol. By this means the mouths of the tubules are emptied of the fluid that conveys impressions to the pulp, and if the injection of the warm air is continued long enough to dry out the tubules to considerable depth, the obtunding effect is quite marked. The continuous flow of compressed air gives better results than the intermittent puffs from a hot-air syringe. The rubber dam should, of course, be used in every instance so that complete dryness can be maintained throughout the operation of cavity preparation.

### REFRIGERATION.

Refrigeration by means of the ether, ethyl chlorid or bromid spray is an effective means of obtunding hypersensitive which is apt to be followed by active hyperaemia, with condentin, but it doubtless owes its analgesic effect to the benumbing influence of the extreme cold upon the pulp itself, gestion, pulpitis and death of the pulp as sequelae.

### SHARP EXCAVATORS.

Fortunately for the dentist, the large majority of cases operated upon are not hypersensitive to such a degree as to demand the employment of any of the obtunding methods mentioned herein.

Mild sensitiveness, and even some exalted cases, may be managed successfully by the use of sharp excavators and smooth-running, keen burs, manipulated with a steady, firm hand and definite and positive procedures, with an air of self-assurance on the part of the operator that inspires the patient with confidence, and the employment of tact to arouse the moral courage, fortitude and intelligent appreciation and assistance of the patient.

### TEMPERAMENTS.

The observation of temperaments and the adjustment of

the attitude of the operator to the temperamental peculiarities of the patient, either with children or adults, sometimes sympathetic and indulgent, sometimes positive, and at other times severe, as the case demands, frequently brings success out of what appears at first to be doomed to utter failure.

### NEURASTHENICS.

The most difficult and often hopeless cases are those who are suffering from neurasthenia, and practically incapable of exerting any nerve force or self-control, and those who are so consumed with dread of a supposed fearful ordeal that they shrink even from the approach of an instrument, and cannot muster courage enough to find out whether they are going to be hurt or not.

In such cases it is only possible to resort to the most temporary expedients, awaiting a time when more favorable conditions may prevail.

## A FEW PRACTICAL EXPERIENCES TO MAKE THE WORK OF A GOLD FILLING QUICKER AND EASIER TO PATIENT AND OPERATOR.*

By W. H. Green, D. D. S., Lebanon, Indiana.

No. 1. 1-2-3-4 to show wherever (in any cavity) I can cut retention with a wheel, round or inverted cone bur, so as to start the filling with DeTrey gold (or moss fiber or Keaton Williams gold); condensed gold to these grooves or undercuts with a small round burnisher; say half fill the cavity or just enough to make starting anchorage firmly, is all I usually do; then go over this with a serrated plugger; before starting with soft foil always finish with soft foil; and I do this in every case possible.

No. 2. When I lined a thin frail wall with cement, and while the cement was soft, I burnished a piece of DeTrey, moss fiber or soft gold to the cement, as a starting point, and to form an anchorage or retention.

No. 3 was soft foil in combination with cohesive gold in large undercuts for bicuspids and molars, usually in large

*Clinic before Indiana State Dental Society, 1907.

cavities to make it easier to condense the soft foil to walls; then finish with cohesive gold.

No. 4 was the gold pin for anchorage in centrals, laterals and cuspids, and 2, pins in bicuspids and molars as anchorage for filling in badly broken-down teeth.

No. 5. When cavity is shaped to one's idea, burnish a piece of heavy foil gold into cement, forming the undercut for anchorage, as suggested by Dr. Thompson Madin, L. D. S., of London, England, in February Cosmos of 1907. (I made reference to the doctor in my paper).

No. 6. Gold filling showing strength of a well-condensed gold filling, a very large contour in central.

No. 7. Large gold filling in molar.

No. 8. Large gold filling over cement with cement as part of anchorage.

No. 9. The small gold fillings in any place is an easy and quicker operation in comparison to any inlay.

## A SIMPLE AND EASILY MADE BUTTON FOR A SMALL CLEFT IN HARD PALATE.*

By J. A. Stoeckely, D. D. S., South Bend, Indiana.

The demonstration is the making of a simple rubber button to close a small cleft or artificial opening in the hard palate, due to an operation made necessary on account of syphilis.

I took an impression with very soft wax. I attached a small ball of cotton to the wax with a string through the ball and wax, and pushed it partially through the opening. I then pulled the string, which caused the cotton to exert a pressure on the wax, and caused a flange on the inside, and then drew the wax out quickly. This bent the inside flange, and I then bent it back to its proper shape again. I then used this impression as a model, after taking off the surplus and invested it in a flask, placing the wax model in one-half of the flask. I then, after using separating material, put on the other half of the flask, and finished the investment. Then I boiled out the wax and separated the flask, and, on the lingual side of same I packed a layer of hard vulcanite rubber. The balance I packed in soft, flexible or palate rubber. Then I vulcanized same a

*Given as a clinic before Indiana State Dental Society, 1907.

trifle longer than for an ordinary rubber plate. Then, after removing same from the vulcanizer and flask, I polished the hard rubber on the lingual surface. This completed the operation.

As you will see, the whole operation is very simple, and can be done in a very short time. I have several patients wearing these buttons with complete satisfaction for the last 10 years. The patients remove the buttons to cleanse them, the same as any one wearing an artificial denture. It is an operation that entails but little expense and for which you will receive a very large fee.

## PROGRESSIVE PORCELAIN CLINIC.*

Drs. E. R. Kibler and J. Q. Byram gave a progressive porcelain clinic in which they were given two patients, one with a mesio-incisal cavity in a superior central incisor; the other case was a superior central incisor with the incisal one-half malformed. Dr. Kibler prepared the cavity for the inlay while Dr. Byram prepared the malformed central for a partial jacket crown. Dr. Kibler constucted the matrix for the cavity by burnishing directly into the cavity. Dr. Byram constructed a die infusible metal of the malformed central. The matrix was swaged over this die, after which it was burnished to the tooth. Dr. Kibler had applied the foundation to his matrix by the time Dr. Byram had swaged the matrix over the die. At this stage they exchanged matrices. Dr. Byram applied the gingival section for the inlay while Dr. Kibler finished burnishing and applied the foundation to the matrix for the tip. From this point the matrices were exchanged about every 15 minutes, so that each operator applied porcelain to each matrix at various stages. The color and adaptation of the inlay were good. The adaptation of the tip was good, but the color was bad. Dr. Byram assumes the blame for the poor color.

*Indiana State Dental Society, 1907.

## PROPHYLAXIS.*

By Dr. Horace Warren, Missouri Valley, Iowa.

I had a very cute caption, as I thought, for this talk. I called it first "Prevention by Extension," meaning the prevention of oral diseases by the extension of prophylactic knowledge, but along about two months ago I saw something in one of the dental journals by Dr. D. D. Smith with that same idea thus expressed, so I had to change that. I met him at the last Iowa meeting, and he wears the same kind of shoes I do, and he wears slippers in the office, too; so you see he copies many things from me.

Prophylaxis comes from two Greek words; it means to "guard before," and that is all there is to it. When a baby fresh from God is launched upon this sea of trial, trouble, tribulation, croup, whooping cough, measles, breach of promise cases, divorce suits, Thaw murder trials, and pyorrhea alveolaris, it is absolutely antiseptic, perfectly pure, inside and out, from the crown of its hairless head to the soles of its cornless feet. But before it has been on this voyage of life one hour the animalcules are playing tag up and down its alimentary canal. And so with all life; from the time the first breath is drawn until the final expiration thereof it is one continual, uninterrupted fight for life, contest for supremacy. When we are sick the micrococci, staphylococci, streptococci, gonococci, pneumococci, or some other kind of cock-eyed parasites, are endeavoring to do us. When we are well we are overcoming them. The great and only "blown in the bottle" panacea is purity; pure air, pure water—and, I might add, parenthetically, pure politics and pure religion, although they do not belong to dentistry. Except in traumatic troubles, the majority of our ill feelings are due in some manner either directly or indirectly to bacteria. And a traumatism would heal readily were it not for the bugs, as aseptic surgery has proved beyond the peradventure of a doubt. When the microbes have overpowered us, overcome us and dethroned us, then occurs that phenomenon that we call death. But—

"There is no death—
The dust we tread shall change beneath the summer showers
To golden grain, or mellowed fruit, or rainbow-tinted flowers.

*Read before the Nebraska State Dental Society, 1907.

The granite rocks disorganize to feed the hungry moss they bear;
The forest leaves drink daily life from out the viewless air."

And so life presents the seeming paradox of nothing being so constant as change. When we have ceased to breathe, when the heart—that fountain of life—has stopped its pumping, then the work of disintegration goes rapidly on, because the microbes of life are superseded by the micro-organisms of death, and there is no rest till the body reverts to the elements from which it came.

Now, in view of some of these matters, isn't it well to give this subject of prophylaxis a thought once in a while, or possibly twice in a while? Dr. Oliver Wendell Holmes once said that in order to raise a boy correctly it was necessary to begin back one hundred years or so. Now the doctor was undoubtedly correct. We respect him enough to think so, but it is not every boy who has had the privilege of selecting his own father, his own parents, much less his grandparents. But, I say, many of the misdemeanors, mistakes and side steps of our ancestors may be overcome by a hygienic regime. Not that these measures will renew the severed continuity of a cleft palate, nor yet restore the contour to Hutchinson teeth, but they may go far toward preventing the unfortunate and innocent victim of a syphilitic taint from filling a premature grave. The principle of protection prevails in nature to such an extent that it seems peculiar it has not been observed oftener than it seems to have been. Now, take the sensation of pain—that awful bugbear that we have done so much to alleviate and avoid. How many of us would have our fingers if it were not for pain? Indeed our arms, our legs, aye, our very lives are preserved by this beneficent protector, pain.

Now, Hygeia, the great goddess of health, according to mythology, is claimed by many to be the daughter of Esculapius, the mythological god of medicine. Some others refer to her as the wife of Esculapius, and it pleases me more for the goddess of health to be going hand in hand with the god of medicine. And there is another combination that I believe is incorrectly coupled up: that is, that "Cleanliness is next to Godliness." It is indeed next, but most people believe that they are hitched up tandem, with Godliness in the lead; but I believe God himself thinks so much of cleanliness, as evidenced

by all the works of nature, that He would place these in juxtaposition in the catalog of good deeds.

Now, this business of prophylaxis has received little or no attention in the dental institutions of this country in the last few years, but I believe I see the halo of a brighter day dawning for a phase of dentistry which has always seemed to me to be of such prime importance and on which I claim to be the most profound crank in the United States, not excepting the celebrated Dr. D. D. Smith himself; and I believe the profession is awaking to the fact that there is something in the science of dentistry besides pushing and pulling—and I have the greatest respect for them, too.

Now, treatises on this subject have been written by the greatest philosophers, philanthropists and altruists and ablest scholars from the world's earliest recorded period, and I take pleasure, ladies and gentlemen, in saying that it does me an honor to appear before the members of the Nebraska society and their guests upon such an important subject, realizing, however, my inability to handle it with the power commensurate with its great importance. But the pleasure is all mine, for it is a subject dear to my heart, and one on the altar of which I have sacrificed many patients. Hippocrates is the oldest known writer upon this subject—400 years before Christ (by the way, the same time Confucius was teaching the Golden Rule), when he wrote his article on "Airs, Water and Places," and so well did he write that the principles he laid down with reference to pure air and fresh water, or fresh air and pure water—for, like all good rules, it works well both ways—are as true today as they were 2,300 years ago. The temples erected before the days of Hippocrates, and dedicated to Esculapius, were not institutions of learning; were not medical colleges, where the truths of anatomy and physiology were taught, where the principles of therapeutics were imparted, nor yet where the technique of surgery was ingrained, but they were health resorts, hygienic institutions. So you see we have the greatest possible precedence for giving this subject all the importance that we may wish.

If we remember but for a moment the minute directions and attention to detail which obtained in the old Mosaic laws: the quarantining and isolation of the sick; the proscribing of pork as an article of diet; the rite of circumcision to prevent

the spread of syphilis and other venereal diseases, we cannot help but know how scrupulously clean the Jews became, thus impelling us to have more respect for the Semitic race than would naturally be engendered by our observation of the pawnbrokers, the second-hand dealers and old-clothes men of the present day. Many, and, in fact, most of these religious rites and usages of the Hebrews, were contrived by the wise doctors purely in the interest of the temporal welfare, the personal health of their people; but at that age of the world an appeal to cleanliness would have been about as availing as pouring water on a duck's back; so they were instituted, ostensibly, for their spiritual good. The Jews became wonderfully free from contagious, infectious and epidemic diseases, while their Christian neighbors were dying by the thousands around them; and so marked was the difference in the death rate that the Christians slew many of the Jews believing they had poisoned the Christians' wells. A Christian man wonders why a woman thinks it necessary to turn things upside down and go through the ordeal of house-cleaning once or twice a year, thus making him miserable for a week.

A Jew knows why, because it was originally a religious rite. It is the mission of hygiene or preventive medicine to ascertain and determine the cause of disease and formulate rules for its prevention. Many of these rules are empirical, we must admit, as indeed the practice of medicine itself is much more so than the M. D.'s care to own. But, after all, it's results we desire most.

Now, the medical fraternity has been doing so much to obliterate constitutional diseases that it seems to me high time we were doing something in that direction. For instance, they have taken the black plague; way back in the sixth century the black plague succeeded in destroying 10 000 people daily in the city of Constantinople for a season, and as late as the sixteenth century, in the city of London, nearly 70,000 people died as a result of this horrible fever, something that we now know, only breaks out in some filthy province of Asia occasionally. And the yellow fever mosquito has been cornered in his lair, thanks to those heroic souls who braved death to undergo the experiment—and by the way, one of them went from Omaha—and the yellow fever, as late as fifty years ago, caused a great death rate in Philadelphia, and now it is known only in the territory bordering the Gulf of Mexico.

What would you think of a physician who would treat typhoid fever recurring in the same house year after year without investigating as to the cause—defective plumbing, contaminated water supply, adjacent cesspools, or something of that nature? Would you think he was very much alive to the situation? And yet we, who pose as a sister profession, have been hammering away about 100 years without much more than a peep into the etiology of disease, and as to prophylaxis, almost nothing has been done. But the people are learning. The dissemination of knowledge is such today that they can size us up pretty well, and if we don't do something they will think we are a lot of pretenders. Not so very long ago, do you know, the people thought that a surgeon who could amputate a leg was a great surgeon, and the dentist who could extract a tooth with lightning rapidity, he was a fine dentist. They now know that it is not surgery, for, as far as cutting off a leg is concerned, most anybody can do it with a jack-knife and a buck saw: and as to extracting teeth, the barbers have done that for a hundred years. The cross-roads druggists do it; the provincial physicians do it; it is nothing. Not that I wish to minimize the value of any dentist doing it skillfully, but I don't think he builds up his reputation upon a class of work that is calling to his chair a clientele what he will desire in after years. Isn't it more noble to save than destroy? Jesus of Nazareth died to save a world, and history is teeming with the accounts of heroes and heroines who gave up their lives to save others. And for what do we most revere President Roosevelt—for the Teddy-bears he killed in Colorado or the peace he brought about between Russia and Japan? A while ago I attended, in one of your cities, the unveiling of a statue of one of the greatest men in this glorious commonwealth of Nebraska. Was that man a valiant soldier? No! Was he a great statesman? Not specially! Was he a great hunter? Not much! Had he felled vast forests with his mighty axe? Not he! He just planted trees and instituted Arbor Day, and caused this arid west to bloom as the rose, and this spirit spread all over the country and across the seas, and into Europe, and now, on the recurring anniversary of this good man's birth, the 22nd of April, Arbor Day is observed. And when I heard those distinguished men on that day pay a trib-

ute to J. Sterling Morton, I realized more fully than I ever did before how much more beautiful it was to make something live than to make something die! Oh, yes, we have done a lot of patching up in the last fifty years. We have been erecting some beautiful gold monuments and some very pretty amalgam foot-boards. We have yanked from out their fleshy beds some diseased and deceased members and erected over the grave of each one a white porcelain tombstone. We have been placing crowns on broken heads and exemplifying by our fees that old saying, "No cross, no crown!" And some of us have been getting the double cross to our crown, and we have all been getting the metaphorical double cross for our crown-work many times. But, the general condition of the human teeth isn't improving; and I say, it's our fault; we haven't been doing our duty in the premises to prevent, **prevent,** I repeat, this alarming increase of oral maladies.

I have been in the habit of interrogating patients and practitioners many years on this subject of prophylaxis. A patient will come in, and with beautiful work in his mouth—grand gold fillings, contoured beautifully and correctly, and some aesthetic porcelain work, but with his mouth in a horribly filthy condition, and I will say:

"Did the doctor who put that work in say anything to you about taking care of your teeth?"

"No, not a word."

"When this beautiful operating was done, were they in the condition they are now?"

"Yes, sir, I guess so."

"Don't you ever brush them?"

"No."

Then said I, "That is beautiful work!"

"Yes," he said, "Dr. King, of Fremont, did that work for me." And that is simply allegorically explanatory of hundreds of cases that I have had where I have been particular to ask them. Then I will ask practitioners, "Are you in the habit of speaking to your patients about the personal care of their teeth?" "Oh, sometimes." That is a great interest. Then some of them will say, "Oh, yes, I say something to them once in a while." "Do you tell them to brush the teeth?" "Yes." "Do you tell them what kind of a brush to use?" "No; I let them use any kind they want to; that is their privilege." "Do

you tell them when to brush their teeth?" "Yes." "When do you tell them to brush?" "Tell them to brush after meals." There it is! They have got that, you know, from the old text books. After meals! Never thought it was proper or not, but they simply said that because somebody else said it, and from the first time that a man walked into the Baltimore college in 1839, and put his name on the roster of that college, down to the 23rd of May, 1907, that has been worked over-time, and to a frazzle. And I would like to see a little common sense injected into prophylactic rules. Nothing to it at all! Brush after meals! Forsooth, I purpose showing that the teeth may be preserved without brushing after meals at all. Some practitioners have answered that it was like casting pearls before swine to advise patients. That's certainly true with reference to some patients. Some of the intangible things in life are the most material, paradoxical as that may seem. Human thought and imagination back of all the grand and glorious achievements of man's brain and brawn can not be seen. We do not doubt the presence of electricity because we can not roll it between our fingers; and who ever looked upon a hurricane? You have simply seen the evidence. But are not these potential influences for good or evil?

Then, in view of this, with what force must the full meaning of that old saying come home to us, "An ounce of prevention is worth a pound of cure!" Or again, "A stitch in time saves nine." That is all there is to prophylaxis. Simply doing a little here to obviate a great deal there. Isn't it more beautiful? Now, when you explain the beauties of this to your patients some will be so solicitous of your financial welfare that they will tell you they are afraid you will break up in business and some dear old lady will say, "Now, Doctor, if everybody would do as you advise, and everybody would save their teeth as you have, dentistry would soon be a lost art and you would be a statesman out of a job." But don't be alarmed; reforms come slowly.

Prof. W. D. Miller, our own dear Dr. Miller—he has been at the head of the Berlin college for many years—stated before the pupils of an eastern college, when over here visiting a few years ago, that the bite of a beautiful girl was as liable to be fatal as that of a venomous serpent. I wonder what figure the pulchritude of the girl cuts in the matter, but I think a man

would be more passive when a beautiful girl were biting him than if she were plain—but be that as it may, are we doing our duty to protect the mouths of mankind?

Many glaring inconsistencies obtain with reference to this subject. I know women; you know them: we all know them—women whose kitchen floors are so clean that you can eat from them, in whose houses a fly would starve to death or commit suicide on account of his loneliness, but the mouths of said women are far filthier than their own slop buckets. Isn't this a beautiful commentary upon the eternal fitness of things? I have noticed many cases of cancer of the oral cavity, the gums, the lips and jaw. I never have known one in the mouth of a person who took fastidious care of his mouth, who brushed his teeth in any kind of a proper way, who took any kind of proper care of his teeth; I have never known of a case of cancer of the oral cavity in such a person. Generally they come by the use of tobacco. General Grant was no exception to this. Dr. Frank Abbott told me he was called in as consulting dentist when General Grant lay on his death bed, and he said that General Grant kept his mouth in a filthy condition, and had not taken care of it properly at all, and he had some molars that were broken down which he had not the courage to have extracted. Think of it! A general in the United States army, president of the United States! Didn't have the courage to have those out or the refinement or culture to keep his mouth correctly. Those sharp teeth irritated his tongue; the nicotine got in, produced proliferation of the cells—result, death. That is what cancer will do. To paraphrase an old saying, "Oh, sharper thou than a serpent's tongue is the scratch of a jagged tooth." I never have seen a baker, a person who works in a bake shop and bakes the bread, cakes and pies, with good teeth. For 30 years I have been looking for a baker with good teeth. I presume some of you may know one; I do not. He has escaped my observation. I have not known a child 12 years old raised in, back of, over, or in connection with a grocery to have good teeth. I have been looking for that child. You may say that candy does not injure the teeth. You may talk about it all you want to, but those circumstances I know.

The most vulnerable time for teeth to decay is in sickness, when the teeth usually receive very little care, but when they should receive the best care. How delightful it would be for

a patient who has been lying for weeks to have his teeth and tongue and gums thoroughly brushed. That would restore the appetite alone in some. And here is where the medical profession should be educated by the dental profession. So many physicians, in treating a patient, will be most particular about the surroundings in every other way than the mouth and let the mouth remain in a filthy condition. Some of the hospitals are doing something in that direction, and perhaps there may be a relief ultimately. A great man has said that great teachers do not really teach us anything; in their presence we are made better. Therefore, every dentist should be most particular, most zealous, in the care of his own teeth. I tell my patients sometimes that I think more of my teeth than anybody else's, and I want you to say the same. Many times on outings I have been the only one of the entire party who never neglected his teeth, and it is because I think so much of them, and I have never found a dentist yet who had as good teeth as I have. I simply say this to prove my teeth are correctly cared for. You can say my teeth are immune, as Dr. Smith said, but that is because I am taking care of them correctly. A vast amount of evil is done before the child reaches the age of 10, often because of uncleanliness and inattention on the part of the parents and the family physician; and right here is where the dentist should make it a point to educate these two classes.

I make it my life work talking to patients on this subject and telling them about it. We have the effrontery to send missionaries to Japan. Now, in Japan during the last war the death rate was very low. Why? On account of their hygienic rules. Every Japanese soldier, before going into battle, was required to take a bath and don a clean suit of underclothing, so that in the case of a bullet penetrating him and carrying the clothing in, it would be antiseptic as nearly as possible. But listen: They were also always required to keep their mouths clean. Did you ever hear of the soldiers in our army carrying tooth-brushes? I guess not! We should all be missionaries in prophylaxis, although our advice, as you know full well, is not received any more graciously than that of the religious missionaries, for whenever we induce one to keep his mouth clean, we are lifting him up to a more refined and cultured plain, and thereby doing society, as well as the individual, an invaluable service.

Eloquence is said to be the power to convince. I never specially desire to be eloquent except when advising a patient in the care of his teeth, or when importuning practitioners to do their duty toward mankind.

How curious it is that the teeth, the first organs to decay before death, should be the last relics of the grave to revert to the elements. I have dug up Indian mounds in which every vestige of bone was obliterated, but wherein the teeth were as perfect in contour as the day the victim drew his last breath.

The micro-organisms of the mouth which produce decay and other pathological changes are similar to other parasites in many respects; rats are not likely to hang around an empty corncrib, nor mice hold conventions in deserted cupboards. Just so with the bacteria of the mouth. The impurities of the mouth form an excellent feeding ground; the temperature of the mouth, 98.6, is just to their liking, or they wouldn't be there. Why do so many people go to California and Florida in winter and Minnesota in summer? Temperature! The railroads wouldn't declare near the dividends they do were it not for temperature. And the third factor is quiet, rest. That's the keynote to the prophylactic treatment of the mouth. The tramp who calls at your door doesn't ask for work. He wants rest. And so with the bacteria of the mouth. They have been crying for rest since man first trod the primeval forests; and if you allow them this rest which they desire, they will be doing business at the old stand till time shall end.

Many times has it been attempted to produce disintegration of a tooth out of the mouth in imitation of natural decay; it has never been accomplished. Calcific deposits at the cervical margins are a frequent source of irritation of the delicate membrane, producing disease.

Inspissated mucus, which, covering the teeth like a veil, protects the elements of decay and inflammation from disturbance, and they are thereby enabled to accomplish results under such conditions with wonderful rapidity. Those of a lethargic temperament are most prone to that thick, ropy mucus, because they are not strenuous enough in their expectoration. All these causes and circumstances court disaster in the mouth. Much legislation has been enacted to prevent spitting upon walks and public platforms, in the interest of hygiene, and all agree that it is very commendable.

But I tell you that a monument awaits the man who will start a successful reform in the matter of clean mouths in public places, for I would as soon visit a garbage lot on a sight-seeing tour as to come in proximity to some mouths we do, emanating odors beside which bisulphide of carbon is sweet perfume! The majority of persons have never even learned to rinse the mouth properly, not to mention brushing.

Teach the patient to stir up the water so vigorously and strenuously that it will rush between the teeth, and tell him to practice that, and when you see him again, see if he has learned how to do it. It is one of the most necessary things—a vigorous rinsing of the mouth. A few years ago a patient presented himself with his teeth in almost perfect condition. He said he had never had anything done to his teeth. I looked at the teeth and asked him if they had been brushed; there was no decay or tartar. I said, "You have been brushing your teeth, have you?" He said, "No, but I wash them every morning before breakfast." I said, "How?" and he showed me how he rinsed them vigorously and took a napkin and wiped them off. He said: "I do that as soon as I get up from the table. I do that and then pick my teeth." I have been doing that ever since childhood—a vigorous rinsing and picking of the teeth. The pearly occupants of the mouth the poets sing about are the hotbeds of disease, disaster and death. A baby's mouth before the teeth erupt is almost pure, and that of a person later in life without the denture in is nearly so; and what a rape it is to press the lips of a rotten mouth to those of an innocent, pure, defenseless babe! ! ?

Over at Cedar Rapids, two weeks ago, we met Dr. Smith and as I stated yesterday, he read a paper on pyorrhea; took him an hour and forty-five minutes; that was Tuesday night. The next morning many of the members asked him about the care of the teeth—he was to make a talk that afternoon on prophylaxis. He would say, "I will tell you that this afternoon." When he made his talk he did not give us any specific directions at all, and we had to pump it out of him, draw it out of him; and when he closed he brought out one of his toothbrushes and showed it to us. There is one of his brushes (showing brush). He did not tell anything definite at all. That is the mistake made when practitioners are speaking to patients. They don't give definite direction. Many have said

to me, "Well, Dr. So and So told me to take care of my teeth; not telling me what to do made a lot of difference."

What should we do? I am going to make a few little illustrations myself. Everybody has been to the board. I have a few symbols here (draws on blackboard three capital P's): Preach prophylaxis to the people perpetually. Practitioners should be paragons of perfection. The first thing you want to teach your patients is this: Three B's— B. B. B.— Brush Before Breakfast. That is absolutely the first thing to teach. If you can get a patient to brush his teeth before breakfast you have him started. The next thing is my Royal Arch Masonry: Rinse After Meals. Get them to do that and teach them how to rinse the mouth out, and then teach them to pick their teeth. I believe, as Booker T. Washington says, in the gospel of the tooth-brush. I also believe in the gospel of the toothpick—not in chewing them on the promenade, but in using them and discarding them at once.

Now, Dr. Smith talks about his **prophylaxis** instead of **prophylactic** scheme, as he calls it. He has the right to do that, I guess, if he wants to, but he says to take that wedge-shaped stick and go around the teeth every week or every month or every six weeks, or such a matter, and he is not particular at all to insist on the personal care of the teeth, that I think is more beneficial. I believe a person can do his teeth more good by picking his teeth after rinsing after each meal than to go to the dentist once a month. It seems to me the dentist stands a great deal in the position of a barber who does this. We go to the barber every week or so and have the hair trimmed up I believe we ought to be professional enough to teach people to do that themselves. We are not there for the purpose of cleaning teeth. However, I do not wish to say it is not efficacious; it is efficacious, but it is adapted to a metropolitan practice. It is aristocratic in its inception, and it is not adapted to any other kind of practice. He is doing a great deal of good to a few wealthy people in Philadelphia. He takes them in there, and in half an hour he is through, and he works that entire half hour on one mouth. He told me my teeth needed treatment. Why, it is the silliest thing in the world to assert that healthy teeth need treatment.

The next important thing is to brush the teeth before re-

tiring; if they are brushed twice a day it will preserve them. We as dentists should brush our teeth after each meal. Don't tell your patients to work five minutes. I have brushed my teeth in 30 seconds, and I can do it perfectly in that time. Have them have one brush at their office and one upstairs and one downstairs—three brushes will last three times as long as one. I believe in calling a spade a spade. Dr. Rhein invented the prophylactic tooth-brush years ago. Dr. Rhein was a scholarly man and a prophylactic man, and that is a prophylactic brush; that is all there is to it. And many of the toothpicks are all right, but I believe every well-regulated house should have a lavatory between the dining-room and the drawing-room, where everybody should step in and rinse the mouth and pick the teeth before sitting in the drawing-room three or four hours with all that filth accumulating around the mouth. I don't believe in it. The micro-organisms in the mouth are like any other parasite—they are there for the purpose of getting something to eat. If you break up their rest by brushing before retiring and the next morning, the first thing before breakfast, you can prevent a great per cent. of decay. Dr. Smith says his prophylaxis scheme will prevent 90 per cent. I don't know how he gets it so, but it will surely make a whole lot of difference.

A sentiment expressed by a great man with reference to another subject, which is not more important to me than this, I will quote and close. That is, he says this with reference to the idea of whether it pays or not:

"Not ye who can stand in the crowd, but ye who can stand alone, fall in! You and I shall not live to see this triumph, but an age unborn shall achieve the victory. Forward, then, against strenuous ignorance! See that your honesty keeps pace with your intelligence, that you dare to do the unprofitable right, and dare to eschew the profitable wrong. Beside this daring all other daring is cowardice."

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### DISCUSSION.

**Dr. J. M. Prime, Oxford, Neb.:** Dr. Warren may well be named the apostle of sanitation.

His memorable paper, "Brush Before Breakfast," was a treat in both wit and wisdom. We dentists took it home with us and began preaching and practicing it.

We look forward to the meeting each year, anticipating something good from Dr. Warren.

He always has his logic interspersed with good humor, which serves, as it were, a sugar-coating so we will all enjoy taking our medicine.

Dr. Warren has not disappointed us this time. His paper today is a masterpiece. It deserves to be placed along side his "B. B. B." paper and scattered broadcast among the profession.

As the essayist has well said, the new-born babe comes into the world with a mouth as clean as spotless linen.

How lamentably soon this condition is, many times, transformed from sweetness and cleanliness to fetor and filth.

As soon as the permanent teeth are in position, we are frequently confronted by a condition disgusting to the eye and sickening to the nostril: the teeth so covered with the filthy accumulations of months that their individuality is hidden. The only feature resembling tooth contour is the cusps lifting their heads from out the debris, as if trying to free themselves from their awful peril.

The teeth sit day and night in a quagmire of decaying filth, midst a hotbed of bacteria.

Then they ask, "Why do my teeth decay?" A more sane question would be, "Why do not all my teeth decay?"

## THE DENTIST THAT GROWS.*

By E. A. Thomas, D. D. S., Red Cloud, Nebraska.

I wish to make an explanation for giving you this paper upon this particular subject.

Upon my leaving college and entering into practice, two years flew rapidly by before I realized that I was not growing, and I must confess and admit I was on the wrong road and running into a rut.

I decided to attend the Nebraska Dental Association, and it was while here that I was converted, born anew in dentistry, my eyes opened into a new professional world, and this paper is the result of that conversion, and what I have seen and experienced in this new world of dentistry.

### THE DENTIST THAT GROWS.

Could a man be secure
That his days would endure
As of old for a thousand long years,
What deeds might he do!
And all without hurry and care.
What things might he know,

*Read before the Nebraska State Dental Society, 1907.

We, that have but spent long lives must bear in mind our limited time for acquisition and remember how narrowly our time is limited, not only by the shortness of life, but also still more by the business of life.

We ought to be especially solicitous to employ what time we have to the greatest advantage. So much of our time is wasted upon the trifling, minor things of this world that many a man, instead of growing, simply becomes a stagnated pool.

The dentist that grows is a believer in great men, and that nature exists for the excellent, that the world is upheld by the veracity of good men, and that they make the world wholesome.

He believes that life is sweet and wholesome, only as we live in such society and actually or ideally, as we live with our superiors.

His religion is the love and cherishing of such patrons. As he inquires into the kind of services he derives from others, he is warned of the danger of modern studies and begins low enough, not contending against love, nor the substantial existence of others.

He believes his profession a divine calling, one of the highest given to man, the aiding and relieving the suffering, the giving of comfort, happiness and longevity of life. He looks over and beyond monetizing and sees there his sacred and sublime duties from a true light, and his compensation is that happiness which comes from a conscience born of a true and divine calling.

He is temperate, believing in cleanliness of mind, soul and body.

He dives deep into the mysteries of dentistry, receiving into himself every atom that can be moulded into profit, for his fellow-men, imparting any theory, idea, or discovery he may have for the benefit of his profession.

He is always present and on the alert for every dental society, every new invention, every clinic, every paper that is for the advancement of the profession and humanity. Nothing but sickness will keep him from his state and local societies.

He discovers that the other man's point of view is the lens through which he reads his own mind. He does not set himself up as an ideal or superior, but sees those of different calling from his own, and such as are good of their kind.

He believes that the main difference between man is

whether they attend to their own affairs or not; that a man is that noble, endogenous plant which grows like the palm, from within outward.

He believes in viewing broadly every question which confronts him, and looking over and beyond the present and gauging it by the ultimate effect, just so soon shall he disarm his conscience of many of the petty annoyances which bombard him in his everyday experience.

He believes there never was a more fatal error than getting even, that every bit of energy used in such an effort is worse than wasted, and that it invariably brings injury to the author. The better way to meet a wrong is, either to ignore it, or else to reckon with it merely to correct it, and prevent its repetition.

He believes that the first thing to do when slighting remarks are made about him is to examine himself closely and see if the remarks may not be true; that critics can sometimes see a fault in him that he is unconscious of, and they are frequently of real benefit to him for their calling attention to it. However, if criticism is manifestly unfounded, and simply due to a mischief-making spirit, the surest way to disarm them is to ignore them, and if a real wrong is done him, and must be reckoned with, he meets the question in the line of correction rather than vengeance.

He believes in righting wrong under all circumstances, but he makes sure his motive is above reproach and his sole aim is to prevent a repetition of the wrong, and thereby improve the condition of society. He counts him a great man who inhabits a wide sphere of thought, to which other men rise with labor and difficulty, that he has to open his eyes to see things in a true light, and in large relations, while they must make painful corrections and keep an eye on all source of errors.

It costs a beautiful person no exertion to paint her image on our lives, yet how splendid is that benefit. It costs no more for a wise soul to convey his quality to other men.

Every one can do his best thing easiest; he is greatest who is what he is from nature, and who never reminds us of others' faults.

He is broad enough to meet an enemy, a ligament half way, controlling temper in dealing with humanity, thereby developing patience.

We are all far from perfect, and cannot believe alike, and this should teach us the sublime reason of patience and charity.

He believes in being broad enough to look out beyond self and see the need of harmonizing the great chaos of humanity. He digs deep into the hearts of his fellow-men, weeding out from them minor vices, heartaches and pain; planting there sunshine, cheer, happiness, charity, and above all, love—Love the one great hope of the world, a lever which moves the hearts of men above the sordid things of earth and gives him a glimpse of that which he calls heaven.

He defines love as the embodiment of all higher virtues merged in one, the essence of all there is in life, and his prayer the illustrious words of Holmes:

"O Father! grant Thy love divine
To make these mystic temples Thine,
When wasting age and wearying strife
Have sapp'd the leaning walls of life.
When darkness gathers over all,
And the last tottering pillars fall,
Take the poor dust Thy mercy warms,
And mould it into heavenly forms."

## DISCUSSION.

**Dr. McCleery:** It was a very excellent paper. I am only sorry that the whole society was not present to hear it. There is not anything to criticise in the paper or in that kind of a paper. Anything that I say will be simply supplementary. The trend of the essay was that the dentist that grows is the perfect man. I suggest that a man, to grow, must first be a man; before he can be a dentist he must first be a man, a man among men, and he must be an honest man. I don't believe that a man could be a good dentist and be dishonest—be a dishonest man. It is a physiological and psychological fact that a man's work is but the expression of the man himself. If he is a dishonest man, he will do dishonest work. I don't care what his profession is; he is not a good dentist, or a good doctor, or a good preacher, or anything, if he is a dishonest man. The foundation of growth is honor and, as was suggested by another essayist here today, we must have an ideal and we must have a high ideal and work for that. An honest man will always do his best; every patient will get his best services; they are entitled to them, I don't care whether they pay for it or not, and the only way a man can grow is to every time give his best service. I have not had the paper and I have not had an opportunity to read it, but I just make these few remarks to supplement it.

**Dr. Wallace:** I am not going to attempt to discuss the paper, but there is one phase that comes out now, and it has appeared before. A paper like this should be listened to by the entire membership. We have had similar occasions, and I was thinking while sitting here, during the reading of the paper, if there is not some way by which these unpleasant things could be obliterated, especially for the young men. My first appearance was to have a similar reception, and I can assure you that it was no pleasant ordeal. A young man feels his weakness, and on the other hand he has put in a lot of time, and he at least would like to have the courtesy of the profession as far as listening, at least to his production. Perhaps our committee on program try to crowd too much into a short space of time, but coming back to the original business of the evening, possibly a whole lot of this will be obliterated inasmuch as our different local societies will put forth their very best men of each division, and thereby we will get the proper amount of clinical material and the proper amount of essays for a gathering of this kind.

**Dr. Vance:** I enjoyed that very much, and Dr. Wallace brings out the very reason for the reorganization of our state dental society. Our meetings are entirely too large for us to comprehend all that we do. It is simply impossible to give the time to the discussion of these valuable papers; we don't have the time; we don't have the time to give to the discussion of our valuable clinics, and if we can cut out the papers and clinics that are not so valuable, deriving our programs from the local organizations, then we can make our state organization of far more benefit to the members, and it seems to me that every man in the state should make a special effort to join with the reorganization committee to this one end. Now, at our clinics our chairs are crowded around, and it is not possible for more than six or eight at most to see the clinic, but if we have six or eight similar operations going on at the same time, it will give practically all the members an opportunity to see, and these operations will be the very best that the members of our profession in the state can produce, and I think that the thoughts of Dr. Thomas, and supplemented by Dr. Wallace, will be carried out in our future meetings after our reorganization has come to pass.

**President Morrison:** This matter of entertainment is a very disagreeable feature, and should be omitted in the future. I know Dr. King has called attention to it several times. I had this same experience at one time, and it is a disagreeable feature. And right here, perhaps, is a good time to speak of the thing that we do, and did, last evening, and it has been done every year of the society, and we pay our car fare and hotel bills, and all to get the benefit of the state society, but we give up to amusement—that perhaps we could get at home—the time we need here. We could enjoy that evening at home, perhaps, when we had leisure, where we are not to the expense that we are here, and would not desire this same entertainment at the state society meeting, and if we could have a meeting the

first evening for the purpose of the work of the state society, why we could certainly crowd in a great deal more very useful material for the state society.

**Dr. Warren:** I deeply appreciate the courtesy extended by the Odontographic Society of Lincoln every year for the entertainment, and still, as the president just said, I don't believe we ought to do it. I believe we ought to have business every night. They do it because they love us, but still I don't think it is right. I think we ought to have business going on here morning, afternoon and evening. It is a very short session. They used to have four days, but they have cut it down to three days now, and I believe it is the consensus of opinion that that is what should be done.

**Dr. Prime:** I think Dr. Thomas had a splendid paper. I couldn't hear it very well on account of the storm roaring outside. I would like to remark that I was present at a meeting of the Southern Nebraska Society when Dr. Thomas read a very excellent paper on prophylaxis, a paper that is well worthy of attention, and I never heard one much better. I regret that there were no more present, and the conditions were not more favorable for Dr. Thomas' paper. I endorse heartily the remarks of the president and Dr. Warren in regard to the amusement feature of our society meetings. I cannot dance, and you may think me selfish in what I say.

I think every moment of our time here ought to be spent in pursuing the object for which we leave our work and come here. We can all dance at home and we can get all the amusement we wish there. So far as I am personally concerned (I say it with all respect), I prefer to be here and hear these papers read and discussed and see these clinics, rather than to see you fellows dance. I would either like to see the time extended so we can get the benefit of these things, or else cut out some of the elements that are not absolutely necessary.

**Dr. Wallace:** I would like to say a word here not on the subject of Dr. Thomas' paper, perhaps, but I am glad that you want to keep it down here at Lincoln in the future. I have hustled on the committee at Omaha, and we all expect next year we will have meetings all the time. If you have any amusement you will have to go out and get it yourselves.

**Dr. Davis:** I think the other members of the society agree with me that this entertainment business is a relic of the past, for the reason that there was a time years ago when we didn't have enough men to come around to our clinics. We could all look over the same clinic then. Thirty-four or five was quite a heavy clinic and we could have only five or six chairs. I remember one year in York four chairs accommodated the entire clinic, and that was only eight years ago, in 1899, in the back of Dr. Hatfield's office, in a little hall; we had four barber chairs and Dr. Hatfield's chair. Well, in those times we need-

ed something to draw the crowd, and this entertainment has been carried over to the present time. I don't think we need it now.

**Dr. Prime:** I fear I said more than I ought to—not exactly that—but perhaps not in the manner in which I should have said it.

I did not mean to insinuate at all that these entertainments are not appreciated, for indeed they are. The dentists of Lincoln and Omaha have the reputation over the state of being skillful workmen, gentlemen of the highest character, and in the front ranks of the profession, and when it comes to entertaining, they are simply princely. There is absolutely no question about it, and we look forward to it each year, but while that is true, when we come to put entertainment alongside of the work from which we get the benefit for which we came here, why one outweighs the other, to my mind. I am talking from my own viewpoint, of course. Coupled with the fact that this is a source of expense and trouble for these gentlemen to prepare and arrange this, and that it is an expense upon our time. I heartily endorse the argument that it be discontinued.

**President Morrison:** Those are my sentiments, however not detracting anything the dentists of Lincoln have done for our entertainment. They are good entertainers.

**Dr. Thomas:** I would like to make an explanation here in regard to that paper and what I have experienced since I have been in town at this convention. It was with fear and trembling that I presented this paper, but yesterday, when I stood around the advertisements that the committee put up in the clinic room, and heard the different criticisms and the different remarks, and how the executive committee was criticised for that work, I wanted to get that paper out and read it there, because I could see over and beyond their work there and see the good there was in the work that they had done by placing those things up there, and it is those things that have brought out that paper in my mind.

## ETHICS, PROFESSIONAL AND BUSINESS.*

**By J. M. Prime, Oxford, Nebraska.**

The history of civilization is but the history of mankind. It is beaming full of human nature, of selfishness, of avariciousness, of crime, of greed, of blood. It has been one of constant wars, invasion and suffering. True, along the epochs have men of great courage of soul and great love of their fellows, fought bravely for human rights, and how bright do they shine

*Read before the Nebraska State Dental Society, 1907.

on history's page, as do the beautiful stars in the great black dome of heaven.

Primitive man was naturally selfish. In him seemed to be the inherent desire to keep what he had, and get, if by blood, that which his fellow possessed. He was fiendish, cruel, selfish, unethical.

This selfishness ran rampant until the dawn of the Christian Era, when a Man, born in a manger, in the little hamlet of Bethlehem, disseminated among his fellows principles that have lived, and, in spite of all opposition, have come down to the present time, and by the world today acknowledged the fundamental principles underlying the great brotherhood of mankind.

This man's great life of humility, His immortal teachings of unselfishness, are crystallized into one great and sublime precept,—"As ye would that others should do unto you do ye even so unto them." A Golden Rule indeed; an epitome of all codes of morals, or codes of ethics, ever hitherto devised.

If we would just do what that Golden Rule inculcates, we would not say anything of our fellow-practitioner—unless it ought to be said—and he will not say anything of us, unless it ought to be said.

This is the keynote of our dental ethics.

It is the very essence of Christianity, of morality, of the eternal principles of right and professionalism.

Any mistreatment of our fellows is usually a direct expression of our own selfishness—a boomerang of unkindness, returning ladened with bitterness.

The greatest among us are those seeking what they can give, not what they can get.

Cicero said, "It is difficult to persuade mankind that the love of virtue is the love of themselves."

In every cavity preparation, in every filling, in every crown, in every denture, should be woven the fiber of that Golden Rule.

Would you want that crown in your own mouth?

Is that filling all that you would wish in your own molar?

If you give your best to the world, to your fellow-dentists, to your patients, the best will come back to you.

Mankind is as a great mirror in which our own images are constantly being reflected back to us.

Indeed the world is as a great forest from which our every utterance is reverberated back to us.

If something good emanates from us, it will grow sweeter as it returns. But if it be something unkind, unprofessional, it will return to us more hideous, blacker and stained with more villainy.

Great success awaits the man who is thoroughly in love with his calling.

If it be the most honorable profession, or that of an humble shoe cobbler, contentment in, and joy of, doing must permeate every cell of his being.

To continue to love it means growth. No man can continue to get that joy of doing whose watchword is not advancement.

"The decreasing progression is the most dangerous form of motion. Whoever engages in it is lost. No rolling mill produces such effacement."

The man who sees only the fee ahead for his pains is lost.

The joy of doing and seeing a thing well done towers above and beyond any mercenary end, until the latter sinks into insignificance.

Joe Jefferson said, "I have spent my life in acting and I stand in awe at its possibilities."

So ought we to view dentistry.

We cannot all excel in manipulative skill; we cannot all possess that enviable personal attractiveness; nor can we all have that affable, pleasing, clever manner, but we can all be clean in character and have our ideals and aims high, and approximate these desirable qualities.

We all can develop, in the profession we love, as the bone and sinew of our professional faith, a spirit of broad humanitarianism which looks to the greatest good for the greatest number, and which rigidly excludes selfishness of motive and narrowness of purpose.

This will lift us out of the rut of self-conceit and prejudice.

It will make us to acknowledge merit wherever merit is due.

It will make us welcome the truth wherever we see it, even if it comes from our worst enemies. It gives us that greatest courage to acknowledge frankly our errors, when pointed out by one in opposition to us.

When we consider a profession from a business standpoint, we are confronted with the oft-repeated saying that professional men are usually poor business men, and successful business men are consequently poor professional men.

It is quite impossible to consider the business feature independent of that emolument which society has made so necessary to our existence. It is only justice to ourselves and those dependent upon us that we do not permit the age of inactivity to come upon us without a reasonable competence.

Here, however, is the pit in which lie the mouldering bones of many a would-be professional man. The spirit of commercialism taking possession and choking out the true, ethical, professional life, and stepping down to the plane of the shopkeeper bartering his wares to the highest bidder.

Professional life has no place for commercialism. They are antiposed. One is fostered at the life of the other.

Since professional life has no commercial element in it, I take it that your committee intended that I should discuss, under the head of business, those acts governing proper use of the savings from our fees for our professional services.

It becomes a thing quite necessary in the early part of our professional life to acquire those habits of economy and healthful business practices.

A rigid custom should be inaugurated to collect that which is justly due us.

Every dollar placed in the savings, if properly invested, becomes the silent partner for lucrative advancement.

Good judgment should always govern these acts.

Business experience has proven over and over again the profitableness and permanency of real estate investments.

First real estate mortgages are safe and should be sought.

Many glowing propositions are weekly offered to the unsuspecting investor, such as oil, mining stock, etc, etc., but such should be strictly avoided.

In the opinion of your essayist real estate ranks among the most desirable investments.

Habits, extravagant in business, and destructive of health, are a menace to clean, honorable professional life.

If you have failed from a business standpoint, there is

hope, but if you have failed from a moral standpoint, it is pitiable indeed.

Sometimes, however, growth comes from decay.

See the waving wheat fields, and its growth comes from ground bones.

An old philosopher once said, "Show me the man who made failures the first half of his life, but each failure was but a spur to something better, and I will show you the man whose latter half of life was crowned with honor."

It was Froude who said, "Where all are selfish the sage is no better than the fool, and only rather more dangerous."

Let us incorporate into our very beings, as it were, the antitoxin to selfishness.

Let us be punctual, industrious, frugal, in business.

Let us honor our profession by practicing with it the Golden Rule.

Let us plant in our hearts a fragrant and ever-blooming flower of professional courtesy and love of our fellows.

Let us bathe it in the warm, mellow sunlight of unselfishness.

Permit your essayist to say with the immortal Shakespeare—

"This above all:
To thine own self be true,
And it must follow as the night the day,
Thou canst not then be false to any man."

## TOLEDO DENTAL SOCIETY MEETING .

On December 20, the Toledo Dental Society met for their last regular meeting for 1907. They had present with them Dr. N. S. Hoff, of Ann Arbor, who spoke to them on the "Necessity of a Dental Society," and made many suggestions as to how theirs could be improved. In his view of the field he stated that at present there were three departments of activity:

1. Self-centered.
2. The benevolent.
3. The professional.

This is not an ideal condition, nor as he would have it, but merely a statement of the facts as they now exist.

The first, or self-centered, finds expression at the conventions in clinics, demonstrations, and exhibits. These things

form the chief motive for many attending the conventions. He considered that this thing was being overworked, and if not checked would crowd out the better phase of the convention work.

The second, or benevolent phase of practice, bulks larger in our work, if we have been conscientious, than we think. Dentists are awakening to the fact that the poor as well as the rich need their services. All over the country societies are doing, in a public way, for the poor. Infirmaries are supported by dentists, giving of their time and money.

Men are going into public schools and examining children as to their need of dental services, making reports to both parents and the school board, and in every way drawing public attention to existing conditions and suggesting remedies.

School boards formerly antagonistic to these things are falling into line and lending their assistance.

Laws are being passed, not for the selfish protection of the dental profession, but for the good of the public.

Efforts are being made to take care of the teeth of patients in our eleemosynary institutions, carrying out a beneficent humanitarianism.

The third department is that in which we try to do something for our own profession. Dr. Hoff then gave to the society many valuable hints and suggestions for the improvement of its efficiency.

He held that every society should strive to develop its own men instead of importing talent. He also suggested that the society take up some definite research work as a whole, that it have a good reference library, and start a collection of valuable data, such as models, etc., that will be of interest to those coming after us present members.

All papers should be carefully prepared and copies in the hands of the discussants at the earliest possible date. Programs should be made out at the beginning of the year and published.

All present felt that Dr. Hoff had given them an uplift and pointed the way for more efficient work this year.

BURT ABELL.
Sec'y.

# EXCHANGE OF PRACTICAL IDEAS

[This department being an exchange of practical ideas, it depends upon our readers furnishing material to keep it going. Just a few practical ideas from each subscriber will make it of mutual benefit and practical worth. Are you willing to do your share? Help the good cause along by sending the editor a few practical suggestions. Send something today. Address Dr. L. P. Bethel, 1255 Neil Ave., Columbus, Ohio].

## THE CARE OF IMPRESSION TRAYS.

By L. P. Bethel, D. D. S., Columbus, Ohio.

Probably no dentist would intentionally place a dirty impression tray in a patient's mouth, but many clean trays are dirty looking to the patient on account of the dulled and scratched condition of the trays.

Where modelling compound has adhered to the tray from over-heating, it is a common practice to scrape away the remains of the compound with a knife or other sharp instrument. This invariably scratches and grooves the metal tray, giving it an old appearance and making it unfit for use of plaster, especially where it is necessary to remove the tray from impression before removing impression from the teeth.

Trays can be kept free from scratches and bright if the dentist will adopt the following procedure:

When modelling compound adheres to a tray, do not use a knife or any instrument for scraping. Simply boil the tray in water (add a little soda if you prefer), wipe as clean as possible with a soft cloth, then pour a little alcohol into the tray, and with thumb or fingers rub it over the remaining compound. Being a solvent of the modelling compound, it removes every particle and leaves the tray as bright and smooth as new. If trays become dulled from age, take them to your lathe and go over them with a stiff brush wheel and fine pumice stone, polishing with a soft brush wheel and prepared chalk. Your patients will appreciate clean trays and they will notice them, too.

## HOW TO PREVENT RUNNING OF MODELLING COMPOUND WHEN POURING LOW-FUSING METAL.

By J. H. Johnston, D. D. S., Albion, Indiana.

In the use of one of the Ransom & Randolph seamless crown outfits I have at times been troubled by the running of the modelling compound when pouring the low-fusing metal; so recently I tried painting the compound model with Cast Gloss and allowing a few minutes to harden. The models now hold their shape and could be used again if necessary.

## THE USE OF PINK RUBBER IN COMBINATION WITH THE DARK-COLORED RUBBERS.

By C. W. Myers, D. D. S., Montpelier, Ohio.

When using pink rubber in combination with dark rubber, pack your case with the dark rubber, then cut a strip of pink, of proper width, and place it over the dark. This gives a veneer of pink, leaving the body of rim of the stronger rubber.

Cut the gates, for escape of excess rubber always at the heel of flask, then the excess is forced back. If the gates are cut in front, the dark rubber presses into them, and will show when the rim is dressed off. When used as described above you will have a perfect pink rim.

## AN AID IN CUTTING DOWN TEETH FOR ABUTMENTS.

By E. S. Hulley, D. D. S., Marion, Indiana.

In cutting down teeth for abutments the stone on mandrel, if moistened and dipped in powdered carborundum, cuts many times faster and with less heat, and very much less pain. I do not claim originality in anything, but happened on this, and offer it as a suggestion and help to fellow-practitioners.

## PRACTICAL POINTS.

By R. E. M.

To clean files or restore the cutting power of carborundum wheels, boil them in sal soda.

If the opening in a tube of ethyl chlorid becomes stopped it can be opened by, first, releasing the valve, then placing the tube in warm water. The expansion caused by heat will create enough pressure to quickly clear the opening.

## SOMETHING TO REMEMBER.

**By L. W. Jordon, D. D. S., Bingham, Maine**

As the three-leaved or poison-ivy vine is so common, and ivy poisoning so severe, I want to tell my dental friends what I have found an efficient remedy: If you are poisoned by ivy poison, use a paste made from wood ashes and water, when effects of the poison first appear, rubbed on the part. In later stages use peroxide of hydrogen, 3 per cent., as it will be more agreeable to the skin in this condition. The writer has cured himself repeatedly in the first stages by wetting a finger with water and touching wood ashes, rubbing the paste well into the skin. The itching is allayed at once and the poison neutralized and made a harmless substance to the skin.

# SUGGESTIONS

## STERILIZING INSTRUMENTS.

**J. P. Buckley, Chicago.**

Formalin, to which has been added a ten per cent. solution of borax, makes a solution in which instruments are readily disinfected without tarnishing.—Dental Digest.

## GOLD WIRE FOR THE CLASP.

**Mr. Hey.**

With a band more or less broad, we are always likely to have food and moisture retained between the band and tooth. It is a good idea to use thin 16-k. gold wire bent on itself in the form of a loop and carefully fitted just above and below the broadest part of the tooth. By this method it is possible to get as powerful a clasp as is necessary with considerable springiness, and yet only a wire line of actual contact which renders it almost self-cleansing.—British Dental Journal.

## BOXES FOR CROWN INVESTMENT.

**J. D. Patterson, Kansas City, Mo.**

I make a point of saving every box in which sand-paper disks are put up. In these boxes I invest my crowns preparatory to soldering. The box acts as a matrix, confines the investment and forces the material close into the joints of backings and facings. For a bridge a box a trifle larger than the bridge is necessary. Save your pasteboard boxes; they will be useful.—Dental Cosmos.

## OVERCOMING WARPAGE IN PORCELAIN.

F. E. Roach, Chicago, Ill.

To overcome the warpage incident to baking large inlays for cavities having parallel walls perpendicular or at right angles to the floor of the cavity, a small sliver of some old porcelain tooth should be ground to fit into matrix so that it will rest at both ends against the walls. The body may be packed around this piece and the inlay completed with little danger of warpage.—Dental Practice.

## DISTAL CAVITIES IN DECIDUOUS SECOND MOLARS.

G. B. Mitchell, Buffalo, N. Y.

Permit me, as one of the younger practitioners of our calling, to take up a few lines of space in your journal to protest against the pernicious advocacy, in the treatment of distal cavities in the deciduous second molars, of grinding the distal cavity away, thereby forming a V-shaped space between the first permanent molar and the second deciduous molar. Occasionally this method gets into print. In July Cosmos, 1907, page 757, Dr. L. C. Bryan, of Basel, Switzerland, says: "Soon after the eruption of the first permanent molar, if we should find the slightest decay in the distal surface of the second deciduous molar, we should . . . grind away the distal surface of the latter, in order that we may protect the newly erupted permanent tooth."

This has been the practice of many of the older practitioners, and my advice to the young men who should read this, is—"Don't!" Why? Because such an operation is productive of an irregularity to the permanent teeth—ofttimes to a marked degree—by allowing the first permanent molar to move forward into the V-shaped space formed.

Angle says: "The mechanical influence of the deciduous teeth in the development of the dental arches is so important that they should not only . . . be retained their full normal period, but if affected by caries their full mesio-distal diameter should be restored by suitable fillings."

One of the functions of the first permanent molar is to

lengthen the lateral halves of the dental arches, by forcing its way between the second deciduous molars and the ramus of the jaw—or the tuberosity. Therefore it will clearly be seen that to grind a V-shaped space will allow the incoming permanent molar to expend its objective force in moving itself into the space gained, and not forcing the lateral halves of the jaws forward—producing thereby a malocclusion of the permanent molar or molars, often forcing the first bicuspids into a buccal or lingual occlusion (see Fig. 131, Angle), and often producing an inequality between the jaws on either half, or perhaps resulting in a case of protrusion of the upper incisors.

This is a small point in diagnosis, but oh how valuable!—Dental Cosmos.

## METHOD OF INSERTING AN ADHESIVE GOLD FILLING.

**G. M. Griswold, Hartford, Conn.**

The method which follows, of inserting an adhesive gold filling, may not in many points, if any, depart from that given by others; however, we will give it in detail:

Prepare the cavity and its margins as your judgment may indicate, avoiding retaining pits and deep grooves made with an inverted cone bur. Make undercuts with round or oval burs, and as shallow as will be sufficient to retain the gold without the use of cement, experience having taught us not to depend wholly upon the adhesive property of the cement, although in many cases it would be sufficient. Select instruments with polished surfaces adapted to the size, shape and location of the cavity. In starting the filling use as large a point as you conveniently can, and one adapted to the undercut of the cavity, for it will spread the gold more smoothly, and there will be less of the "evening-up" process required later. Place the cylinders, rolled, or fibre gold, on the annealer; if the latter form be the one selected, cut or tear it in pieces of various sizes—none too large, however. Turn on the current and by the time the cement is mixed the gold will be thoroughly annealed. In selecting a cement for lining the cavity take one that is "sticky" when mixed sufficiently thin to flow quickly and smoothly over the floor and walls of the cavity.

Out of quite a number tried, I have found Ames' quick-setting gray to be the most satisfactory for the size of the cavity to be filled. Mix the cement quickly, but thoroughly, carrying it to the cavity before it really begins to set. A double-end bayonet-shaped amalgam instrument—No. 2 of E. J. Ladmore's set is a good one for the majority of cavities, of course using the larger or smaller end, according to the size of the particular cavity on hand. Do not use a steel spatula in mixing the cement, as it is very liable to leave a stain that will show through the enamel walls, especially if the walls be thin.

If you have succeeded in placing the cement quickly in the cavity, wait a few seconds until it begins to set; then carry the fibre gold to place, pressing it well into the groove, and if necessary, holding it with a fine point while more pieces are packed, in order that the attachment to the cement may not be disturbed or broken until the floor and walls of the cavity are well covered. Sometimes, after having covered the cavity with fibre gold, it is well to wait a few moments in order to allow the cement to harden thoroughly before continuing the filling, but usually the heat from the gold and burnisher hastens the setting sufficiently to prevent any delay.

After removing any overlapping cement, and making sure that the margins are free from it, the filling can be continued, using fibre gold or cylinders, or both. We have found it of advantage to use both, as the cohesive property of the fibre gold seems to be greater than that of the foil, and if for any reason the foil does not unite, by placing a piece of fibre gold, cohesion will usually be re-established. After the first layer or two of fibre gold is inserted, cylinders or foil in any form are largely used, as they may be burnished to place more smoothly, and we believe more solidly, although in the "leveling-up" process fibre gold spreads more readily, and is therefore of great advantage. We prefer foil, especially for the surface but in many cases a few layers of rolled gold work beautifully and produce a fine surface. In placing the pieces of gold, press them gently to place before burnishing. This prevents dragging and displacing the gold before the attachment is made. Burnish each piece. This is of the greatest importance, as a dense filling cannot be made if several pieces are placed and burnished together. Trim and polish in the usual way.

In closing, I would say that we have used the method de-

scribed almost wholly for the last two years; in fact, we have had occasion to use the mallet but little in that length of time, and in many cases only to test the density of certain fillings and to be more thoroughly convinced that we were producing a solid filling. We are realizing more and more the great relief it is to the patient to be freed from the blows of the mallet, and the consequent satisfaction to the operator. In the two years we have had opportunity to observe many of the fillings inserted by this method, and are more and more convinced that it is "a better way."

As we depend so largely upon the cohesive properties of gold in this method of filling, and as we make an adhesive filling by the use of the cement, it is suggested that we term it the "Co-ad" method of filling.—Dental Cosmos.

## TO REPAIR BROKEN FACINGS.

**Clarence J. Barber, Auburn, N. Y.**

My method is to cut away the pins and remains of original facings, select new facing to match in color and size and grind it to fit approximately. Then take a thin piece of copper or brass plate, punch pinholes and slip it on the facing to see if holes are punched just right; take off, try on old backing and trim so it will be a counterpart of it; replace on old backing, mark through the pinholes and drill holes for pins of new facing. By this method you can put your holes in the old backing almost anywhere you wish, and without enlarging afterward. With a little more grinding, the new facing will slip right into place. It can be cemented on, and afterward filled with amalgam around pins, if you wish. If you are to fill in with amalgam, countersink holes from under side and thread pins with a Bryant instrument.

A method similar to this, by Dr. M. R. Brinkman, of Hackensack, N. J., is described in the January Items of Interest. He threads the pins and holes for an interlocking anchorage, bending the pins with an Angle plier.

### THE PINLESS-FACING WAY.

Another way I have is to clear off everything of old facing except the pins, which I leave in the backing. Cut the pins

off the new facing, and with a pattern of sheet copper or brass made to the old facing, mark for holes in the new. Drill holes in the new facing with a diamond drill; grind to fit and cement to place. With the extended point diamond drill holes can be drilled in a facing very quickly, and this does not weaken the backing. With the Bryant bridge repair instruments all are probably familiar. I have set and have used them with success in some cases.

### SLOT-BENT-PIN METHOD.

At the union meeting of the Seventh and Eighth societies last fall, Doctor Willis, of Ithaca, gave a table clinic, at which he showed two ways of replacing facings. On anterior teeth, or on bridges where the backing was thin enough for the pins to reach through, instead of drilling two holes he makes a slot, sets the facing and with wedge-driving pliers bends the pins away from each other, filling the slot with amalgam. In a narrow tooth, like a lateral incisor, this would so weaken the backing that with a little strain it would soon break at that point.

### SLOT-STAPLE-PIN METHOD.

In bridges where there is a cusp or deep backing he fills the space between pins with solder, makes a slot in the backing, then drills a hole perpendicularly from the grinding surface down through the mass of solder, and secures the facing by putting a pin in the hole. This is a very ingenious method, and the only improvement I can suggest is to solder a stiff piece of platinum-iridium on the new facing, to prevent its breaking off again.

### FOR THE CLOSE BITE.

Making this suggestion is in line with my reason for working out a different way from the simple one first spoken of. This reason is that most of the facings I have had break were in crowns with a close bite, where the backing necessarily had to be very thin. In biting something hard the backing bends and the porcelain snaps, as there can be no other result. I have seen crowns that I have tipped with hard clasp gold or platinum-iridium plate marked from biting almost as though

nails had been hammered out on them. How to put on a new facing and stiffen it so that the backing would be less apt to bend again was the problem. I have tried several ways. The first is, after clearing away remains of broken facing to drill a hole for a No. 18 gauge wire, about the size of an ordinary pin, through the tip into the base of the crown, and burnish a piece of matrix platinum on the old backing, as for an inlay. Take a piece of platinum-iridium wire of 18 gauge, wrap with matrix platinum and pass up through the hole over the matrix; fasten with porcelain paste and withdraw the pin. We now have a double matrix in which to make a facing. When facing is baked, cement to place, passing the pin up through the tube and clipping off the end of the pin.

### ANOTHER SORT OF INLAY WAY.

Another way is to drill a hole the size of an AA How post through the backing, reaming the posterior opening for a nut. Take a crown metal AA How post, or its equivalent, cut off a piece the length of the facing and solder at right angles to the other piece of the screw. We now have a T-shaped screw. Burnish a matrix on the backing, and pass the screw through the matrix and hole in the backing. Run an AA nut on the screw and clip off. We now have the matrix bolted to place, which can be filled in with porcelain paste, either by pressure or tapping. The number of times the facing will have to be baked will depend on one's skill in porcelain work. We have the foundation for the facing bolted right in place, where one can carve it to match the adjoining tooth. Here, also, skill with porcelain will determine how nearly one can imitate the tooth to be matched. After carving, unscrew the nut, take out the tooth and finish the baking.

### AND YET ANOTHER WAY.

Another way for posterior teeth on bridges is, after clearing the backing, to drill two holes with an AA How or a No. 9 Anchor screw drill, in which set the screw posts. Cut the pins off the new facing and grind the facing to fit. Fit the backing to the facing and solder on a tip after removing the porcelain. Finish this tipped backing and bolt to the bridge, giving a solid and stiff support for the facing. Now, with a

diamond drill, make two holes in the facing for the screws in the backing, and cement to place.

### CAPPING THE CAP.

These methods of my own I have utilized in the mouth, and know they are feasible. Still another method which I have followed with a model, but not in the mouth, is to cut off everything below the original cap, which I leave. Then I drill and tap holes into the root on the approximal sides of the old pin, and put in two screw posts. I next burnish a piece of gold or platinum plate over the old cap, making holes to correspond to those in the root before setting the screws. Finally, I make a couple of tubes to fit over these screws, grind the facing to fit, back, place in position, wax, take off and solder into one piece. In roots too small for two screws one can be put in posteriorly to the old pin.—Dental Office and Laboratory.

# EDITORIAL

## OHIO STATE DENTAL SOCIETY.

At the recent meeting of the Ohio State Dental Society, steps were taken toward better society organization. A new constitution and by-laws were adopted, they being similar to those of the Illinois State Dental Society, and a committee on organization of district societies was appointed, with power to act.

During the past year the committee on hygiene for institutions have investigated conditions in the eleemosynary institutions of the state, and from their findings concluded that there is no dental service rendered in these institutions worthy the name. This recommendation was that the indigent poor of organized charities be looked after first, and then later, the indigent poor generally, and that the legislative committee prepare a proper bill and use its utmost endeavor to have it enacted into a law.

Acting on the suggestion, the following resolutions were adopted by the society:

WHEREAS, After hearing the president's address, together with the report of the chairman of the committee on hygiene for state institutions, it is the sense of the Ohio State Dental Society, now in session, that a resident dentist should be placed in all the eleemosynary institutions of the state containing 1,000 or more inmates, and that all other like institutions should be looked after by the resident dentists of the town where the institution is located; therefore be it

RESOLVED, That this society authorize its legislative committee to frame a proper bill to this end and use its utmost endeavor to have it enacted into law by the present legislature, this society bearing all the necessary expense for said legislation.

The meeting of the society was a most successful one, and 86 new members were added to the rolls.

The papers read were interesting and instructive, and will be published for the benefit of readers of The Dental Summary.

## THE PACE THAT KILLS.

From Washington, where the statistics are gathered, a startling message has been flashed to every man and woman in the United States. It says: **"Go slower! Go slower, or it will kill you!"**

This particular message to you is about **heart disease**, the blow that comes like a flash of lightning, that smites a man as he walks the streets or is at work in his office. One minute there was a human being, a living, breathing, thinking creature—the next there was nothing but the worn-out shell which was unable to hold such a big, pulsing force as life any longer, because the man had mistreated it, and abused it, and weakened it. The government has discovered that in 17 cities alone more than 18,500 men and women died of heart disease during 1907. In these 17 cities 2,500 more dropped down in 1907 than in 1906. What does it mean?

It means that we've got to give these hearts and these bodies of ours time to rest. Cut out evening and Sunday practice. Cut down your daily office hours to make them commensurate with the state of your constitution. Take your mind from the glittering dollars long enough to inquire about your health and human machinery. The heart is peculiarly sympathetic with the brain. They are like coupled engines, and one can drag the other to destruction. It seems that is just what we are doing. From the very time of boyhood we keep crowding these engines. We insist that they go faster and faster and faster. We begin taking before we have finished giving, and then we never have the time to give any more. We want them to generate a life full of power on an hour of fuel, and they can't do it. They break. The warning of the government is to you. It means that we have come to live so fast that it shows in the statistics.

As Abe Lincoln said, "It is not a theory but a condition that confronts us." And the hard-working dentist cannot afford to ignore the warning.

Which shall it be—the **repair shop** or the **scrap heap**?

# NEW PUBLICATIONS

**Treatment of Malocclusion of the Teeth.** Angle's System. Seventh edition, greatly enlarged and entirely rewritten, with six hundred and forty-one illustrations. By Edward H. Angle, M. D., D. D. S., president of the Angle School of Orthodontia, St. Louis, Mo., founder and first president of the American Society of Orthodontists; surgeon to the Wabash railroad for the treatment of fractures of the maxillae; member of the American Society for the Advancement of Science; member of the American Anthropological Society; member of the Academy of Science, St. Louis, Mo.; charter member of the St. Louis Society of Dental Science; member of the New York Institute of Stomatology; honorary member of the American Dental Society of Europe; honorary member Verein Wiener Zahnarzte; honorary member Sociedad Dental Mexicana; member of the American Forestry Association, etc.
PHILADELPHIA: The S. S. White Dental Manufacturing Company, Publishers, 1907.

The author has practically rewritten the entire book in order to make clear the basic principles of the science as well as their practical application, and has added about three hundred and fifty illustrations, and more than three hundred pages to the book.

His extensive experience and observation have enabled him to discriminate between the worthy and unworthy, and to present those things that he is convinced are the best to follow in the practice of orthodontia.

Chapter I is devoted to occlusion, which the author denominates is the basis of the science of orthodontia. He lays stress upon the first permanent molars as the key to occlusion and the line of occlusion, which in the last edition he defined as "the line of greatest normal occlusal contact," he now defines as "being the line with which, in form and position, according to type, the teeth must be in harmony if in normal occlusion."

Chapter II is devoted to malocclusion, forces governing malocclusion and classification of malocclusion. While additional cases are presented, the subject matter in this chapter

is about the same as in the last edition. In his classification the author still uses the terms "mesial" and "distal" in relation to the arches. The term "mesial" in the Standard dictionary is defined, "Situated in or directed toward the middle; median." "Distal" is defined as "relatively remote from the center of the body or the point of attachment." The terms are not definite in meaning forward or backward. The terms "anterior," "farther front or forward in space," and "posterior," "situated behind, or toward the hinder part," seem to be more exact in meaning relative to these conditions. The classification as given, however, makes a splendid basis for diagnosis systematizing in a general way, as it does, the various conditions of malocclusion.

Chapter III devotes 28 pages to facial art, presenting pictures of many facial types. The author no longer advocates an ideal face such as Apollo, from which to judge the harmony of the features of people in general. He says (p. 61): "The beautiful face of Apollo Belvidere has been very largely used as a guide toward the ideal, and from which to judge variations, but this is impracticable and misleading, etc." Further he adds: "We should be able to detect not whether the lines of the face conform to some certain standard, but whether the features of each individual—that is, the forehead, nose, chin, lips, etc.—balance, harmonize, or whether they are out of balance, out of harmony, and whether the mouth is in harmonious relations with the other features, and if not, what is necessary to establish its proper balance."

Chapter IV treats of the etiology of malocclusion. The same general factors as given in the sixth edition are here treated, but more fully. The subject of mouth-breathing and adenoids receives special attention. We are sorry the author has said so little about malnutrition and lack of development as instrumental in the causation of malocclusion, for they seem to be prominent factors in many cases.

Chapter V treats of the alveolar process and peridental membrane. While revised and rearranged it covers the same ground as in the preceding edition, as do also the chapters treating "Tissue Changes Incident to Tooth Movement" "Physiological Changes After Tooth Movement," etc.

The chapter on impression-taking has additions to text and illustrations, and is a valuable one.

In considering materials for construction of regulating appliances, the author enumerates the various noble metals and several of the baser metals, adding, "After experimenting with all of these, the author is thoroughly convinced that the material most nearly filling all requirements is nickel silver (German silver).

In speaking of retainers, the author states: "The main principle to be considered by the designer of a retaining device is to antagonize the movement of the teeth only in the direction of their tendencies to return to former malposition. Very slight antagonism is required, but its exercise must be constant. If the reader will keep these facts in view he will realize that only delicate devices are necessary, and will be impressed with the utter uselessness of much of the bulk and material composing so many of the retaining devices shown in our literature."

Aside from the retaining devices mentioned in the sixth edition, the author has suggested in this edition several new forms of retainers and illustrated their application by models.

In the chapters on treatment of cases much has been added to the text, many new cases being described and illustrated. The old edition devoted only 88 pages to treatment, while in this edition 262 pages are used for the subject. The cases considered cover in general almost every phase of irregularity.

Dr. Angle is honest in his convictions, and has given with sincerity what he believes to be the best in orthodontia. While some practitioners may not agree with him in everything, Dr. Angle has done a good work in systematizing orthodontia and helping to develop it into a recognized science, and deserves full credit for what he has done in the interests of this important branch of dentistry.

### BOOKS RECEIVED.

**La Stomatologie, L'Art Dentaire et son Evolution Contemporaine.** By Dr. Cruet, Ancien Interne des Hopitaux de Paris. Preface du Dr. V. Galippe, member de L'Academie de Medecine.
PARIS: G. Steinheil, 2 Rue Casimir, Delavigne 2, 1907.

# OBITUARY

## DR. F. D. SHERWIN.

Dr. Sherwin was born in Roseville, Ill., Nov. 26, 1864, and died at his home in Lincoln, Neb., Oct. 18, 1907, at the age of 42 years, 10 months, 22 days.

When a child his parents moved to Traer, Ia. At the age of 14 years he went with his parents to Edgar, Neb. On May 6, 1891, he was married to Miss Ida Searle. Dr. and Mrs Sherwin remained in Edgar three years after marriage, when they came to Lincoln, April, 1894. Lincoln has been their home since. Dr. Sherwin began his profession as dentist in Edgar, Neb., and continued it in Lincoln, and with fine success. He was prominent in his profession in this city and state, and his judgment was often sought by men his senior in years. He was a member of the Second Presbyterian church of Lincoln, coming by certificate from the church at Edgar. He was a faithful and useful member. He was prominent in its councils, being an officer during almost the entire time since uniting with the church.

He was a real convert to foreign missions. Two years ago Dr. and Mrs. Sherwin took upon themselves the support of a native pastor in Loas, Siam. The doctor took great delight in him and his work.

He also took great interest in the local church, showing his great devotion by his words, work and money.

He was always interested in the civic affairs of the city: in good government, in the improvement of the city. His strict, but sane, views upon the keeping of the Lord's Day and the control of the liquor traffic were well known.

He was a man of high ideals; a valuable man in the community, conscientious in all his work and in his belief. The city and dental profession will miss him.

## DR. B. F. ARRINGTON.

Dr. Benjamin Franklin Arrington died at his home in Goldsboro, N. C., October 29th, 1907. This simple announcement is of especial significance to the dental profession everywhere, for in his death we have lost an extraordinary member, one whose life was devoted most unselfishly to exploring and carving new paths for our footsteps.

Dr. Arrington was born in Nash county, N. C., September 11th, 1827. His parents moved to Tennessee while he was very young, and he was reared there, although he spent much of his time with his grandmother in this state. He read medicine under Dr. Cutler, of Dresden, Tenn., and completed his medical course at the old Transylvania Medical College at Lexington, Ky., from which he was graduated in 1847 or 1848. He then practiced his profession in Kentucky. At a later period he took up the study of dentistry and graduated from the Baltimore College of Dental Surgery in 1853. He then located at Goldsboro, N. C., where he practiced both medicine and dentistry until 1858. In this year he gave up the practice of medicine and devoted himself entirely to dentistry for the remainder of his life.

His tastes and his talents led him naturally into mechanics, and he was the inventor of some of our most useful instruments. He was a pioneer in amalgam, and the inventor of the Arrington amalgam instruments. He also invented the smooth edge scaler for the treatment of alveola pyorrhea.

His work in dentistry in this state has been most important, and like the influence of all earnest, able men, has been felt in an ever-widening territory up to the time of his death. The last seven years of his life were devoted to the treatment of his specialty, Riggs' disease. I cannot do him more honor than to say that he was a complete master of this scourge, and without a peer in his treatment of it.

Dr. Arrington was a charter member of the old Southern Dental Association, and ever remained a faithful adherent to its highest principles and precepts; indeed, at no time did he ever cease his efforts for the highest standard of professional excellence. He was a frequent contributor of valuable papers to the literature of his profession.

"He was the gentlest knight that ever laid lance in rest." As a man, the sweet courtesy of his manner was as unfailing

as the flow of the tides, and this added to a charming personality—ideally typical of the old southern gentleman—combined to make him irresistibly attractive in personal intercourse.

He is survived by his wife, three daughters, and one son: Miss Mary Arrington and Mrs. E. B. Dewey, of Goldsboro, N. C.; Mrs. Thomas Bond, of Baltimore, Md., and Mr. John Arrington, of Atlanta, Ga.


## ODONTOTECHNIQE SOCIETY OF NEW JERSEY.

The regular monthly meeting of the Odontotechnique Society of New Jersey will be held Thursday evening, February 6, 1908, at the Elks' Club, 37 Greene St., Newark. Dr. Ralph Waldron, of Newark, will read a paper entitled "Contradicted Arches: Their Causes, Treatment and Results."

At the March meeting, Thursday evening, March 5, a paper of extraordinary interest will be read by Dr. D. A. Webb, of Scranton, on the subject of "Malignant Growths of the Jaw; Fractures, Etc." Stereopticon slides will be used to illustrate his essay.

Very truly yours,

JOHN A. VOORHEES,
Journal Correspondent.

## PROGRAM OF THE G. V. BLACK DENTAL CLUB OF ST. PAUL.

The annual clinic will be held in St. Paul on Thursday and Friday, February 27th and 28th, 1908, at the Old Capitol building.

**Thursday, February 27th, 10 A. M.**

Gold filling, by Drs. A. C. Searl, F. S. James, J. W. S. Gallagher, W. D. James, K. E. Carlson, W. R. Clack, J. V. Conzett, W. H. K. Moyer. Cast gold inlay, by Drs. W. N. Murray, G. N. Beemer, J. O. Wells. Amalgam filling, by Dr. F. S. Robinson.

Table clinics—The list is not completed.

2:00 P. M.—Essay: "Western Dental Philosophy," Dr. E. S. Barnes, Seattle, Wash.

Essay: "A Consideration of Western Dental Philosophy by an Eastern Man," Dr. Chas. McManus, Hartford, Conn.

8:15 P. M.—Illustrated lecture, "Pathology of Dental Caries."

**Friday, February 28th, 9 A. M.**

Gold filling, by Drs. Wm. Finn, W. G. Crandall, F. J. Yerke, A. M. Lewis, F. S. James, J. W. S. Gallagher, J. F. Wallace, C. H. Rob-

inson, A. C. Fawcett. Cast gold inlay, by Drs. W. N. Murray, F. S. Richardson C. E. Woodbury.

2:00 P. M.—Essay: "Gold Inlays," Dr. C. E. Woodbury, Council Bluffs, Iowa.

Essay: "Certain Phases of Our Professional Duty," Dr. C. N. Johnson, Chicago, Ill.

All the gold operations, with the exception of those made by Dr. Moyer, will be made in proximal or proximo-occlusal surfaces.

On Thursday, Dr. Finn, of Cedar Rapids, Iowa, will demonstrate cavity preparation, instrumentation, packing of gold, etc., using large wooden teeth with cavities, clay, etc. This special demonstration will also be given on Friday.

Dr. W. H. Taggart, of Chicago, will assist Dr. W. N. Murray upon both days of the clinic.

A number of the manufacturers have written for space in which to display those things which are new.

Dr. J. B. Ridout, of St. Paul, will demonstrate upon both days of the clinic.

Everybody interested in the advance and progress of the dental profession is invited to meet with and take part in our meeting.

For further information apply to

R. B. WILSON, Sec'y,
Am. Nat. Bk. Bldg. St. Paul, Minn.

## RESOLUTIONS ON THE DEATH OF DR F. D. SHERWIN.

WHEREAS, The All-Wise Providence has removed from this life Dr. F. D. Sherwin, who passed to the great beyond on Oct. 18, 1907, and

WHEREAS, The members of the Lincoln Odontographic Society feel a deep loss in the death of Dr. Sherwin, because of the Christian spirit he always exhibited, as well as striving at all times to perfect himself for the better serving of mankind, and ready and willing at all times to lend a helping hand to those in need; therefore be it

RESOLVED, That in the death of Dr. Sherwin our society has lost a man of sterling worth, whose progress and efforts in his profession should be a source of pride to his co-workers, and from whose example all hope to profit; also,

RESOLVED, That our deep sympathy is with the bereaved family, and that a copy of these resolutions be sent to his widow, to the dental journals, and be spread upon our society records.

H. A. SHANNON,
CLYDE DAVIS.

## RESOLUTIONS ON THE DEATH OF DR. J. B. BEAUMAN AND DR. W. D. MILLER.

WHEREAS, That in the death of Dr. J. B. Beauman, the Ohio State Dental Association has lost one of its well-beloved pioneer members, whose presence at our meetings and whose persistent and constant labors in the line of high professional duty has been for so many years an example and a stimulus to us, therefore,

RESOLVED, That we hereby express our appreciation of the faithful qualities of our friend and brother, and offer our sympathies to his intimate friends and family.

WHEREAS, That by the death of Dr. Willoughby D. Miller, the dentists not only of the state of Ohio but of the civilized world, have lost a distinguished member, one who, by his devotion to patient laboratory investigations and original researches and discoveries in dental etiology and pathology, has illuminated the path of science, and made clear to the humblest of our members so many dark places in these obscure branches, therefore,

RESOLVED, That we hereby acknowledge our indebtedness to him and our gratitude for his unselfish and untiring labors in our behalf. Also,

That we express our sincere regrets for his loss, and our sympathy to his many intimate and personal friends in America and Europe, who loved him as a friend and brother.

C. M. WRIGHT,
IRA W. BROWN,
A. F. EMMINGER.

# AFTERMATH

**Died in Dental Chair.**—Morris E. Vezewith, aged 35 years, of Youngstown, O., died, December 19, in a dentist's chair while his teeth were being extracted. Chloroform had been administered.

**Married**—Dr. Royal B. Giffen, Sacramento, Cal., and Miss Gladys Hale, Sacramento, December 27. Dr. A. F. Schatzel and Miss Pearl C. Henney, married at San Diego, Cal., January 7, 1908.

**Michigan Dentists Organize District Society.**—A meeting of the dentists of the counties of St. Clair, Huron, Sanilac and Lapeer was held Dec. 12 for the purpose of organizing a district dental society.

**American Institute of Dental Pedagogy** elected the following officers: President, Dr. W. E. Wilmot, Toronto; vice-president, Dr. E. Hillyer, Brooklyn; secretary-treasurer, Dr. B. E. Lischer, St. Louis.

**A Vulcanizer Explodes.**—An explosion of a vulcanizer in the office of Dr. Z. F. Knapp, of Naples, N. Y., December 9, shook the building, destroying considerable property, and set fire to the office, but Dr. Knapp escaped injury.

**Gives Up Dentistry to Become a Minister.**—Dr. W. C. Sensibaugh, a prominent dentist of East Moline, Ill., has decided to give up his dental practice for the purpose of entering the ministry, a work toward which he has long been inclined.

**Vulcanizer Explodes.**—Dr. W. A. White, a dentist of Middlefield, O., narrowly escaped death while in his office, December 6. The vulcanizer blew up, wrecking the room, and the force of the explosion raised the roof boards two inches off the joists.

**New Haven (Ct.) Dental Association** elected the following officers: President, Dr. D. T. Johnston; vice-president, Dr. T. L. Watson; secretary, Dr. E. L. Richards; treasurer, Dr. G. C. Fahy; executive committee, Drs. H. A. Spang, G. H. Newton, and E. B. Smiley.

**Black Hills (S. D.) Dental Society** elected the following officers: —President, Dr. F. M. Gantz, Deadwood; vice-president, Dr. L. E. Eaton, Hot Springs; secretary, Dr. A. L. Revelle, Lead; treasurer, Dr. G. E. LeMar, Rapid City.

**State Dental Examinations.**—California, 65 candidates; 44 passed, 21 failed. Minnesota, 79 candidates; 57 passed, 22 failed.

**Fires.**—Dr. Leavell's dental office, Woodville, Miss., damaged $500, Dec. 7. Dr. A. B. Brown's dental office, Lake City, Fla., damaged $350, Dec. 11. Dr. R. R. Dunshee's dental office, Stanberry, Mo., damaged $2,000, Dec. 12; loss complete.

**Dr. A. M. Harrison, College Trustee.**—Dr. A. M. Harrison, of Rockford, Ill., has been elected a member of the board of trustees of the Shurtleff College at Upper Alton, Ill. The college is one of the oldest in the state, having been founded in 1827.

**Illegal Practitioners Driven Out of Altoona, Pa.**—Altoona physicians and dentists have combined to drive quacks out of the city. Prosecutions for illegal practice will be brought against all who fail to leave after being advised to go.

**St. Louis (Mo.) Society of Dental Science** elected the following officers: Dr. Geo. H. Bowman, president; vice-president, Herman F. Cassell; secretary, C. O. Simpson; treasurer, W. E. Brown; curator, J. C. Gault; executive committee, Rich. Summa, E. P. Dameron, Chas. A. Dunham; advisory council, D. O. M. Le Cron, A. H. Fuller, Adam Flickinger, E. H. Angle, B. L. Thorpe, E. E. Haverstick, W. L. Whipple.

**Dentist Succumbs to Hydrophobia.**—Dr. David Marshall, a young dentist of Florence, Ky., was bitten some weeks ago by a dog suffering from the rabies. After being bitten, Marshall had the wound cauterized by a local physician and was then sent to the Pasteur Institute in Chicago, where for a time it was thought that he would recover, but later Marshall became violent and died, December 23, from the effects of the bite.

**Dental Club Formed in New York State.**—A dental club composed of the members of the profession of the counties of Fulton and Montgomery was formed at the office of Dr. R. D. Sayre, of Gloversville, N. Y., Dec. 20. The following officers were elected: President, Dr. George Woolsey, Fonta; vice-president for Fulton county, Dr. W. H. Alexander, Johnstown; vice-president for Montgomery county, Dr. L. A. Timmerman, of Fort Plain; secretary and treasurer, Dr. R. D. Sayre, Gloversville.

**Oldest Dental Practitioner Celebrates 90th Birthday Anniversary.**—Dr. Jesse Cope Green, of West Chester, Pa., the oldest practicing dentist in the United States, celebrated his 90th birthday anniversary, Dec. 13, and the occasion was made a sort of social function. In 1843 he opened a dental office in West Chester, where he has ever since been in active practice. He was one of the organizers of the Republican party of Chester county, and for years has been president of the West Chester board of health. For 60 years he has

been treasurer of the First West Chester Fire Company. He enjoys excellent health and almost daily rides his bicycle about town.

**A New Work on Operative Dentistry.**—We are pleased to announce that Dr. G. V. Black's work on operative dentistry, which has been in preparation for years, is now in process of publication, and will be ready for delivery in a few weeks. Dr. Black has divided his life-work between keen observation, scientific laboratory investigation and practical operating, both in private practice and in the great dental-school clinics, and this book contains his accumulated and condensed results as applied to operative dentistry. The work will be published in two large volumes, containing about 800 pages of reading matter, and the price for the two volumes will be $10. It is being published by the Medico-Dental Publishing Co., Chicago.

**Robberies.**—Dr. G. H. Mosher, Los Angeles, Cal., gold filling valued at $30, Dec. 13. Dr. Charles A. Rice, Passaic, N. J., Dec. 16. Dr. Wentworth Holmes, Newark, N. J., gold and platinum valued at $50, Dec. 17. Dr. Tancie Smith, La Porte, Ind., gold valued at $50, Dec. 19. Drs. Wasser & Wasser, La Porte, Ind., gold valued at $400, Dec. 19. Dr. Bell, Rockford, Ill., gold valued at $15. Dr. J. W. Stapleton, Winchester, Ky., quantity of gold taken. Dr. H. B. Bristol, Bennington, Vt., Jan. 4th, loss $100.

**New Jersey's Safeguards of Dentistry.**—Since the passage of the law of 1890, providing for the registration of dentists, 1,080 licenses have been issued in this state. The State Board of Registration and Examination of Dentistry says, in its annual report to the governor, the general public has been more thoroughly protected from charlatans and irresponsible dentists than ever before. The law has been well enforced, and there have been few evasions of the statutes. The board says that the practicing dentist should be encouraged on moral and ethical grounds to do his best work for his patients. In 20 counties of the state the State Dental Society has appointed trustworthy members of the profession to take cognizance of any infraction of the dental law and report it at once to the secretary of the board. There are at present no cases of illegal practice before the courts. The report says that New Jersey has a more complete registration than any of the larger states. This has been a tedious task, involving four years of labor. The treasurer's report shows receipts for the year aggregating $2,362.47, and disbursements of $2,011.54, leaving a balance of $350.93.

**Deaths.—Dr. Peter Kleist,** formerly of Milwaukee, at Manistee, Mich., Dec. 11. Dr. John T. Codman, of Boston, Mass., at Revere, Mass., Dec. 14, aged 81 years. Dr. N. Klein, Santa Cruz, Cal., Dec. 15, aged 75 years. Dr. Jesse C. Forbes, Torrington, Conn., Dec. 17, of pneumonia, aged 26 years. Dr. Emerick Parmley, of Oceanic, N. J., at Atlantic Highlands, N. J., Dec. 18, of paralysis, aged 78 years.

Dr. Edward P. George, Thomaston, Me., Dec. 19, of blood poisoning, aged 67 years.

Dr. Robert S. West, New Orleans, Ala., Dec. 20. Dr. Elizabeth D. McDonald, Philadelphia, Pa., Dec. 21, of tuberculosis, aged 40 years. Dr. N. A. Royer, Evansville, Ind., Dec. 26. Dr. George A. Wilson, Detroit, Mich., Dec. 28. Dr. Albert R. Newman, San Antonio, Texas, Dec. 29, of pulmonary trouble, aged 29 years. Dr. Frank H. Kendrick, Worcester, R. I., Jan. 1, of pneumonia, aged 49 years. Dr. Charles A. Heydon, Hackensack, N. J., Jan. 4. Dr. S. T. Hanks, Dubuque, Iowa, Jan. 3, aged 65 years.

**Death of Dr. James S. Knapp.**—Dr. James S. Knapp, dean of the dental profession, and the expert who made a set of false teeth for Henry Clay, died December 26. He was 84 years of age and was considered a remarkably active man for so advanced an age. Though a native of Guilford, N. Y., Dr. Knapp had practiced dentistry in New Orleans, La., for more than 60 years. It was in 1849, on the occasion of a visit from the distinguished statesman, that Dr. Knapp made a set of false teeth for Henry Clay. He also treated a number of other notables. Dr. Knapp was one of the founders of the old College of Dentistry in this city, and among the professional honors bestowed upon him was the presidency of the Southern Dental Association, of the American Dental Association and of the American Academy of Sciences. While he took no active part in the civil war, he contributed freely from his own fortune to the cause of the confederacy. Dr. Knapp leaves many relatives in this city, including children, grandchildren and great-grandchildren. Of his children he leaves two daughters, Miss Julia Knapp and Mrs. Julian Bartlett, and four sons, Dr. J. Rollo Knapp, Dr. C. D. Knapp, Dr. W. S. Knapp, and Dr. S. B. Knapp, all of this city.—New Orleans Item.

**Killed by Exploding Vulcanizer.**—Dr. C. Eugene Stroud, of Sandusky, O., who was injured, December 13, by the explosion of a vulcanizer in his dental office, died January 2. Portions of the vulcanizer were driven into his forehead, fracturing the skull.

**Dentist Elected Potentate of Syrian Nobles.**—Dr. Edward S. Keefer, dentist in the Bell Block, Cincinnati, O., was unanimously elected potentate at the annual meeting of Syrian Temple, Nobles of the Mystic Shrine, in the Scottish Rite Cathedral, December 20.

**Dentist Assaulted and Robbed.**—A dentist in Minneapolis, Minn., was beaten and robbed of $100, December 25, by a man who hid in his office and assaulted him when he entered to build a fire.

**Ancient Dentists Did Bridge-work.**—Cicero, in his treatise, "De Natura Deorum," ascribes the invention of tooth-drawing to Aesculapius, third of the name, says the British Medical Journal. The first mention of dentistry is found in Hippocrates, who in several parts of his writings has a good deal to say about toothache. Long before the dawn of Greek civilization, however, dentistry seems to have reached a high degree of perfection. From the Phoenicians the art found its way to the Etruscans. At the international congress held in Rome in 1900, Professor Guerin exhibited several specimens

of dental art which proved that something very much akin to bridge-work was practiced in ancient Italy so efficiently that it has lasted 30 centuries. Artificial crowns have also been found in Etruscan tombs. Artificial dentures go back to a remote antiquity. Dr. Deneffe states that in the museum of the University of Ghent there is a set of artificial teeth, found in a tomb at Orvieto, with jewels and Etruscan vases; he gives its date as from 5,000 to 6,000 years before Christ. In a collection of antique surgical apparatus made by Dr. Lambros there is an artificial denture found in a tomb at Tanagra, near Thebes, which is believed to belong to the third or fourth century before the Christian era. Teeth stopped with gold have been found in Greek tombs. In the Temple of Apollo at Delphi there was, according to Erasistratus, nephew of Aristotle, and physician to Seleucus Nicator, king of Syria, 354 B. C., a leaden instrument which was used in the extraction of teeth; obviously an instrument of lead could have been used only for loose teeth. In the laws of the Twelve Tables made by the Roman Decemvirs in 450 B. C., it was expressly forbidden to bury or burn gold with dead bodies, except when used for wiring the teeth. In the construction of false teeth recourse was had by the ancients to bone and horn; sometimes human teeth were employed. Benzoni found in some mummies artificial teeth made of sycamore. In the first century of our era false teeth were very common among the Romans. The name of a fashionable dentist is enshrined in a line of Martial:

"Eximit aut dentem Crescentius aegrum."

Elsewhere he ungallantly twits a lady with removing her teeth as she takes off her clothes at night. He says rude things of the teeth of two other ladies:

"Thais habet nigros, niveos Licania dentes,
Quae ratio est? Emptos haec habet, illa suos."

Dentistry shared in the decay of the arts during the Middle Ages, and we read that when St. Louis died in 1270, although he was only 55, he had but one tooth in the upper jaw. French surgeons, notably Ambroise Pare, took a leading part in the revival of dentistry. Louis XIV's dentist used only instruments of gold in operating on the teeth of his august patient. From the time of Pare onward the highest dentistry was in the hands of surgeons, extraction being left to barbers and quacks.

**Recent Patents of Interest to Dentists:—**

872091—Toothbrush-holder, Fred J. Spangler, Lebanon, Pa.

872908—Dental floss, John D. Cutter, New York, N. Y.

872626—Plate for artificial teeth, James Humphrey, Boston, Mass.

872978—Making molds for dental inlays and the like, Wm. H. Taggart, Chicago, Ill.

873015—Dental chair, Arthur W. Browne, Prince Bay, N. Y.

873100—Dental broach, Carl A. Skalstad, Chicago, Ill.

874281—Dental plugger, Robert H. Antes, Geneseo, Ill.

874189—Dental articulator, Wm. Hare, Galesburg, Ill.

874199—Dental soldering apparatus, Jacob W. Horner, Columbus, Ind.

873789—Artificial tooth crown and bridge-work, James B. Righter, River Falls, Wis.

874131—Making toothpicks, George P. Stanley and W. W. Tainter, Dixfield, Me.

Copies of above patents may be obtained for 15 cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

**A Dentist Should Have General Office Experience Before He Specializes.**—We do not wish to say that the dental student should be taught to specialize. He should be trained so as to have a good general knowledge of the principles and practice of the routine work of his calling. He should also have some years of general practice before thinking of embarking on any special line of practice, and, even then, he should only launch out in it if he feels that he has the desire and ability so to do. The specialist ought not to be of sudden growth, but should feel convinced that his talents are best utilized in some special work in which he feels he can excel, grounded on a general experience of the conditions of the mouth which only years of post-graduate practice can bring.—British Journal of Dental Science.

**To Make Attractive the Office Window.**—I am constrained to suggest to my colleagues that they follow my example, and try a window box in front of their operating chair—the contents of the same to be changed from time to time. My own has been a constant delight to the eye, the subject of many pleasant conversations and a source of daily, unflagging interest. Last fall it was planted with spring flowering bulbs; in it were imbedded tall pine twigs (which were very pretty to look upon after a snow storm), and removed when spring came. At one time, eight beautiful daffodils were in bloom, remaining so for weeks. Later, some fine pansies throve well —then some bright geraniums, as summer approached. Always before one's eyes, it received constant care; the earth is loosened frequently, dead leaves removed, etc., and it has repaid, with compound interest, the slight effort required.—Mary E. Blake, in Dental Brief.

**Facial Neuralgia.**—For facial neuralgia, a small quantity of oil of sweet birch rubbed over the nerve gives great relief.—Dental Era.

# REGULAR CONTRIBUTIONS

## SERIOUS NERVOUS DISTURBANCES DUE TO TEETH.

By E. Ballard Lodge, D. D. S., Cleveland, Ohio.

It is well known that very many affections are due to reflex conditions caused by disordered teeth. The trifacial, trigeminus, or fifth pair of nerves, being the great sensory nerve of the face and head is capable, through its distribution and through its association with other nerves, of producing reflex troubles most far-reaching and serious.

It is further found that there may be profound nervous disorder due to dental irritation with absolutely no dental symptoms, as pain or soreness in or about the teeth, to enable the sufferer to seek appropriate measures for relief.

The second and third divisions of the trifacial nerve, supplying as they do the upper and lower teeth respectively, are in intimate relation with the eye, the ear, the forehead, the scalp, the face, the neck, the shoulder, and even with very remote parts of the body. It is quite needless also to say that it is in close relation with the central nervous organ, the brain. To illustrate some of the pathologic phenomena which can be accounted for by this intricate anatomical mechanism, I will briefly cite a few cases. Dr. J. F. Stephan, of Cleveland, announces a case of knee trouble, neuralgic in character, cured by treatment of root-canals of bicuspid teeth. The case was of long standing, and both knees were affected. Upon the removal of a foul cotton dressing of the lower right first bicuspid, the pain subsided in the left knee, and upon treating a septic lower left first bicuspid, the neuralgia was relieved in the right

knee. The pain was re-established in the left knee by deliberate closure of the canal of the right bicuspid, and again relieved by opening the same. The evidence was thereby assuring, both to the patient and the dentist, that the neuralgia was caused by the teeth. In a recent issue of the British Medical Journal may be seen the report of a case in which neuralgia of the knee was cured by the treatment of a lower tooth. It is said that Dr. Millikin, of Cleveland, has reported a case of bilateral ulceration of the cornea which was cured by the extraction of a molar tooth on each side. Dr. J. R. Bell, also of this city, relates an interesting case of epilepsy completely cured by the extraction of impacted lower third molars. Large numbers of cases might be cited which have been recorded in dental and medical literature.

It is difficult to say where dental irritation may not account for trouble.

That grave disturbances of the nervous system, conditions not chiefly, or even at all, necessarily exhibiting the symptom of pain, may be correctly ascribed to disordered dental states, is not doubted.

Not merely neuralgia, in its various forms, may be thus caused, but also epilepsy, chorea, paralysis and insanity are at times the result of dental disease.

The knowledge that dental perversion may account for insanity is not new. If one will turn to page 600 of Burchard's "Dental Pathology and Therapeutics," revised by Inglis, edition of 1904, he will find the following: "Cases of insanity arising from dental diseases have been recorded; they were both maniacal and melancholic. In several of them a restoration to a normal mental state followed promptly upon the removal of the offending teeth. In some of these a pre-existing maxillary neuralgia directed attention to the teeth as possible sources of the nervous diseases."

One of the happiest girls in Ohio is one who, a year ago, was a subject fit for a hospital for the insane, and who, had it not been for timely dental assistance, would doubtless have been committed to such an institution before this. The patient, a woman of 27 years, was suffering from profound melancholia.

Medical treatment having been of no avail, her physician sought the advice of a dentist to see whether, in the latter's opinion, there might not be dental disease present which could

account for the girl's unfortunate condition. The dentist concurred in the view that such might be the case, that it was known that dental lesions sometimes caused insanity. Upon examining the teeth, and finding them in apparently good condition, he urged upon the physician the importance of having an X-ray examination made to determine whether or not there was an impacted third molar causing the trouble.

Accordingly a skiagraph was taken and the upper left third left molar was found to be in violent impaction with the second molar. (See Fig. 1).

It is appropriate for me now to say that the neurologist in

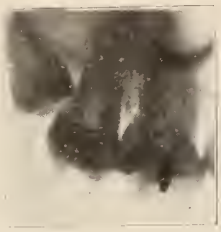


Fig. 1
**This is a skiagraph of the impacted upper left third molar, upon extraction of which the patient was cured of melancholia.**

the case, the physician above mentioned, was Dr. Henry S. Upson, and the dentist was Dr. John F. Stephan. The tooth was extracted by the dentist and the patient made a complete recovery, and this within a few weeks after the removal of the tooth and without other treatment. The patient, unmarried and a teacher, had been a sufferer for five years. For a year she had been very restless, terribly depressed and profoundly melancholy. She had intractable insomnia, delusions of having committed many deadly sins and utter hopelessness of recovery.

Melancholia is a disease which may appear in many forms, and it is a disease which may be induced by many causes. May it not be possible that it is brought on by dental irritation much more frequently than has hitherto been supposed? Is it not possible that there are in the world today persons suffering with this or other serious nervous diseases who could be cured if only they had some one enough interested in their case to make the necessary examination of their teeth?

Dr. Upson, encouraged by the fortunate outcome of his case, has been making systematic examinations of the teeth of patients suffering with similar mental diseases in a number of the state hospitals for the insane.

While it is yet too early to expect a report of recoveries in these asylum cases, it is interesting to note the high percentages of impacted teeth, revealed by aid of the X-rays, in the mouths of patients already examined. Of six female patients examined at the Newburg State Hospital for the Insane, the subjects of melancholia, mania, and dementia precox, one patient with melancholia and one with dementia precox have unerupted third molars, one undoubtedly impacted.

At the Massillon State Hospital, of nine cases examined there were six who had impacted third molars. Three of these

Fig. 2 Fig. 3
Impacted lower third molars of insane patients.

were suffering with dementia precox and three were manic depressive. (Figs. 2-3).

At the Columbus State Hospital for the Insane we examined 18 patients, of which we found 7 with impacted teeth;

Fig. 4 Fig. 5
Impacted lower third molars of insane patients.

five of these were patients with dementia precox and two with manic depression. (Figs. 4-5).

Among the latter was a young woman, a college graduate and a teacher of German, of whom it was said she pulled out her hair by the fistful and ate it. A skiagraph of her case revealed an impacted third molar on the upper jaw and on the side from which she pulled out the hair. (Fig. 6). The ap-

Fig. 6
**This skiagraph shows an upper third molar impacted. This is a picture taken from the insane girl who pulled out her hair in handfulls and ate it. The tooth has been extracted but too recently to report a cure.**

pearance of the impacted tooth is identical with that of the patient whose case was cited above, viz., the case of melancholia which was entirely cured by the removal of the offending tooth.

In view of our observations in these cases, it is reasonable, we think, to expect a recovery by the extraction of the impacted teeth. The hospital cases will be watched with great interest, and it is much to be hoped that the recent investigations and examinations with the X-ray will result in great good to these sufferers. While, of course, we can not assign to dental irritation the responsibility of causing all mental disease, still we ought to be ever on the alert to recognize the absence of any teeth, whether third molars or not, as any other tooth may be the cause of irritation as well.

Absolute certainty of the condition can only be determined by the use of the X-ray; and this, too, when the normal complement of 32 teeth are present. In these cases there are sometimes found supernumeraries. Only recently I located an upper impacted fourth molar. This tooth was impinging upon the distal side of the third molar and was extracted with a hope of relieving a headache of two years' standing.

In conclusion, I would say that we as a profession should be fully aware that our field of usefulness is not curbed within narrow confines. By taking a broad view of the status of the

oral cavity in its relation to the health and to disease of the body we can not but be impressed with the importance of our recognition and correct diagnosis of possible sources of nerv-

Fig. 7
This skiagraph shows a misdirected upper cuspid. The antrum is seen to begin dista to the apex of the cuspid's root.

ous or other disease, remote, perhaps, from disordered teeth, and yet due to dental irritation. (Fig. 7).

The scope of dentistry is broad, and we should study to observe closely that we may be enabled to understand the significance of all abnormal oral conditions. Then we can intelligently advise patients whose cases may not be strictly dental in nature to call upon the neurologist, the oculist, or the rhinologist, as suitably befits the case. When we do this, and not till then, may we be truly entitled to the name stomatologist, and only then, in a strict sense, shall we have attained the highest plane as dentist.

I want to express my indebtedness to Dr. Henry S. Upson, and likewise to Dr. John F. Stephan, and others, for assistance and valuable data used in the preparation of this article.

# THE CONTRIBUTIONS OF PIONEER DENTISTS TO SCIENCE, ART, LITERATURE, AND MUSIC.*

By Burton Lee Thorpe, M. D., D. D. S., St. Louis, Missouri.

Thomas Carlyle has tritely said: "In all epochs of the world's history we shall find the great man to have been the indispensable saviour of his epoch—the lightning without which the fuel never would have been burnt. The history of the world was the biography of great men."

These words are applicable to the dental profession. Tradition and facts are both correct, that the early practitioners of our craft were the barber, blacksmith and traveling tinker, who crudely practiced the dental healing art as a "side line" to their respective callings. This continued from the time of Christ until about 1839, when, by the process of evolution, the men following the calling of dentistry realized the needs of converting the craft into a profession. About this time "the great men," who have since proven to be the saviours of American dentistry, and eventually have influenced and developed the dentistry of the world, appeared in form of Horace H. Hayden and Chapin A. Harris, both ripe in years of practice and possessed with the ambition to better their chosen calling. Their efforts were ably seconded by such men as Eleazer Parmley, Solyman Brown, Amos Westcott, Elisha Townsend and others, who were masters of more talents than being skillful dentists. To know our profession's history one must be familiar with the biography of our great men, who, by their personality and manifold talents, brought our calling out of chaos, divorcing it from a trade and marrying it to a science.

No matter what a man's work, he must have some recreative diversion, some fad or hobby, before he can be considered a broad-minded, well-informed man. Some one has said, "Before a man knows his own language he must master another." President Woodrow Wilson, of Princeton, has well said that "We judge the range and excellence of every man's abilities by their play outside the task by which he earns his livelihood. Does he merely work, or does he also look abroad

*Illustrated lecture delivered before the Ohio State Dental Society, Columbus, O., December 4, 1907.

and plan? Does he, at least, enlarge the thing he handles? No task, rightly done, is truly private.

It is part of the world's work. The subtle and universal connections of things are what the truly educated man. be he man of science, man of letters, or a statesman, must keep always in his thought, if he would fit his work to the work of the world. His adjustment is as important as his energy."

As a profession we do not play enough. We think, talk and work too much at dentistry. William Wordsworth that poet of nature, said:

> "The world is too much with us; late and soon,
> Getting and spending we lay waste our powers;
> Little we see in nature that is ours—
> We have given our hearts away, a sordid boon!"

The really great men in dentistry had other things outside of their profession with which they garnished their talents, and that, as a recreative diversion, took their thoughts off the monotony and humdrum of shop.

They would have been great in any other walk of life; they would have illumined any other calling.

Besides being great dentists, some have been famous as artists, musicians, sculptors, orators, naturalists, poets, actors, soldiers, philanthropists and humanitarians. Had they devoted equal time to any calling that they did to dentistry, who can question that they would have been equally accomplished in other arts as they were in dentistry?

Nearly all the men who stand out pre-eminent had some other line of work as a fad or hobby, in which they excelled, that made them better citizens and greater ornaments to the profession. To view "the other side" of their lives is of more than passing interest. To know what we are, we must realize from whence we, as a profession, came.

Let us view some of these men from "the other side," viz., the artistic side, that has illumined their careers, both personally and professionally.

J. J. F. Le Maire

**Joseph Jean Francois LeMaire,** credited with being the first regular practitioner of dentistry in America came to this country with Count Rochambeau, in 1770. He was an intimate friend of the Marquis de Lafayette, who spoke highly of his ability.

In time of battle he did his part nobly fighting for American independence. During the winters of 1781-2, while in winter quarters, he tutored Josiah Flagg and James Gardett in the art of dentistry. He was the first and original American dental preceptor, and his coming marked the beginning of dentistry as a profession in America. At the close of the revolutionary war, he instructed others and located in New York city. Later, 1784, he removed to Philadelphia, where he made a practice of transplanting teeth and carving artificial teeth from blocks of ivory. LeMaire was a talented writer and contributed a number of valuable works to our literature; amongst them, "The Ladies' Dentist"; "A Manual on the Anatomy and Physiology of the Teeth"; "A Treatise on Dental Physiology and Pathology"; and several other works written in French. His name will live in dental history as patriot and pioneer surgeon-dentist, whose coming marks the beginning of dentistry in America.

Jas. Gardette

James Gardette, a fellow-countryman of LeMaire, born in France, 1756, educated with the intention of the career of the naval surgeon. After an academic course, he was sent to Paris, in 1773, where he remained two years studying anatomy and surgery at the Royal Medical School. During this period he received instructions in dental operations from Mr. Le Roy de la Faudiniere, a dentist of high repute, of Paris. (At this time such instructions were a part of the naval surgeon's requirements). He studied the works of Fauchard and Bourdet, both at that time recognized dental authorities. He completed his college course, and was sent to the hospital at Toulouse, where he remained 18 months as student and interne. From there he went to Bayonne, where he took the examination conducted by the surgeons of the admiralty with successful results and was commissioned a surgeon in the French navy. He immediately entered the service and sailed for America, October, 1777, on a ship cargoed with French soldiers, landing at Plymouth, Massachusetts, early in January the following year. During the voyage occurred an engagement with two British ships, in which a number were killed and wounded, thus giving young Gardette the opportunity to try his surgical skill. Arriving in America, he joined the continental troops at Newport, where he received further instructions in dental surgery from LeMaire. Later he went to Boston, then to New York, and in the spring of 1784 he located in Philadelphia, where he entered into practice, where

he soon acquired a wide reputation as a skilled carver of bone and ivory teeth. He is also credited with being the first to introduce the mortise method of attaching natural teeth to artificial bases, also inventing flat elastic clasps for retaining dentures in position, and for inventng an extracting instrument. He was also an advocate of gold foil instead of lead or tin as a filling material, and prepared his own foil by beating it from Dutch ducats. He wrote a treatise, in 1827, published in The Medical Recorder, giving his views in "The Transplantation of the Human Teeth," a method then in vogue, but which he condemned. He practiced for 45 years successfully, then returned to his birthplace, France, where he died in 1831.

Josiah Flagg

**Josiah Flagg**, without doubt the first native-born American dental practitioner, and grandfather of the late Professor J. Foster Flagg, of Philadelphia. He was also the first American dentist to carry evidence of American dental progress to other foreign countries. Josiah Flagg was born in Boston, in 1764. He was a son of Lieutenant Colonel Josiah Flagg, of Elliott's regiment of the Continental army, in which he enlisted at the age of 15 as a private. In the winter of 1781-82, this regiment, together with the French troops of Count Rochambeau, camped near Providence, R. I. Here young Flagg met Joseph LeMaire, the French surgeon-dentist, who instructed him in the dental art, which he practiced following his

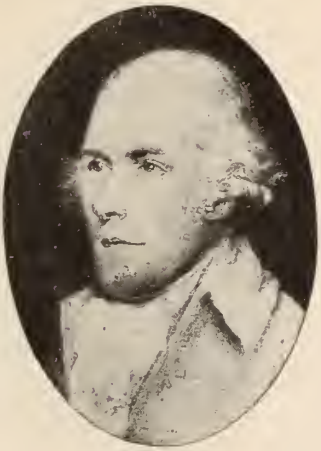
discharge from the army in the summer of 1782. He first practiced as an itinerant until 1783, when he located in Boston, where he practiced with success until 1812, where he announced his accomplishments in the following circular: "Dr. Flagg transplants teeth, cures ulcers and eases them from pain without drawing; fastens those that are loose; mends teeth with foil or gold to be as lasting and useful as the sound teeth, and without pain in the operation; makes artificial teeth and secures them in an independent, lasting and serviceable manner. Sews up hare-lips, and fixes gold roofs and palates, greatly assisting the pronunciation and the swallow. Cuts the defects from the teeth and restores them to whiteness and soundness without saws, files, acid and such abusives as have shamefully crept into the profession, and which have destroyed the confidence of the public. Sells, by wholesale and retail, dentifrices, tinctures, chew-sticks, mastics, teeth and gum brushes, suitable for every age, complaint and climate, with directions for their use." In later years he published a circular as follows: "He practices in all the branches with improvements, i. e., transplants both live and dead teeth with great convenience, and gives less pain than heretofore practiced in Europe or America. Extracts teeth and stumps or roots with ease. Reinstates teeth and gums that are much depreciated by nature, carelessness, acids, or corroding medicine. Fastens those teeth that are loose (unless wasted at the roots), regulates teeth from their first cutting to prevent fevers and pain in children, assists nature in the extension of the jaws, for the beautiful arrangement of the second set, and preserves them in their natural whiteness entirely free from all scorbutic complaints, and when thus put in order and his directions followed (which are simple), he engages that the future care of a dentist will be wholly unnecessary. Eases pain in teeth without drawing. Stops bleeding in the jaws, gums, or arteries. Lines and plumbs teeth with virgin gold, foils or leads. Fixes gold roofs and palates and artificial teeth of any quality without injury to any independent or natural ones, greatly assisting the pronunciation and the swallow when injured by natural or other defects. A room for the practice with every accommodation at his house, where may be had dentifrices, tinctures, teeth and gum brushes, mastics, etc., warranted, approved and

adapted to the various ages and circumstances; also chew-sticks, particularly useful in cleansing the fore teeth and preserving a natural and beautiful whiteness; which medicine and chew-sticks are to be sold wholesale and retail that they may be more extensively useful. Dr. Josiah Flagg has a method to furnish those ladies and gentlemen or children with artificial teeth, gold gums, roofs, or palates that are at a distance and cannot attend him personally. Cash given for handsome and healthy live teeth at No. 47 Newbury street, Boston" (1796). Flagg developed a wonderful mechanical ability as a dental surgeon. He was one of the first to use gold foil in filling the teeth. At the beginning of the war of 1812, his patriotism got the best of him, and he enlisted in the naval service shortly after, to be captured by the British and taken to England as a prisoner of war. While on parole in London, during 1813-15, he practiced dentistry. There he made the acquaintance of the distinguished surgeon, Sir Astley Cooper, whose lectures and clinics he attended at Guy's Hospital. Professor Cooper recognized his expertness, both publicly and privately, and did much in exploiting his fame abroad. This was brought to a close, however, with the ending of the war of 1812. His parole expired, and he returned to his native land. A few hours before landing his ship was wrecked in New York harbor, and he suffered severely from exposure. He went to Charleston, S. C., to recover, and there died September 30, 1816. His two sons were talented dentists and dental writers, as well as his talented grandson, J. Foster Flagg, one of the pioneers of "new departure" fame.

Paul Revere

"So through the night rode Paul Revere:
And so through the night went his cry of alarm
To every Middlesex village and farm,—
A cry of defiance and not of fear,
A voice in the darkness, a knock at the door,
And a word that shall echo forevermore!
For, borne on the night-wind of the Past,
Through all our history, to the last,
In the hour of darkness and peril and need,
The people will waken and listen to hear
The hurrying hoof-beats of that steed,
And the midnight message of Paul Revere."

**Paul Revere**—Likely few know that he who made that famous midnight ride that in days agone was recited in every school child's reader, was a dentist. The story of Paul Revere, recounting how he sounded the alarm and aroused the whole country-side to arms, and next day the victory at Lexington was won. Paul Revere was a silversmith, and one of the most expert engravers of the age. He also was a mechanical dentist and had his place of business "at the foot of Dr. Wright's wharf in Boston," so early Boston newspapers say. While not a dentist in the strict sense, yet he did some prosthetic work far above the average, at the time he lived.



John Greenwood

**John Greenwood,** born at Boston, May 17th, 1760, was another patriot of the Continental army whose varied career reads like one of the thrilling tales of Captain Kidd's adventures. At Bunker Hill and Charleston Mills, with General Isaac Putnam; with General Benedict Arnold on his Canadian invasion, fighting Indians and the British, enduring hardships, exposure and dangers without number; with General George Washington, the winter's morning he surprised the Hessians at Trenton. Greenwood was on the fighting line, doing his duty for liberty's sake. Next we find him a midshipman on the privateer Cumberland bound for the West Indies, in a dozen dangerous sea encounters, finally to return destitute and worn with hardship, to New York city, where he began business in a small way, as a maker of mathematical and nautical instruments and as an ivory turner; finally to drift into dentistry and make a success in the surgical treatment of diseases of the teeth and oral cavity, and to become famous in his profession on account of being the first dentist to successfully supply George Washington with dentures that were satisfactory. Some humorous historian has said the real reason that George Washington could not tell a lie was that he wore such ill-fitting dentures that every time he attempted to tell an untruth his dentures would loosen, fall and prevent his utterance.

John Greenwood was the preceptor of Horace H. Hayden whose brilliant career reflected credit and honor to American dentistry.

Edward Hudson

**Edward Hudson,** Irish patriot and pioneer American dentist, was born in County Wexford, Ireland, 1772. He was a picturesque character of artistic and musical temperament. At Trinity college a classmate of Robert Emmett, the patriot, and Tom Moore, the poet, he gained a reputation as a debater and writer. Filled with the fire of youth and patriotism, he became involved with Robert and Thomas Addes Emmett, Thomas Moore, Arthur O'Conner and others in the "Emmett Conspiracy," and was arrested, and with his comrades imprisoned in the Killmainham jail. During this imprisonment, which lasted four or five months, hearing of friend after friend being put to death, and expecting daily his time to come, he amused himself in his solitude by drawing with charcoal on his prison wall his fancied origin of the Irish harp, which, when viewed by his friend and confidant, Tom Moore, was an inspiration to Moore to produce one of his best melodies "The Origin of the Irish Harp." Hudson played, with much feeling, the flute, and this also inspired Moore to better poetic efforts. Moore says of him: "He was the first who made known to me this rich mine of our country's melodies—a mine, from the working of which my humble labors as a poet have since derived their sole luster and value." Hudson was released from prison, where, during his imprisonment, he practiced for the gentry of the surrounding country, who paid large fees for his services, and emigrated for America, locating at Philadelphia, where for many years he was the recognized leader of his profession until his death, 1833. He played the roles of gentleman, scholar, patriot and ideal professional man with grace and dignity.

Leonard Koecker

**Leonard Koecker,** a native of Bremen, Germany, was of poor parentage. In 1807 he came to America, locating at Baltimore as a commercial agent. Being an accomplished musician and of rare tact and suavity, he readily obtained access to the best society. In 1809 poverty again drove him to dentistry, of which he had obtained a meager knowledge in his native land. From an itinerant Hebrew dentist, he soon acquired a lucrative practice, which continued until 1822, when he removed to London, England, where he wrote his first book, "The Principles of Dental Surgery," the first complete treatise on dental science, pathology and therapeutics ever published. He also wrote other works on dental science. He was studiously inclined and thoroughly mastered the English, French and Latin languages. He was of refined taste and a collector of rare books and clocks, and a lover of music.

(To be Continued).

## ROOT TREATMENT AND FILLING.*

By R. J. Winn, D. D. S., Bolivar, Missouri.

In presenting to you this paper, upon the subject of "Root Treatment and Filling," I only want to give you my experience along this line, together with my methods, which I do not claim to be the only and best way to perform this operation. I do claim and know that in my hands these things I shall tell you about are the best and most successful. In the treatment of those cases that come to me, where the pulps of the teeth have to be destroyed, I usually use an application of the devitalizing fibres, in combination with campho-phenique or with dentalone. I say usually as a matter of expediency, because I can apply arsenic and remove the pulp at subsequent sitting in much less time than I can remove it with pressure anesthesia. I often use the latter method in these cases; I do not (except upon rare occasions) practice immediate root-filling, and I do not advocate that practice. I sterilize those canals, and in from four days to a week I fill them, not sooner than four days, and if I cannot make it convenient to attend to them in a week I change treatments. Why? Because I have had teeth get very sore to the touch after the application of fibres and removal of pulps, and also after the removal by pressure, and if they get sore, I would rather it would be before the root is filled. Why do they get sore? you may ask. Sometimes because the condition of the pulp will allow the agent to absorb more readily than another condition, which will seemingly refuse to take up a particle of the agent used; but the most common cause is that part of the nerves are left about the apex of root after being thoroughly saturated with some of the agents that are used to destroy pulps. And then, again, the common cases that we see are the ones that you can always attribute the fault to client who does not return at appointed time to have treatment and pulp removed. If you ask me what I do when I have sore teeth from over-treatment of arsenic, I say, let it alone after the pulp is out, and if you do not get pulp in its entirety, then extract the tooth, if you care anything for your reputation.

In the treatment of the cases that come with dead pulp

*Read before the Springfield, Mo., Dental Society.

that are sore and inflamed when we first see them, I at the first sitting remove the contents (as nearly as I can) of the pulp chamber and canals, and after washing with sterilized warm water, I treat with Oxpara powder, made pasty with wood creosote. In first treatment I use care not to pack cotton tight; as a usual thing, there are gases present, and to pack cavity tight will cause trouble. I have also treated this class of teeth very successfully with oil of cassia, campho-phenique and other remedies, but the Oxpara seems to accomplish a cure more readily than any other preparation that I have used.

The other classes that we run onto when we least expect or want to are the ones that cause the trouble. When they come already sore, we can't be held accountable, but when everything is lovely and you just do something that seems very insignificant to patient at the time, and about the first thing you see the next day is that person with a very sore tooth; then it is that you are apt to lose one of your "geese that lays the golden eggs."

I have heard of people who did not hesitate to fill that tooth immediately; I would not do it. I get the strongest disinfectant that I know of into that tooth as quick as I can, and at the same time I tell that patient what may happen before 12 hours. I do not fill any of these cases, the former or the latter, until I am sure that all is well, and then I pack with sterilized cotton and wait until it is convenient to complete the operation.

In the cases that have fistulous openings, we were taught at college to clean out everything in tooth and canals and fill immediately. I treat these about as I do the others before fillings are inserted. If a condition exists that will cause a severe abscess, that condition should be corrected before the operation is completed. I want to impress this fact: we cannot be too careful about this class of work.

Now the fillings: I believe that if the canals are filled with any solid material that we can feel reasonably certain that the tooth will not cause any trouble. I have for several years used for root-filling gutta-percha points, wood points, the same that you have seen Dr. B. Q. Stevens use at our state meetings. I use forma-percha instead of the chloro-

percha; I think the formalin in the mixture is an addition worth considering on account of its preserving qualities.

I advocate the use of the rubber dam, but do not use it all the time. The essential thing is to have the tooth and canals dry. I use hot air. I think a few drops of alcohol or chloroform in the canals and evaporated with hot air will usually give a dryness that we want. I usually follow with cotton on a broach to see if everything is dry, in large and medium canals. I use gutta-percha points always, but in small ones I use the wood points always, and if I cannot select a wood point small enough I draw them through a folded disk until I can insert them into the canal. I pump forma-percha into the canals before I insert points, and by using a pumping motion with the point, I work the air out, and then push the point gently to place. The wood points I dip into the forma-percha and let it dry, and when everything is ready, I warm the point and insert it in the same manner as I do the gutta-percha. If you will notice, these wood points will admit of considerable bending, and I can usually force them into a crooked root very well.

I use Donalson's broaches and canal-cleaners, as I do my work better with them than any broaches that I have used. After the cleansers have served their usefulness, I make my smooth broaches out of them by filing the barbs off and making them perfectly smooth by drawing them through a folded disk, and in this way can make a smooth broach that will go into the very smallest canal, and if the canal is not straight it will follow the curve about as well as any that I have seen The metal in these broaches is very tough and gives very little trouble about breaking.

## TREATMENT OF DECIDUOUS TEETH AND THEIR POSSESSORS.*

**By O. U. King, D. D. S., Huntington, Indiana.**

In preparing this paper, I was reminded several times of Solomon's declaration that there is "no new thing under the sun," and while this is true concerning the primal elements in

*Read before the Indiana State Dental Society, 1907.

[I want it distinctly understood that the contents of this paper are not all original.—O. U. K.].

this subject, it is not true concerning the methods of treatment. Cotton and wool and linen will always form the basis for clothing, but the methods of raising and preparing, and the styles and shapes are different. Search out a scientific textbook of 30 years ago, and place it beside one used now by a 14-year-old boy. New and improved methods are continually being introduced and adopted in all lines of work.

The past few years have witnessed some wonderful changes in dentistry, and the care and treatment of children's teeth have more than kept pace with the other branches of dental science. However, our present boasted knowledge on this vital subject may be likened to a new book, with many of its best pages uncut, for who will deny that the crying need of the times is a closer attention to the care and treatment of the deciduous teeth?

The old school of dentists thought these teeth of so little importance that they were allowed to decay and then extracted before they had fulfilled one-half of their function, and I am sorry to see that some of our younger men are following the same practice.

### LECTURES ON THE MANAGEMENT OF CHILDREN.

A stated course of lectures on the management of children and the care of their teeth should be included in the college curriculum, so that every graduate may be impressed with the vital importance of this subject. Then the dentists will in turn be able to educate the public, for it has been said that you must begin with the grandfather to make a gentleman out of the third generation. Well, I believe that it is a very good time to begin on the teeth, and let us be sure to begin with "grandpa" during the dentition period.

### CHILD MANAGEMENT AND CHILD TRAINING.

In the first place, we must not forget that the management of children's teeth must include the management of the children themselves, and when a dentist can do this, half of his battle has already been won.

I trust you will pardon me for a personal reference, but from it we may be able to learn a few fundamental principles in child psychology that will help us in child management and child training.

Early one morning a few weeks ago Charlie Blank, accompanied by his 11-year-old son, came into my office and said: "Hello, Doc, I brought along my boy Fred, and want you to 'yank' out a few of his teeth." Then turning to the lad, who had the appearance of having been cuffed around somewhat before arriving at the office, he said: "Get in the chair, Fred and remember, I expect you to sit there and have those teeth 'yanked!'"

Fred sat down in the operating chair, and from his eyes I could read that a dentist, of all men, was to him the most treacherous and dangerous. He was laboring under a nervous tension and mental fear that was affecting his entire body.

I saw at a glance that the chief factor of success in controlling this child would be an infinite amount of patience, mixed with sympathy and tenderness. I kindly asked him to open his mouth and let me examine his teeth; and when he hesitated his father again blurted out in the most violent manner and said: "Fred! open that mouth and let Doc 'jerk' out those teeth, or I will rap you one." The poor boy was trembling like a leaf, tears were starting, when he said: "Pa, I just can't."

The father insisted that he "must." Seeing that the mistreatment of the boy, on the part of the parent, was not only injuring the boy's will power and nervous system, but it would be impossible to accomplish any kind of work satisfactory for him, I kindly, but firmly, invited the father to retire to the waiting room, telling him that I believed Fred and I could talk the matter over better alone.

I now had a heart-to-heart talk with the boy, and it was the same old story of the dentist that had told him it would not hurt. He had been one of those smooth slight-of-hand performing dentists that could slip the forceps up his sleeve, and on the pretence of looking into the mouth, could then extract the tooth before the child knew it. My opinion is that hell ought to be "het" seven times hotter than it is wont to be "het," for such a dentist.

The first thing I did with Fred was to win his confidence, and we had a definite understanding that there would never be any teeth extracted until he had given his consent, and I pledged him my word and honor that I would not deceive him.

I did this in such a way that left no doubt in his mind but that the "square deal" would be our motto.

Then I explained to him in language suitable to his age that unless his teeth were cared for that he would have aching teeth, sleepless nights, distorted nervous system, bad digestion, weak stomach, alveolar abscess, foul and fetid breath, and thus, with his whole system out of order, he would be more susceptible to diseases, such as diphtheria, scarlet fever, measles, etc., and that if teeth were not extracted at the proper time they would cause an irregularity that would deform his facial appearance, and finally I appealed to his sense of bravery, telling him that while it would hurt a little, I knew he could stand it as well as the boy I worked for yesterday, and that boy never whimpered when I extracted his teeth. I praised Fred for his grit and nerve, which I knew he had (if this patient had been a girl, I would have told her that I knew she could stand it better than boys), and I also told him that I knew he had more of these qualities than some older people. Then I gave him time to decide; in a moment he said: "Take them out;" which I did, and then received this compliment, "Why! that never hurt a bit," and it was a compliment because I knew it did hurt.

This father had lost sight of the fact that will-training is an important element in child-training, but that will-breaking has no part or place in the training of a child. A broken will is worth as much in its sphere as a broken bow; just that and no more. A child with a broken will is not so well furnished for the struggle of life as a child with one arm, or one leg, or one eye. Every child ought to be trained to conform his will to the demands of duty; but that is bending the will, not breaking it. Breaking a child's will is never in order. For a parent or a dentist to compel a child to have teeth extracted against his will is crushing out for the time being, and so far to destroy the child's privilege of free choice; it is to force him to an action against his choice, instead of inducing him to choose in the right direction.

A child's will is his truest individuality; the expression of his will in a free choice is the highest expression of his personality. Why should a parent or a dentist, or any one else, trifle with this sacred personality in every child, which God himself holds sacred in every human creature?

Neither would I have it understood that I believe in coax-

ing and rewarding a child to be quiet in a dental chair or elsewhere; I would recommend encouraging a child to an intelligent control of himself. That should be the aim of every one interested in child life.

### WHAT THE SUCCESSFUL DENTIST MUST BE.

The dentist who wishes the largest measure of success with children must be,

First, a lover of children.

Second, a student of children.

Third, a sympathizer with children.

Fourth, one who at a glance may read human nature and recognize the individuality of each child, and immediately gain their confidence.

Fifth, he must be active in body and mind. A lazy dentist will never succeed with children (and with nobody else).

### THE CHILD'S FRIENDSHIP AND CONFIDENCE.

Children, and especially boys, are quick to respond to a genuine spirit of friendliness. Gush and mere talk will never awaken this response. The friendship which counts for something is a sacred thing and should never be trifled with. Having won a child's friendship and confidence, and having proven to him that you have a human interest in his case, you may proceed with your work with the comfortable assurance that you have control of the situation. With a child that really believes in you, and loves you, you may do what you like.

The other day, John D. Rockefeller, in commenting on his success, gave to the world the following statement. He said: "It takes infinite patience and courage to compel men to have confidence in you. I believe I have both of these qualities, and I also believe that they are the secrets of my success.

"I believe that the most essential element of success in the professional and business world is confidence. Whether the managing party be a lawyer, doctor, preacher, or a business man, those with whom he deals must have confidence in him. They must believe, first, that he is capable of doing just what he assumes to do, and second, that he has their interest at heart."

A dentist must not only have confidence in himself, but must win the confidence of the child, and to do this he must

have that sympathetic touch that comes from the heart that has a warm side for child life. If we have forgotten what we thought, and how we felt when we were children, we might as well quit before we begin their management. In fact, I do not see how an old bachelor or a childless dentist can have that sympathetic feeling for children that has come to the man who has studied child nature in the home, and who has spent many anxious hours at the bedside of his own sick child.

For a dentist to win the confidence of a little patient may require several visits before doing a thing for them; in fact, in a great many cases it is a good plan to have them come with a parent, and watch while you are operating upon it's mother. In this way they get acquainted with the dentist, become familiar with the surroundings, and, above all, see that "mamma" is not hurt.

No dentist has a right to deceive a child, or allow any one else to do so in his office. Some one has said "that a child is entitled to the truth, or nothing, from his parents, teachers, and all others to whom his interests are intrusted."

"Deliberate deception practiced on a child appears to me as abhorrent as a crime. It is something like assassination of his moral life. It seems strange that any one should fail to see that any trifling advantage so obtained is transient and most dearly bought. Some people imagine that deceit is a time-saving and profitable exercise." **When lying has failed as it always will, the liar will find that his influence is gone.**

What can you do with a child without his confidence? How long will his confidence last after his discovery of the deception? When will the people come to learn that the late John Hay's policy of straight out-and-out truth is the safest diplomacy in all the world? This doctrine applies to individuals as well as nations.

### A WORD OF WARNING.

Now, let me sound a word of warning here: in securing the complete control of a child, you will have some little patients come to you that have never been controlled; but if you are really a student of human nature, and know when to be yielding and kind, and when to be firm, as we have already suggested, you will have the pleasant satisfaction of having taught a child one of the greatest lessons in human life, the lesson of

self-mastery. But listen! in securing this control, the dentist should, under the most trying circumstances, have himself under complete control, always manifesting patience and kindness, never exhibiting the least display of temper; anger has no place in the control of children.

### DO NOT OVERTAX THE CHILD.

And, again, let us remember that having won his confidence, so that we are able to do sometimes the most difficult and painful work, we should always keep in mind the fact that our little patient should not be overtaxed, so that a dread to return will be created in his mind; neither should the nervous system be so taxed as to work injury to the child. Be sure to use a large amount of good, old-fashioned common horse sense in this work.

### FIRST IMPRESSIONS.

Don't fail to remember the importance of the child's first impression of you. The first operation should be short and painless, and when you get the little patient in the chair, have it definitely understood at the very outset that if you hurt him he is to let you know and you will stop, and be sure to keep this agreement, and if you think it may cause him some pain, tell him so that he may be prepared. Do not take him by surprise, but be sure to have him understand that there is a difference between pain and noise; and then when you begin have something doing all the time. Don't let the interest lag; keep his mind occupied. Improve every opportunity to impress upon him the importance of his teeth, and make him interested in his own case. Explain to him that these little holes in the teeth are caused by germs, and that you can clean them out, fill these cavities, and if he will keep them clean, his teeth, health, speech and appearance will be preserved. I would have you go into detail with him; answer all his questions, for a child's mind at this age is a great big question mark, and it is not only his privilege, but it is our business to answer satisfactorily these little people, for we must remember that they have some sense, and should be treated as little men and women. And, above all, you yourself should take a personal interest in each case; show the same honesty, sincerity and anxiety in each patient that you would if the child were yours.

The dentist who possesses that tact and policy, together with patience and endurance necessary to successfully operate for children, will be rewarded with a large practice. The writer knows from personal experience that a satisfied child is a multiplication table to a dentist's practice.

The doing of successful work for them may be made the most interesting part of a dentist's work, and by it we may acquire the confidence of the parents.

## MISSIONARY WORK FOR DENTISTRY.

We must improve every opportunity to do missionary work for dentistry by instructing parents to bring their children at regular intervals for examination. A persistent effort should be made to overcome the general ignorance of parents on this subject, and I would like to say that I have found mothers especially anxious to learn more about the care of their children's teeth. How often have we heard them say, "I never want my children to suffer with their teeth as I have had to suffer," and many times are we told by the parents that the importance of saving these deciduous teeth had never before been brought to their attention. Now it seems to me that the business of educating the public on this subject must be largely one of a hand-to-hand and a heart-to-heart talk with the parents themselves. They must be instructed as to the injurious results following the wake of improper care of the teeth in childhood.

In the first place, explain to them the suffering the little patient must endure, and the injury to the health from abscessed teeth. Just last week I took nearly one-half ounce of pus from an abscessed deciduous molar, and I then and there preached a sermon to that mother that she will not forget soon. This child had for weeks been under a physician's care, and practically all the trouble, as I explained to the mother, was due to the absorption of this pus into the system. Now the best part about this case (and it was no exception), was that the mother thanked me for the information and the interest taken in her child's welfare.

Dr. C. N. Johnson says: "That we should impress upon the parents the question of habit; children readily acquire habits which may conduce to either their permanent benefit or injury. If a deciduous tooth decays and is allowed to go

without attention, it sooner or later becomes sensitive to the impact of food mastication, and the little one, without being able to explain the real source of discomfort, avoids chewing on the side of the mouth affected. This leads to improper mastication, and where there are several sensitive teeth in the mouth, it may lead to an almost entire cessation of mastication, so that a process of bolting is inaugurated which may, and often does, cling to the child through life."

Parents should be made to feel the danger accompanying the too early extracting of deciduous teeth. I have had parents tell me that their dentist had instructed them that when these teeth caused trouble, to use oil of cloves, or some household remedies, anything to relieve the pain; that it was not necessary to do permanent work on these teeth, as they would soon be replaced with the permanent ones.

I say, shame on the dentist that will not take a little more time and patience to study this phase of our profession, and do work that will not only be permanent and remunerative, reflecting credit upon himself, but add to dentistry a higher place among professions.

Is it any wonder, then, after such advice, that many mothers think these teeth only "come in and come out," and when they pain and ache, the mother relieves the pain by putting into the cavity of the tooth burnt alum, creasote, carbolic acid, soda, or anything handy, without once considering the injurious effects of such remedies.

Do we not know that thousands of dollars are being spent every year in Indiana for toothache remedies and doctor bills that should be credited to the dentists?

## TREATMENT.

In the treatment of the deciduous teeth the filling materials are of necessity limited to those of easy insertion, and in the writer's experience each case requires a thoughtful consideration, for no one material is the best in all different classes of cavities, and then in rare instances you had better insert a temporary filling than lose the good-will of a patient. When cavities occur on the proximal surface of the incisors, they usually are very sensitive and shallow, and thus the operator is prevented from securing a good retention, and these cavities should be filled with oxyphosphate of zinc, which will ordinar

ily remain in place until the eruption of the permanent teeth, but in the cavities in the cuspids, especially on the distal surface, fill with amalgam, as they are not so early lost.

In those cases that present themselves with only superficial cavities some of our best dentists are in the habit of cleansing the surface and applying nitrate of silver, and where the child is young and quite nervous, and it would be necessary to resort to extensive cutting for the insertion of a filling, this method may be used, and the pulverized crystals carried to place on a platinum wire, and held in position for some time, and thus the decay arrested. The trouble with this method with me has been that it must be repeated too often, and while it has some merit, I believe in most cases, with about the same amount of effort, we could insert a filling.

In the filling of deciduous molars, we should always keep in mind the fact that these teeth are to remain for four or five years after the incisors are gone, and it is the business of the dentist to be careful and do painstaking work, aiming to fill them as permanently as possible. In my practice the simple cavities on the occluding surface are filled with amalgam, but if proper preparation of the cavity cannot be secured, I use copper oxyphosphate; and right here I would like to say that Ames' oxyphosphate of copper cement has given me universal satisfaction in filling these teeth. It is not only a non-conductor, but a strong antiseptic, and in many cases I have done nothing but prepare the margin of the cavity and fill it: and I have noted many teeth that had been filled with it, and that while the cement in some instances had almost entirely disintegrated, there was no sign of recurrence of decay. It may be used in cases where the pulp is nearly exposed if you are careful in filling not to use too much pressure. Some object to its unpleasant taste, but you can very easily guard against this after you become proficient in its manipulation and insertion.

The most difficult cavities for me to fill properly are those occurring on the proximal surface of the molars, but if proper retention can be secured, which is usually the case, fill with amalgam, but if the tooth is too sensitive for this, fill with copper oxyphosphate cement. Some will advise the filling of these cavities where the pulp is closed with gutta-percha, but I have no time for this filling material, for, at its best, it is only a temporary one, and must be replaced from time to time, and my little patients and their parents get disgusted with this

method, and when I have a case that must be temporized with in this way we devitalized and remove the pulp. I then fill permanently with amalgam.

In devitalizing the pulps in these teeth, I do not hesitate to use arsenic. It has seemed to me that if the application is made carefully and care taken in amount used, and sealing it into the cavity, allowing it to remain from 36 to 48 hours, that you get rid of the annoyance and pain that a child is likely to have by repeated applications of carbolic acid and kindred drugs, and I have never noticed any ill effects from arsenic. Some advocate the pressure anesthesia method, but I find that it is almost impossible to protect the tissue of the mouth for the time required, from such drugs as cocain. Be very cautious about using such drugs, or, in fact, any drug carelessly in the mouth; some of them, while they may be harmless, will, upon coming in contact with the mucous membrane, create a prejudice in the child against having dental work done.

In pulpless molars, the same methods and care should be adopted and exercised as in treating permanent teeth, and the treatment of deciduous abscessed teeth may be made a very simple and successful operation by the use of such drugs as we use today in treating the same diseased condition of the permanent ones. The pulp chamber and root-canals of a deciduous molar should be filled permanently with a paste or cement, into which drugs have been incorporated, that will keep it aseptic. Some of our best dentists are having success in filling these pulp chambers and canals with iodoform cotton.

To me it matters not what we may fill a root with; the absorption goes on just the same. I know some will take issue with me on this statement, but it is based on clinical experience. Just a few days ago, I extracted teeth in which the roots were filled, and found nothing but the crown resting on the gum, and I positively know these root-canals had been filled three years previous. This absorption may not be as rapid, but I know it does take place: and then, if nature absorbs a surgeon's ligature, which is dead matter, or the root of a permanent tooth that has been replanted, tell me, please, why it will not absorb a deciduous root that has been treated and filled?

Don't be so tremendously anxious, however, to fill perfectly these root-canals, for you may do more harm than good, if you force filling material through the apex of the root.

I have no fixed rule for extracting the deciduous teeth, unless it be this: that when a tooth is a source of irritation, affecting the health of a child, and does not respond promptly to treatment, then I extract it.

A motto for thoroughness in little things, and "doing your work as well as you can, and be kind," must be kept in mind while treating deciduous teeth and their possessors.

I suppose by this time some of you are saying, yes, your ideas sound well in a paper, but such a standard as you advocate requires too much persistent work for me.

Brother, the trouble with about two-thirds of us has been that we have been searching for some easy way to treat these teeth, forgetting that many of our best dentists that have gone on before have brought back good reports of the promised land in dental science to those who possess the courage, tact, and infinite patience to study child-life; but I suppose that the future will still see some wandering around in the wilderness of laziness, making excuses of non-appreciation on the part of parents, and murmuring against the poor financial returns; but there are a few brave-hearted dentists that will look square in the face all giants that are to be met, and by preparation, at the cost of much time, study, patience, care, skill, and equipment, will, with banners of confidence and good cheer, march into the promised land and sit down in comfort and satisfaction in the evening of life, having won all other prizes, and received the financial crown.

## DISCUSSION.

**Dr. Clem Shilder, South Bend, Ind.:** The experience with Fred Blank is of too frequent occurrence; and do we always succeed, as the essayist has done, in making him our friend and accomplishing what we sought, he bidding us good-bye with a smile and the assurance that he will have no hesitancy hereafter in seeking us when in our need? If we have, the comfortable assurance of having a good deed well done is almost ample compensation; if not, there has been an error somewhere, and the chances are, it has not been Fred's.

The essayist's plea for truth and the avoidance of deception when he says, "No dentist has a right to deceive a child or allow any one else to do so in his office," is worthy of the highest commendation. Too many parents accompanying a child to the office have given it ample assurance that the dentist is only going to look at the tooth, and then, by sign and grimace, indicate that the tooth is

to be removed while the child is not looking, or that the excavation necessary for a filling will not hurt a bit. Stop right there, and by flat contradiction let the child know what to expect, and by so doing gain the confidence that even the parent does not possess. Operating under such circumstances is **never** advisable; better the child suffer for days (especially if it keep the parent up at night) than be deceived in such heartless manner. Send the parent to the reception room and keep her there; then, when the sitting is over, even if you have accomplished nothing more than to have gained the confidence of the child, do not fail to give the parent one of the essayist's sermons, for her management is often more difficult than that of the child.

Too much stress cannot be laid upon the too early extraction of the deciduous teeth. The calcification of the process makes the eruption of the successor more difficult, and, as it follows the line of least resistance, it is very liable to be deflected from its proper course. Undoubtedly no other cause is more fruitful of irregularity in the permanent teeth than the injudicious extraction of the temporary molars. Should the jaw not develop in proportion to the eruption of the teeth, as is often the case, the first permanent molar, appearing between the sixth and seventh year, if not held in place, will either tip or be forced bodily forward by the gradually developing second molar, so that by the time the bicuspids are erupted there is no place for the cuspid, and it is forced out of the arch and appears as the so-called "tusk"; or, as sometimes occurs, if the cuspid appears about the time or before the bicuspids, there is no place for one of the latter. These very important deciduous molars should, by all means, be given the most careful attention, and if impossible to preserve the crown, treat the roots that they may remain in place until forced out by their successors.

There is the parent who never gave a thought to her child's teeth until she had been kept up all night by her cries of pain and sleeplessness; brings the little patient to the office with the avowed intention of having a tooth extracted long before it is time to be shed. A few minutes' talk with her explaining in detail the probability of irregularity of the permanent teeth and the pain, annoyance and expense of their regulation is usually all that is necessary to convince her of the folly of such procedure. Then there is the parent who really appreciates what may be done with these teeth, if taken in time, and places the child in your care. The operator must be student enough of child nature to know just how much and what to do at this tender age that the child may not be prejudiced against all dentists. And now, just a moment's digression: Is it not possible that in our zeal to obtain preservatives for the teeth, a filling that won't come out, a crown that is perfectly adapted, we have overlooked one of the fundamental principles of our practice, namely, the care of the patient herself. Multiply the number of patients on your books by the number of practitioners in your town and see how it compares with the population of your community. The percentage

of people who never see a dental office is fairly accurately obtained. And why this great lack of dental attention? First and foremost because they have not been educated to the degree whereby they appreciate the benefits derived from having their masticatory organs in perfect condition. Second, and this applies chiefly to the better educated, because from childhood they have had the honor of the dentist's chair and dental operations, due in a great measure to such procedures as just alluded to, "the lightning slight-of-hand operator" and his deceptive methods. But how about this great laboring class who are not able to pay for dental operations? They are as able to pay dental bills as physicians' fees; the only difference is they have learned to employ the physician to relieve their aches and pains, and just as soon as they realize the comfort derived from dental attention, they find the means for having such attention given them. And of the few who have not the means for extended dental operations? Where is the ethical dentist who would not, by temporary procedures, if need be, tide over such patient until fortune looks upon her more favorably?

In the treatment of these very important deciduous teeth the writer, in the main, follows the line of procedure suggested by the essayist, with possibly a few exceptions. Nothing was said about the interproximal space, one of the very important things to be remembered in the care of these teeth. Many little ones come to us with the story that they are unable to eat upon certain teeth because they hurt, when, upon examination we find a wedge-shaped space between the teeth the gums pushed far beyond the gingival line, and food, in different degrees of decomposition, filling it, due either to approximal cavities, usually between the molars or cement fillings, the contact point of which has been washed away. If this condition is not remedied, the pain incident to mastication will cause the shifting of the food to the opposite side, thus producing the unnatural habit of doing all the masticating on one side; or if the same difficulty occur on that side, in order to be relieved of the pain of mastication, bolting the food occurs, which, if continued at this impressionable age, becomes a fixed habit and often continues through life. Now, these approximal cavities can be prepared with sufficient retention **without undue pain,** fill with amalgam, because it will preserve the space as long as it remains in place. This is about the only place I have any use for amalgam in the deciduous teeth. If sufficient retention cannot be obtained or the amalgam will come in too close contact to the pulp, fill with oxyphosphate of copper, leaving a broad, flat surface for the contact with the opposing tooth or filling, this surface forming a right angle with the occluding surface, so that no food can be wedged in between the teeth. If cement be manipulated in this manner, it is surprising how little of the proximal surface of these fillings is worn away, even after years of service.

Bridging with either cement or amalgam has not been a success with me, the individual movement of the teeth loosening the filling

in one or both the teeth. However, in cases where the crowns are very badly broken down, base-plate gutta-percha warmed and dipped in oil of eucalyptus will often preserve the teeth and space for a considerable length of time.

In occlusal cavities amalgam, as I am able to manipulate it, has not given man the satisfaction that the oxyphosphate of copper has given. Of course, where no lines or fissures extend into the cavity (for extension for prevention is never permissible in these delicate little teeth), amalgam may be used; but even then there is little excuse for it unless it is very difficult to keep the cavity dry before insertion, for if copper oxyphosphate has a therapeutic value, as the essayist admits in other cases, it certainly will have in these, producing less shock from thermal change, and if properly mixed and inserted in a dry cavity and kept free from moisture for a few minutes by placing the finger over the tooth and pressing upon it, the cement will set and become almost as hard as amalgam. There will be absolutely no line of decay around the filling, and while it may be partially dissolved by the fluids of the mouth and stress of mastication, it usually remains until the tooth has served its usefulness. Then if there are fissures and pits in the surface of the tooth, as is generally the case, even though they be not in connection with the cavity itself, flow cement in all of these depressions, and when partially set carve to shape so that it does not interfere with the occluding tooth, and you will be surprised how long it will remain and prevent decay in the pits and sulci.

**Dr. S. F. Gilmore, Indianapolis, Ind:** If you will not treat your juvenile patients properly after the instructions you have had from these two papers, or the original and the discussion, you are out of facilities or something else. So far as I am concerned in the matter of the treatment of deciduous teeth and their possessors, I feel as though we should talk about the treatment of the parents of the possessors of the deciduous teeth. I have found it more profitable in my practice to educate the parent, or at least I have had better access to the children at the proper time through the education of the parent (the important thing), and I have practiced it for a number of years. When I have a patient in my charge and have to operate on his or her own teeth, if they have children in their family, instead of talking about the weather, crops, etc., I frequently speak about children's teeth, and incidentally explain to them what you and I, and all know about, the importance of preserving and conservatively treating the temporary teeth. I notice that they are always very much interested; in fact, years afterward I have known them to refer to what I said upon the subject. I usually, in explaining to the laity in regard to the temporary teeth, the importance of their retention, and the importance of preserving them until the proper time, use a homely illustration. Opposite my operating window there is a wall which has an arch over the window. I frequently call their attention to the brick arch, and ask them if they notice the arrangement of

the bricks in the arch; ask them if they notice the bricks surrounding the arch, and also call their attention to the fact that the bricks surrounding the arch have a tendency to keep the bricks in the arch in alignment. I have often said to them that that illustrates, in a fair way, the temporary and permanent teeth in the child's mouth. I explain to them that about the sixth year the first permanent molar is formed and erupted, and that the anterior temporary teeth stand in relation to the permanent teeth something like this (indicating). I say these are the roots of the temporary teeth, this is the enamel organ of the second tooth, and it is coming in just behind these roots. These roots act as a retaining wall for this arch, which is in the process of formation, carrying the permanent teeth. They understand that.

I further say: Now, suppose I pull out this upper incisor, whose root is a retaining wall for the permanent incisor. What is the result? There is one brick in the arch that has nothing to keep it in alignment. Your children will grow up to be 13 or 14 years of age with that upper tooth out of alignment, which came about by having its retaining wall removed too early. They easily comprehend things like this. I use simple illustrations, and the consequence is that they understand and remember them, and seeds sown in this way are the ones that afterwards bear fruit.

Of course, in the matter of treating children's teeth, I know it takes a good deal of patience. The essayist has told us how they should be treated, and he has done it in an able manner, so I do not think it necessary for us to talk very much about that, except to say that it should be in a gentlemanly, kindly and methodical manner, from a therapeutical, prophylactic and an operative standpoint. We usually feel like avoiding the treatment of children's teeth, especially from a remunerative standpoint; also when we have appointments that need to be attended to, but I tell you, it is rather bad policy; because if we can get them to look on us with favor, it has its influence with the parents. In fact, it is probably better for the child to say something good of you, and get that child to advertise you, than to give copy to the printer and advertise yourself. But you all know that, and it is not necessary for me to review. We all understand that children differ in temperament: some very attractive and mannerly; others less so.

**Dr. A. R. Ross, Lafayette, Ind.:** According to the essayist, he has advanced the theory that the practitioners who are married are better able to take care of the children than the bachelors; and in the same paper in which he puts forth the theory that married men are better able to take care of children, he cites an incident in which the father treated the child very ugly, ordering him to put himself at the disposal of the dentist. Merely being married is not going to make Fred Blank's father a big-hearted man and a gentleman. He was not a gentleman with his own child, and I take it that a big-hearted man being a bachelor is not going to make him hard-hearted,

and one that can not approach children in the right spirit. If a man is gentlemanly and big-hearted by nature, being a bachelor is not going to make him a devil, and he will naturally treat a child as gentlemanly and tenderly as he would if he were married; whereas, being rough by nature, being a married man is not going to make him an easy dentist. If he has an idea that he knows how to raise his own children, and is mistaken in his way, he is going to treat other people's children just as he treats his own; so I do not believe that bachelors are lost when it comes to treating children.

**Dr. S. T. Kirk, Kokomo, Ind.:** If there is anything I take an interest in it is the children. I take pains with them, and this is the foundation of success in taking care of the children's teeth.

Now, I did not hear all of the paper, but I judge from what I did hear that it was an excellent paper, and the discussion of the paper and the second paper were excellent also. I do not propose to give you anything original. I cannot tell you anything on anybody else, either—it always comes on me. I have had the pleasure of being asked by the superintendent of schools in our city to talk before the schools on the care of children's teeth. A superintendent, now at Greencastle, asked me to talk to the children, and you ought to have seen me sweat. I went down there and read what I thought was a first-class paper. I did my very best. The paper was to be read in 15 minutes, but he says, "You may have 20 minutes;" so I read my paper and then undertook to explain a few of the things. I was living in South Kokomo, and the place he took me was away up to the north wards. After I read my paper up there, I said to the superintendent, who was with me, "Now, you have heard my paper twice, what do you think of it? Do you think it will do to read down in some of your pet wards?" He said, "I will tell you, if you will leave that paper off, as it is mainly what we teach, your talk will do good." So I left my paper at home after that.

This is a good paper, and I think we will have some good papers later, but what I want to impress upon you now, gentlemen, is that every one of us is under moral and professional obligation to take care of the children of our patients. That is the most profitable work we can do. But you say, "I spend five dollars' worth of time for the little patient, and do not charge you a cent." You must make charges, and inform them that children's teeth ought to be cared for, and should never be removed from the child's mouth until the child can take them out itself. There are very rare exceptions. Now, you say you do not get any money from this. May be you don't, but do you know what I am doing now? I am working for the children of the children that I commenced my practice with. The children of the children are my friends, and I am holding my practice more fully and solidly in this way than in any other way.

I also want to impress upon you young men the fact that you should take care of the children's teeth. They will pay you a hundred fold, if you expect to stay in one place, and do not move about

every year. Take care of the children's teeth. Every man here knows how to do that; take the time, and it will pay you, and pay you richly. Take care of the children's teeth.

**Dr. W. E. Kennedy, Indianapolis, Ind:** One thing we have to battle against, and that is the country practitioner of medicine. He is sometimes found here in the city, too. Just yesterday a man came in to me with a child seven years old, and he had taken that child to some physician here in town—I suppose out in the suburbs some place—and the physicians there, are, as a rule, good, but some of them will use the forceps, and they know very little about the use of them. He had extracted a deciduous molar, and he had beefed up that child so inhumanly that if she had not been a grandchild herself I could not have done anything with her; but after getting the confidence of the child, it did not take very much time, because she had more sense than the father.

I mention this as only one of the many instances I have seen; and I think one of the greatest curses to the child is the man who is not a dentist who attempts to render dental assistance. Should we as dentists trifle with this set of men, who have the idea that they have the right to use the forceps when it is possible to get some one else? We have done a great deal to help the child along. I was raised up about 50 or 60 miles from a railroad, and I have been in the clutches of big, stout physicians two or three times, to have teeth extracted, and I know something about it. I suppose I must have had an amount of nerve, because they never did make me scream, but there have been two millions of them in that position that did scream, and scream loud and long, and when I am talking to a physician I tell him he has no right whatever to use the forceps or to have them in his office.

**Dr. O. U. King, Huntington, Ind.:** I am sure I appreciate the kind way in which you have taken the paper, and the appreciation you have shown. I was afraid that in reading this paper some one might say that I was setting myself up as an authority, but I am here to get all out of this subject I can. This is a great subject to me, both financially and otherwise, and the views that were presented in regard to the relation of physicians and dentists I had incorporated in my paper once, and then cut it out. It is very hard to write a paper on this subject and get it short enough, so I cut out several things. .

There was another subject that was very interesting to me, and that was what a child should eat; but this is a great big subject, and it is hard to get a paper short enough. I approve of what Dr. Kirk has said, because he has had great success in dealing with children, which always comes to men that have a great, big heart for child life.

## A METHOD OF MAKING A PORCELAIN-FACED SHELL CROWN FOR BICUSPIDS.*

By E. J. Frowine, D. D. S., Bowling Green, Ohio.

1st. Remove the pulp.

2nd. Prepare tooth as for ordinary shell crown, removing all the enamel.

3rd. Inject local anesthetic on buccal side of root.

4th. Fit band as for shell crown, carrying it well under gums on buccal surface.

5th. Remove band and prepare tooth on buccal surface as for Richmond crown, replace band and mark on inside with sharp instrument, remove, trim out face where marked, trim band to proper length.

6th. Swage cusp (either from carved model or die plate). Solder cusp to band and fill in lingual cusp with 22k. solder.

7th. Replace crown on tooth, take wax bite. Take plaster impression with crown in place, make model and mount on articulator.

8th. Grind facing into place, trimming away buccal cusp to make perfect joint, back up facing, tip facing and wax into place.

9th. Cut crown from model, invest, clean out inside of crown and solder with 18k. solder.

## A METHOD OF REPLACING FACINGS ON BRIDGE-WORK IN THE MOUTH.*

By Dr. J. G. Wherry, Elyria, Ohio.

I am presenting nothing new in this method. It is the old riveting process, and all I hope is to be able to show how to do the riveting successfully. I drill out the pins and countersink the holes. Then fit pin facing. I then prepare a thick piece of soft rubber by folding up about a half sheet of vulcanite. Place facing with thin cement and place the rubber on labial surface.

*Clinic at Ohio State Dental Society, December, 1907.

Then take an ordinary plate punch, and protecting the facing with the soft rubber, proceed to chew the soft platinum pins into the countersink portion of the pin holes. I have used this method successfully in a number of cases.

## AFFINITY OF GOLD FOR TIN.*

**By H. L. Ambler, M. D., D. D. S., Cleveland, Ohio.**

Dr. Ambler, in his clinic, demonstrated that when a cavity in a tooth was filled about full of his cohesive tin foil, thoroughly condensed, that on the surface left by a serrated plugger, he could burnish on freshly annealed gold foil either with a blued steel or an ivory burnisher, so that the gold could only be removed with a cutting instrument. In this manner gold facings can be made on tin fillings; of course the gold facings can also be built on with a serrated plugger.

## THE VALUE AND USES OF SULPHOCARBOLATE OF ZINC.*

**By W. H. Whitslar, M. D., D. D. S., Cleveland, Ohio.**

A demonstration of the value and uses of sulphocarbolate of zinc was given. Sulphocarbolate of zinc was stated to be antiseptic, astringent, stimulating, and refrigerant. As an antiseptic it inhibits the development of pus, and after the removal of deposits pus is stopped in from one to a half a dozen treatments in 90 per cent. of cases. Therefore it is useful in the treatment of all ulcerated conditions of the mucous membrane in whatever part of the body they are found. Because of the astringency of this preparation of zinc, it causes the peridental membrane to close around the tooth, keeping out the food and other foreign materials from the pyorrhea pocket so that the healing process may go on without disturbance. The stimulating qualities help the healing after removing the deposits. The refrigerant action sometimes gives pain, but this is obviated by warming the solution when used. Sulphocarbolate of zinc is found in the drug stores in crystals and the

*Report of Clinic at Ohio State Dental Society, December, 1907.

druggist places 730 grains in one pint of cinnamon water to make a 10 per cent. solution, which seems to be the most useful. A solution made with liquor antisepticus is more efficient than is that with cinnamon water. Color the solution with tincture of cudbear. To use the solution inject with a "Sub Q" syringe and be careful to place the needle at the bottom of the pocket first, and as the piston is pushed to fill the pocket, gently draw the needle out and flood the tissues about the tooth with the solution, then massage the gums. The enamel is not affected by this material. Sulphocarbolate of zinc is useful in all forms of gingivitis, abscesses with a sinus, inflammations of the antrum, and it is a useful spray in prophylactic treatment.

A small bottle of the solution is given to each patient to massage their gums several times a day after meals. Prescribe liquor antisepticus as a mouth-wash. This is an officinal preparation. Sulphocarbolate of zinc is made from sulphuric acid, phenol, and oxid of zinc. I have used this preparation two years with much benefit and success.

## THE TONGUE.*

By J. S. Cassidy, M. D., D. D. S., Covington, Ky.

Although the subject of our sketch, especially when attached to our patients, gives us as much physical trouble and vexation as any other one thing with which we have to contend, and although, also, it involuntarily acts as our friend in many ways, we have been indifferent to, and, indeed, almost unconscious of, the fact of its existence.

Time was, not so long ago, when the family doctor, after getting a whiff of the odor peculiar to the given disease, thereby arriving immediately at a true decision in regard to the case in hand, confirmed beyond question his instinctive diagnosis by feeling the pulse and looking at the tongue; but nowadays, as a rule, he ignores these diagnostic aids, except the smell, and instead, he employs a self-recording thermometer, the stethaphone, the sphygnograph and other instruments of precision. Time was, also, when we, too, were more in touch with the tongue and its surroundings than we have been since

*Read before the Kentucky State Dental Association, Louisville, Ky., May, 1907.

the inevitably universal use of the rubber dam. The mouth in its entirety was as an open book to us, throughout the time of every operation. As things are now, lacking certain interests which formerly obtained, there may be novelty at least, if not much information, in the following description taken from an old work on anatomy:

"The mouth is separated from the nose by the hard and soft palate and communicates behind with the fauces. It is bounded in the front by the lips, while its floor is formed by the mylo-hyoid muscles, and its sides by the cheeks. The space between the lips and the teeth is called the vestibule. The mouth is lined by a mucous membrane which has a variable degree of thickness and is thrown into folds which are called frena. There is one beneath the tongue, one in front of the epiglottis cartilage at the roof of the tongue, and one at the middle of the inner surface of each of the lips. This membrane is covered with numerous glands, some of which are mucus and some salivary.

"Internally the lips are composed of muscular fibers which extend from the middle of the internal surface of each lip to the gum, of fat, and externally of skin. The upper lip is thicker and longer than the lower and has a vertical depression on the middle of its front surface called the philtrum.

"The gums are formed of the lining membrane of the mouth, much thickened. They have great hardness and vascularity, and but little sensibility, in health. They include the neck of the tooth and adhere firmly to the periosteum. The gums and lips are covered by numerous papillae, which consist of capillaries and nerves. The cheeks are composed of muscle, fat, cellular tissues, glands and blood vessels, included between skin and mucous membrane. The tongue is an oblong, flattened muscular body, which varies in size and shape. It is the organ of the taste and also of importance in speech and mastication. Its posterior extremity, or root, is attached to the hyoid bone by yellow, fibrous tissue. Its anterior extremity is called its point or tip; the intervening portion, its body.

"The mucous covering of the tongue is very thick upon its upper surface, and very thin upon its under surface. Sometimes the term peri-glottis is applied to the epithelium of the upper surface. Upon its upper surface are a number of pro-

jections or papillae of various sizes and shapes. The largest are eight or nine in number, called papillae maximae, and are situated at the posterior portion of the tongue, in two convergent lines. They are surrounded by fossae, the largest of which is in the middle and called the foramen caecum. The larger papillae will be found to be covered by smaller ones, which are called secondary papillae. The smallest papillae are fine and pointed and are found near the middle of the tongue and are termed filliform. The intermediate papillae are most abundant; some of them are conical, others fungiform. Each papilla is formed of capillary vessels and a nerve. Different functions are attributed to the different papillae.

"The hyoglossus muscle arises from the cornu of the hyoid bone, and is inserted into the sides of the tongue, some of the fibers reaching to its tip.

"The genio-hyoglossus muscle; origin by a tubercle behind the symphysi of the lower jaw, and is inserted through the entire length of the tongue into the hyoid bone.

"The lingualis muscle arises from the yellow tissue at the root, and is inserted in the tip between the two first-mentioned muscles.

### SUPERFICIALIS LINGUAE.

"This is an indistinct layer of muscular fiber on the dorsum of the tongue, under the mucous membrane. It seems to curl the organ upwards.

"Transversales linguae are scattered fibers which pass from the middle line to the edges. They extend from the tip to the root and their contractions lengthen the tongue.

"Verticales linguae. These are fibers which extend from the upper surface to the lower.

"The tongue is supplied by the lingual artery. The nerves are the hypoglossal which is distributed to its muscles; the lingual or gustatory branch of the fifth, which supplies the papillae and mucous membrane of the fore part and sides; and the lingual branch of the glosso-pharyngeal division of the eighth, which sends filaments to the papillae maximae, and to the mucous membrane near the base of the tongue."

Does not this simple, unexciting description of a part of the field in which we work appeal to you as something we have seen at least in our dreams, or have heard of sometime

or another? A sort of atavistic realization of the memorizing exercises of our grandfathers' student days?

I think it is true that we seldom scrutinize the tongue unless in such cases as soreness, induced by its onslaught on offending sharp edges of worn or broken-down teeth. Then we remedy the evil, only as a matter of course, taking no thought or pleasure in the contemplation of its symmetrical beauty, facility of movement and its indomitable energy in performing the various official duties exacted of it, as detective, guardian, governor, executive; in fact, general manager of the province to which it has been assigned. Indeed, the tongue has really much more to do than merely to decide on the taste of things, or to assist in modulating the gift of speech, and in the act of deglutition. To us it is an unmitigated nuisance, butting in when and where we do not want it, and so interfering with our plans, and sorely testing our patience; but in these cases it is doing only what it understands to be its duty. Besides, we should remember that it is our best friend, in that it detects incipient imperfections in our department, and thus compels its owner to come to us, and then it points out the places we should search. Let us also remember that without its governing presence in the mouth it would be useless for us to construct artificial teeth, for the practiced tongue does much more than it gets credit for, in keeping these substitutes in proper subjection.

But aside from these protea intrinsic values of the tongue, there are many signs radiating from its surface indicative of trouble elsewhere, or of secret habits that obtain in the individual.

Were it not that clinical observation of the tongue has been sadly neglected in modern medicine, perhaps the alienists of today might find evidence pro and con in noting certain peculiarities of its anatomy, such as dilatation of the ranine artery and vein, which suggested in ancient times cerebral congestion and lack of mental equilibrium, by which they might base their opinions on something definite and tangible.

It is interesting to observe the changing colors from pink to purple, in cocainism; and the pale, sickly tip in morphinism, and the wrinkles of the dorsal mucous membrane of those who indulge too freely and continuously in the liquids that possess ethyl hydroxid $C_2H_5OH$ as their active principle.

Again, were it not that time forbids, we could reflect, perhaps with profit, on the various adjectives applied to this most remarkable organ; as, for instance, the golden tongue of St. Ambrose; the silver tongue of some of our Kentucky orators; the wagging tongue of gossips; the whispering tongue of scandal; the mocking tongue; the vicious, the libelous, the lying, the dull, the sharp, the obscene, the vulgar, the profane, the fluent, the loquacious, the silent, the wise and the kindly, to say nothing of the dozens of synonyms derived from it. Sufficient to say that the tongue itself is not the responsible origin of these adjectives. It is, as it were, the helpless victim, compelled to obey the dominant mind of a depraved nature; or, happily, a willing instrument by which words of hope, confidence, love and charity, brighten and bless the world.

## DISCUSSION.

**Dr. H. B. Holmes, Louisville, Ky.:** To the enthusiastic, wide-awake dentist, one who habitually attends dental societies, both state and local, subjects which in any way touch his profession rarely grow tiresome or monotonous. Yet we do appreciate having some one occasionally diverge from the much-worn paths of dental hygiene, easy methods of constructing gold crowns, porcelain and gold inlays, and give us a treat of something entirely out of the regular routine of the usual subjects of which we read from week to week and month to month in our dental literature. While the essay to which we have just listened was good from many viewpoints, yet its chief charm lies in the fact that the essayist has selected a subject which is an unusual one for our consideration. While it is true that I am one of the younger dentists present, I have never before listened to or read a paper on this subject. I have never seen it discussed in any of our dental journals. We certainly cannot accuse the essayist of plagiarism. It is a subject to which the majority of dentists have given but little thought, except, perhaps, when our patient wielded it too vociferously in describing an ill-fitting denture which we had constructed, yet to the conscientious, painstaking dentist the tongues of our patients are more often our friend than our foe. The essayist speaks of the tongue as a diagnostic aid. This is true in some cases, and especially might we speak of it as an indicator of the alimentary canal, an index to the state of digestion. When the physician asks the patient to protrude the tongue, he does so more to get an idea of the state of the alimentary tract than he does to determine any special disease. It is an indisputable fact that we as dental surgeons should scrutinize the tongue more closely, for we are more or less concerned with all the parts of the oral cavity. It is constantly liable to certain pathological conditions;

such as hemorrhage, hypertrophy, inflammation, abscess, cancer, etc., and for any of these conditions we should constantly be on the alert. A considerable portion of the essay was taken up with the anatomical description of the tongue; this being but a narration of facts admits of no discussion. It takes us back to student days, when we tried to make all this information ours, but failed. It is not out of place for us to listen to a review of this occasionally in order that we may be better and more readily versed in this very important organ of our anatomy. The importance and appreciation of the tongue is something to which we give only a passing thought.

The five senses have been defined as seeing, hearing, tasting, feeling and smelling; and none of these are of more importance than the sense of taste. The quickness with which it detects the pure from the impure, the acids from the alkaline, the sweets from the sours, is a function of the tongue to which we are indebted for much of our general health.

The tongue is also quick to detect imperfections in teeth, such as the presence of caries, roughness, accumulation of calcific deposits, and in this way, as our essayist has stated, often sends us patients who might otherwise be long deferred in coming.

Also the wearing of an artificial denture would be practically impossible did not the tongue, unconsciously, as it were, to itself and its owner, control them and keep them in place.

Did we but know the secrets which the tongue tells we should be much wiser, and there is little excuse for us not knowing at least some of the many truths which it tells. For instance, in auto-infection, or, as we commonly term it, biliousness, the tongue from tip to posterior extremity is covered with a white, furry mass, which is indicative of this disease.

In the different eruptive fevers, the tongue acts as an aid in diagnosis. In scarlet fever we have what is sometimes known as the strawberry tongue, the tongue being red and pitted in a manner not unlike the color and appearance of a strawberry. In typhoid fever, you find the tongue flushed in the center, but pale or white in appearance along the margins, and in all stomachic troubles the tongue is always indicative of existing conditions. I am willing to confess I know but little of the tongue as an indicator of disease, but I want here to make a plea in the defense of the dentist rather than to condemn his ignorance. 'Tis true, the tongues of our patients are constantly before us, but they can hardly be as an open book to us, for we seldom see them save when the patient is in a state of health; and as the tongue is then in a normal condition, there is nothing to evoke unusual attention from us. It is the abnormalities which most quickly enchains our interests. Then, too, when working on the dental organs proper our whole mind, our every thought, is centered on the offending tooth; so, while the tongue in all of its beauty and symmetry, which the essayist so beautifully describes, is laid out before us, we virtually see it not. We cannot think of two things at the same time and our whole mind is on one thing, and unless it be

in cases of prosthetic dentistry, that thing frequently has no connection with the tongue. Yet there are certain general expressions of the tongue relating to systemic diseases with which there should be no excuse for our not being familiar.

By general expressions, I refer to the size, color, coating, taste and forms of the tongue. For instance, the long tongue indicates alimentary troubles; the white tongue loss of blood corpuscles; the black tongue is indicative of blood-poisoning; dryness of the tongue indicates prostration, while moisture is considered a favorable condition. Loss of motion indicates cerebral complications, while a shrinkage of the tongue is usually indicative of weakness. Taste is often regulated or modified by the amount of coating on the tongue.

The essayist praises the tongue for its many good qualities and then, in the conclusion of his paper, is inclined to heap abuse on it for its habit of "butting in" when it has no business. For this characteristic feature of this member we must speak a word of defense. It simply wags as the "power of thought directs," and if we suffer from "brainstorm," let us not put the blame all upon the tongue, lest it rebel and "talk back".

# Exchange of Practical Ideas

[This department being an exchange of practical ideas, it depends upon our readers furnishing material to keep it going. Just a few practical ideas from each subscriber will make it of mutual benefit and practical worth. Are you willing to do your share? Help the good cause along by sending the editor a few practical suggestions. Send something today. Address Dr. L. P. Bethel, 1255 Neil Ave., Columbus, Ohio].

## A METHOD OF MAKING A WATTS' METAL BASE FOR UPPER AND LOWER PLATE WITH VULCANITE ATTACHMENTS.

**By Edwin S. Hulley, Marion, Indiana.**

This following method of making a Watts' metal base for upper or lower plate, with vulcanite attachments, will save much time in construction and give a pleasant surprise in the finished piece.

Pour impression with a mixture of two parts powdered silex and one part plaster of paris. Separate and construct base with casting wax, spurs, rim and lugs carved in the wax. Roll two strips of wax and attach to heels with hot spatula in relation to gate and vent outlined by flask.

Place cast in cold water until thoroughly saturated and mix plaster and silex in quantity sufficient to pour both halves of flask, placing case in its proper position in flask. Allow 20 minutes for investment to harden, then place over burner and heat till all moisture and smoke are driven off.

The carbon surface over which the metal is run gives a finished base which requires no work except the sawing off of gate and vent.

N. B.—I claim no originality in this, simply my new way of casting Watts' dentures.

## INVESTMENT MATERIAL FOR GOLD WORK—A SIMPLE AND SAFE OBTUNDENT FOR HYPERSENSITIVE DENTIN.

**By C. R. Butler, M. D., D. D. S., Cleveland, Ohio.**

Seeing recently, in the Cosmos and Summary, investing material for gold work mentioned, I would suggest one that is inexpensive, and decidedly practical.

Take bank sand, such as is used for fine brass casting (it being much finer than lake sand), and sift it.

The proportions, two of sand to one of plaster of paris, using a strip of fine screen for a retaining band; only a small amount is needed to hold the work securely while heating up.

A simple and safe obtundent for hypersensitive dentin can be made as follows: Mix cocain crystals on a glass slab, with a drop or two of oil of cloves, or cassia, and make a creamy paste.

Having the dam applied, dry out the cavity with a bit of bibulous paper and alcohol. Take a pellet of paper, dip into the paste and pack into the cavity with some pressure, allowing it to remain for a short time, when much of the cutting may be done with spoon-pointed excavators. Repeat the application if necessary. It helps amazingly and will not ruin your fine cutting instruments, as will trichloracetic acid.

## THE USE OF AMALGAM IN RESTORING BADLY BROKEN-DOWN TEETH.

**By Dr. Chas. A. Priest, Marion, Indiana.**

In restoring badly broken-down teeth never use a banded crown, unless to preserve split roots. More preferable is a tooth restored entirely with amalgam, which can easily be done by cementing posts in the nerve canals and use them as anchorage, building the amalgam around them.

Whole teeth may be restored in this way, but a matrix should always be used in such restorations.

Never leave thin enamel exposed to the force of mastication. Always break it down and restore with the filling material. Always cut away enough tooth structure to allow for a good body to your filling.

## VASELINE A USEFUL ADJUNCT.

By W. G. Hamm, D. D. S., Chillicothe, Ohio.

Use vaseline on the stone when reducing a tooth for crowning or other purposes, where grinding is resorted to. The results will be surprising; it is far in advance of cold water.

It eliminates pain, caused by the heat; it assists the stone to abrade more rapidly, it holds the debris globular, which prevents debris from splattering over your clothing and patients.

It is splendid for putting pumice on tape to cleanse and polish teeth, especially the spaces.

## REPLY TO QUERY.*

By Cecil Corwin, D. D. S., Haywards, California.

In answer to a query by Dr. H. E. Craddock, of Montpelier, O., I will say that I have experienced the unfortunate condition of which he writes, and have been without the sensibility of the right half of my lower lip for about 13 years.

On account of this personal experience, I think I am in a position to give some ideas upon the subject that may be of value to the dental profession, and incidentally to their clientele.

My injury was caused by the removal of a third molar that grew with the occlusal surface in contact with the distal surface of the second molar.

It was very firm and resisted the forceps. It was finally dislodged by placing an elevator under the crown and prying it upward. In doing this the end of the anterior root of the third molar was forced downward and fractured the thin layer of bone above the inferior maxillary canal which carries the nerve and blood supply.

As soon as this operation occurred I felt that half of my lower lip was absolutely without the tactile sense, but was sensitive to heat, cold and, to my sorrow, pain. The gums from the median line to the right second bicuspid are affected

*Dr. Craddock's "Query" appeared in January, 1908, Summary.—ED.

in like manner. I do not know whether the teeth are affected, because there has been no decay in them. They did not lose vitality or give any evidence of being affected. The hole in the bone healed in the usual manner, and during the treatment of the wound I could feel that the nerve trunk was exposed. Any exploring in the bottom of the cavity produces a sensation in the lip and bicuspid region like that produced by touching one's "funny bone".

Conditions have remained this way for about 13 years, and the only inconvenience I experience is that, when any small bits of food get on that side of my lip, I am not aware of its presence unless it is cold or hot. It is embarrassing sometimes to have this occur at the table.

In regard to the treatment of this condition I have come to the conclusion, from numerous consultations with surgeons, that the only remedy is to perform an operation upon the seat of trouble and remove the piece of bone that causes the pressure upon the nerve trunk.

The pressure is caused by the fractured pieces of bone becoming calcified in the position which they assumed at the time of the injury.

I have not had any desire to undergo an operation, as "I am used to it now." I do not think electricity, massage, or any other treatment, would give beneficial results. I would be glad to try any reasonable suggestions that may come to your notice and report results.

# SUGGESTIONS

## SOME USEFUL REMEDIES.

In the communication under the above title, H. W. C. Bodecker discusses, among other agents, cocain phenate and a preparation which he designates as "zinc iodid". Cocain phenate is prepared by adding to a small quantity of carbolic acid an equal volume of crystals of cocain hydrochlorid. As soon as the latter are dissolved more cocaine is added, until the carbolic acid is saturated. Some undissolved cocain crystals should remain at the bottom of the container, while the supernatant liquid should be perfectly clear, and of a thick syrupy consistence.

Cocain phenate may be used to advantage as an application under the gum before removing deep-seated calculi from the roots of teeth affected by pyorrhea; as an application to relieve the pain caused by the entrance into the mucous tissues of a hypodermic needle; for the relief of pulpitis; to relieve the sensitivity of pulp remnants after partial extirpation under arsenic; in the treatment of post-extraction pain, ulcers in the mouth, etc., and to diminish the pain caused by ligatures, clamps, etc. Generally speaking, cocain phenate judiciously applied will be found to be a useful agent, being obtundent as well as antiseptic.

Another remedy to which Dr. Bodecker calls attention is an iodin preparation, which, according to his opinion, acts better than tincture of iodin, iodin and carbolic acid, or iodin and aconite. For the sake of convenience it has been termed "zinc iodid," although properly speaking it is not exactly that. This so-called zinc iodid was, as nearly as can be ascertained, first recommended by Dr. A. L. Northrop, of New York, in 1877. It is prepared by mixing a saturated solution of potassium iodid with an equal volume of a saturated solution of zinc

sulphate, and iodin crystals to complete saturation are added. The iodin crystals must be added immediately after mixing the two solutions, for otherwise but very little of the pure iodin will pass into solution. The author employs this preparation after the removal of calculi, even in the presence of healthy gum, that the latter may more perfectly adapt itself to the necks of the teeth; whenever the gum is inflamed, appears purplish, and bleeds easily; in the treatment of pyorrhea alveolaris and aphthous stomatitis. In the latter disturbance, if the zinc iodid be preceded by treatment with cocain phenate no pain will follow its application. It has also been found to give satisfactory results in the treatment of sensitive dentin at the necks of teeth, whether due to erosion or caused by the metal clasps of dentures.—Dental Cosmos.

## QUICK PLATE REPAIR.

**C. B. Mendenhall, Bucklin, Mo.**

Cut undercuts in the same way as when mending with rubber. Smooth the margins, place the tooth in position and pack amalgam in the undercuts and around the pins. Burnish and let set.—Western Dental Journal.

## METHOD OF MAKING A PORCELAIN CROWN.

**L. M. Homburger, New York City.**

We all know how impossible it is to accurately fit one of the ready-made porcelain crowns, at present on the market, to the root of a tooth, by means of grinding. True it is that we can build up these crowns to accurately fit the root by means of porcelain, thus making a close-fitting joint. But if we overcome this difficulty we meet another, due to the fact that the molds from which these crowns are made are limited in number. Therefore the selection of both shade and shape is not as easy as, for instance, in choosing plain porcelain teeth for vulcanite plates.

For some time past I have employed the following method, which surmounts all these difficulties:

The root is prepared in the usual manner, and then a piece

of inlay platinum burnished over the root end. A piece of round iridio-platinum wire, of suitable length, thickness and strength for the post of the crown, is rolled up in some platinum foil, in the same manner that a stick of candy is rolled up in paraffin paper. This is thrust through an opening previously made in the platinum, over the end of the root. These two pieces are now cemented together with sticky wax, so as to hold them in proper relation. A rubber tooth is now selected of the correct shade and mold, and ground and fitted to the patient's root. This fitting completed, the pins are bent around the post by means of a pair of pliers. The whole is then carefully removed from the mouth and the root of the post invested in equal parts of plaster of paris and very finely ground silex. The investment is carried up to the platinum floor and then trimmed so that it will stand with the incisal edge of the porcelain tooth pointing upward. The sticky wax is removed and the tooth packed with porcelain of the correct shade, put in the furnace and fused. This is repeated until it has been built up to the required height and contour.

The platinum foil is then peeled off the cervical end of the finished crown and the post is grasped in a pair of flat-nosed pliers and pulled forcibly out of the crown. The bit of platinum foil, which has been wrapped around the post, remaining in the crown, is removed with a small round bur rotated in the engine. The posthole and the cervical floor are now etched with hydrofluoric acid. The post is roughened by rolling it on a table under a file and it is then cemented into the crown and the root in one operation. The result is a perfectly-fitting crown.—Items of Interest.

## COMBINATION OF GUTTA-PERCHA AND CEMENT FOR CROWN-SETTING.

E. A. Royce, Chicago, Ill.

Personally, I have found the mounting of crowns with gutta-percha very difficult, and recently have been using a combination of gutta-percha and cement for many cases. The gutta-percha is placed upon, or in, the crown, as the case may be, and while soft the crown is pressed to place, and after removal of crown and gutta-percha the root is smeared with the

soft cement and the crown replaced, allowing the cement to cover the root, and cement the gutta-percha to it.—Dominion Dental Journal.

## MAKING A GOLD INLAY.

H. N. Orr, Chicago.

**Cavity Preparation.**—Flat, broad gingival seat, lingual wall slightly diverging to occlusal, buccal wall extended distally to center of buccal surface, angle rounded, flat occlusal seat, deepened distally for retention, occlusal outline extended distally to and including the distal groove, margins slightly beveled.

**Technique.**—Impression tray made from 28g. German silver plate bent to cover cavity, a hole being cut in occlusal directly over retention point into which an orangewood stick is placed extending through not quite the depth of the retention point. This acts as a handle for the tray and assures carrying the impression material to the bottom of the pit. Pink base-plate gutta-percha is used for impression material. The gutta-percha is warmed and placed in the tray, care being taken to smooth all wrinkles out of the material. The tray with the material is then inserted and carried to place evenly by pressure on the occlusal and proximal surfaces; it is then cooled and removed. If the impression is not perfect, all excess material is cut away and the impression again inserted and a stream of hot water is played on it until it is felt to give slightly under pressure, then cooled and removed. The impression is then invested with plaster in a rubber ring, the cavity side being exposed, and after carving plaster to allow the free removal of the die the impression is smoked by holding it over burning gum camphor. The plaster containing the impression is again inserted in rubber ring, and Mellotte's metal is poured into the gutta-percha impression, the metal being quite hot, and jarring it down slightly as poured. Upon cooling, the die is coated with a solution of whiting and alcohol and a counter die run, or the matrix is swedged with a buckshot.

Matrix of 36g. 24-k. gold is used, and after swedging, is carried to cavity and burnished and the matrix is removed at this time and retention pit is filled with moss fibre gold and

22-k. solder is sweated in to make it solid. The matrix is then returned to cavity, reburnished, and a bite is taken in modeling compound which is thoroughly cooled before removing. The cavity side of the matrix is then coated with vaseline to facilitate removal from model and a bite run up with plaster and mounted on an articulator. A small piece of modeling compound is warmed and placed in the matrix and a bite is taken, which is carved to occlusion and contour. The matrix with the contour is then removed, vaselined, and the contour side is invested in plaster, care being taken not to invest deep enough to allow plaster to run on to cavity side of matrix. When plaster has set, remove matrix and replace on model, and with a fine wheel bur cut out matrix enough to allow of filling with solder. Smoke plaster mold and run die and counter die of Mellotte's metal and swedge contour of 30g. or 34g. 24-k. gold. Trim contour so it will fit cavity and not lap margin of matrix, remove matrix and contour in relation, and catch one point with 22-k. solder; return to model and burnish contour to margin, remove and solder remainder to margin.

Carry inlay to mouth and try it for occlusion and contour. If it is high the soft metal may be pressed in with a ball burnisher and a perfect occlusion and contour obtained. The margins are also reburnished and the inlay is removed and filled with 20-k. solder through the hole previously cut in the matrix, the proximal surface is then finished and polished and the inlay is set with Ames' inlay cement, overlap of margins cut away with plug-finishing burs, finished with stones and polished with disks and strips.—Bur.

## GOLD INLAYS FOR INCISORS AND CUSPIDS—A NEW METHOD.

**J. Allen Johnson, Middletown, Del.**

In many of the cases of badly broken-down cuspids and incisors coming under our observation, the bite is such that the use of porcelain for the restoration of corners is contraindicated; not that we do not possess adequate skill, but the limitation of the tensile strength of porcelain is such that we feel that such a restoration will ultimately result in a failure.

This is especially true where the patient is of a vigorous temperament and a pipe-smoker.

It is the purpose of this article to deal with those cases wherein the process of decay has gone to the point where devitalization is indicated as a conservative operation, although the inlay method herein described may as readily be applied where the pulp is vital, retention being attained, as with the porcelain filling, without the screw-post.

We will take as our first illustration a superior central incisor having a very large mesio-incisal cavity, pulp removed and apical foramen scaled.

After reaming out root-canal to readily take a platinous gold post, gauge 14 to 16, prepare the cavity as you would for a porcelain filling, except that the mesio-incisal corner should be slightly beveled to afford extra protection to the enamel edge. You will now take an impression of the cavity with dental lac and obtain a die or cast of the cavity in the inlay metal for sale by the S. S. White Dental Manufacturing company. This die or cast in the swaging ring is placed in the inlay swager and 36-gauge pure gold is swaged over it. The inlay matrix thus obtained should be returned to the tooth cavity and burnished to an exact fit.

Having the matrix in place, the platinous gold post is pushed through to a position in the root-canal and hard (or sticky) wax flowed around post on floor of matrix to unite them in order to facilitate their withdrawal without change of position. After investing the canal portion of post and the under side of the matrix, flow 22-k. solder around post to replace the wax on the floor of the matrix. Replace matrix in tooth cavity and cut off excess of post.

With hard wax now restore the tooth to full contour (less the thickness of 36-gauge plate), giving the wax a glazed surface by means of hot air.

From 36-gauge 24-k. plate cut an oblong strip, sufficiently long to cover cervical margin of cavity, and extend one-eighth of an inch below the incisal edge, and wide enough to extend from the labial margin and cover the mesial surface of wax.

This strip is now placed between the wax filling and adjoining tooth, and with the fingers and double end burnisher is brought smoothly over the wax, cutting the lower edge, to facilitate the restoration of the contour. The assembled parts are

carefully removed from cavity and lightly invested, so that the heat directed from below will flow the 22-k. solder dropped through the opening on lingual surface.

After trimming the inlay with curved shears it should be cemented in cavity, where with stones and disks the operation is concluded. The total time consumed should not exceed one and a half hours, regardless of the size of the cavity.

The very secure anchorage of an inlay or filling having a post makes it an ideal abutment in the centrals and cuspids for the support of a lateral incisor.—Items of Interest.

## HYDROFLUORIC ACID BURNS.

If you are so unfortunate as to burn your fingers with hydrofluoric acid while etching an inlay, wrap the part in absorbent cotton and keep wet with phenol sodique.—Dental Cosmos.

## OPEN-FACED CROWNS OBJECTIONABLE.

**E. M. S. Fernandez, Chicago.**

The use of what we call an open-face or cut-out front crown I consider a very bad practice. I would object to the use of any uncemented shell crown for the purpose of holding a removable bridge, for it means destruction to the supporting natural tooth, unless the shell crown is to slide over a cemented crown or post.—Dental Review.

## CEMENT A STRONG POINT IN INLAYS.

**F. E. Roach, Chicago.**

Many members of the profession today believe that cement is a weak point in these inlays and partial crowns. I maintain that if the work is accurately fitted and accurately adapted it is the strongest point. It seals hermetically the joints of these inlays, and it is a strong point in their favor.—Dental Review.

# EDITORIAL

## THE SHOVELER AND THE STOKER.

Some years ago I knew a man who won quite a reputation as a furnace tender.

There was a certain church furnace that the janitor couldn't get hot enough for even the Christian members, and the church auditorium was a constant reminder of a cold storage room. It seemed as though the devil and his followers were on hand with myriads of icicles to ply up and down the spines of the congregation, and pneumonia germs were more numerous in the pews than were church members.

But one week the janitor was ill and a man out of work volunteered to try his hand at the coal-eating, non-heating monster of a furnace. The winter season was still in evidence and the mercury was trying to hide in the bulb of the thermometer, but the next Sabbath the old church was more cheerful and inviting. The room was thoroughly heated, with here and there a transom turned to permit an admixture of the clear, cold air from without.

Everybody noticed the change and marveled. How was it done? Here was the same furnace and the same fuel. The only change had been the furnace-tender, but why was not one furnace-tender as good as another? No one seemed able to explain what had wrought the change but the new janitor himself. How did he do it?

In mid-week he went to the church, removed the ashes and clinkers from the furnace, cleaned the soot out of the flues, started a fire, inspected the hot and cold air registers to test the circulation, then gave his full attention to testing the fuel.

He wanted to learn the peculiarities of the furnace and effect of the fuel.

He didn't shovel bushels of coal into the furnace at a time, as the other janitor had done, for he knew there could not be

complete combustion, and the flues would fill with soot and the furnace become clogged from over-feeding.

This man was something more than a shoveler—he was a stoker. He placed a little coal here, and a little coal there in the furnace, and watched the effect, adding just enough to obtain as nearly complete combustion as possible, and at no time smothered the fire from over-feeding. He studied the effect of the fuel on the heat-giving qualities of the furnace until he knew just how much coal to use to get the greatest amount of heat and best circulation, with least amount of clogging of the furnace.

He thus solved the problem of getting the best work out of the heater with the least amount of fuel and a saving of wear and destruction of the vital parts of the furnace. He was a successful stoker and not a mere shoveler.

Now, the human stomach may justly be compared to a furnace, and the foods we eat to the fuel which is burned. We eat in order to supply our bodies with nourishment, or, in other words, to make blood, as that is the life-giving fluid; hence the quality of our blood depends upon the kinds of foods we eat and their proper digestion.

The stomach should be quite as carefully guarded as the furnace, not only as to kinds of food used but the quantities as well. There is much greater danger of eating too much in most cases than too little, for the stomach, like the furnace, can be over-stoked, and when an excessive amount of food is taken, even if it be the proper kind, it clogs the system and bad results follow, which may easily become serious.

It is estimated that deaths from over-eating form a large per cent. of the total mortality. Some people use no discretion in eating. They stuff their stomachs and overtax digestion. Elimination is not in proportion to supply, and the body clogs. Poisonous products not eliminated are absorbed into the system and a train of ailments follows. And eventually, perchance, through the continued action of the poisons, some vital organ becomes diseased and the person dies. No matter what the disease was called, the primary cause was over-eating.

Heed this warning. The question of diet concerns you; you cannot afford to ignore it. If you have not already given it attention begin today. Take example from the furnace-tender. Rid your system of clinkers; unclog the avenues of waste; look after the circulation; study the effects of different

kinds of fuel on the system and use only enough to form free combustion. Experiment until you know when to eat, what to eat, how to eat, and how much to eat, to keep your system in the best condition.

No abstract rules of diet can be made to suit all conditions, as we are not all situated alike, and what might be healthful for one might be wholly improper for another, and moreover, various occupations require different foods.

The outdoor laborer needs a greater amount of food for supply and demand than those leading sedentary lives.

I could point to dentists who eat no breakfast, and to others who eat no noon-day lunch, and feel better from the abstention. And there are others who indulge in one heavy and two light meals per day. The majority of dentists who eat heavy meals at noon-time complain of a feeling of depression and bodily fatigue during the afternoon, something not conducive to the best work. And this is especially the case where three heavy meals are eaten daily.

There is too much over-stoking and clogging of the human furnace.

Too little free combustion and perfect elimination.

Watch your furnace. Do not rest content with being a mere shoveler; make yourself a successful stoker.

## INDIANA SEMI-CENTENNIAL JUBILEE MEETING.

The semi-centennial jubilee meeting of the Indiana State Dental Association, to be held in Indianapolis, Ind., June 4, 5, 6, 1908, promises to be one of the greatest dental meetings ever held, surpassing the famous Tri-State meetings held some years ago by Ohio, Michigan and Indiana. The state dental associations of Illinois, Kentucky, Michigan and Ohio have been invited as guests of the Indiana association. The essayists selected to represent the state associations are: Illinois, Dr. T. W. Brophy; Michigan, Dr. George Zederbaum; Kentucky, Dr. H. B. Holmes; Ohio, Dr. M. H. Fletcher. The Indiana State Dental Association has selected Dr. G. V. Black as guest of honor. The four state associations above named will furnish fifty clinicians, and all other state associations have been invited to furnish clinicians and it is expected that every state dental association will send at least one clinician. All essayists and clinicians are to represent their state associations, and are not coming as individual dentists.

# CORRESPONDENCE

## A REPLY TO A CRITICISM.

To the Editor of The Dental Summary:

"For if the teeth are eternally slaughtered, like in Dr. Black's preparation, I think it is often an error, because if the tooth has a good, sound corner on it, it should be left many times. If you can leave the labial wall protected by an immense wall of dentin, why cut it away? Leave it there. Some of the enthusiasts who are forwarding Dr. Black's preparation are going, I think, a little too far. They are 'Wedelstaedting' pretty nearly everything. Dr. Wedelstaedt is an enthusiast and a great teacher. But I had the pleasure of seeing 16 of his pupils or disciples preparing cavities in one corner of the national convention at Buffalo, N. Y., two years ago. In many of these cavities I would not even have removed the incisal angle, and the majority of these had the angle cut away—yes, most of them had both angles cut away, as well as the incisal edge, and were filled with gold as we saw Dr. Le Cron's porcelain tip put on last night. I do not think they were justified in doing that in most cases."

The above words form part of a discussion which may be found on pages 19 and 20 of the January, 1908, Dental Summary. The speaker is Dr. Clyde Davis, of Lincoln, Neb., who is discussing one of the best essays on cavity preparation which has appeared for several years. The essay was written by that very able man, Dr. C. E. Woodbury, of Council Bluffs, Iowa.

It is not my purpose to discuss the ideas contained in the essay, to highly compliment Dr. Woodbury, or to review the discussion beyond having something to say about the contents in the above paragraph.

Parts of the discussion call for an explanation, and they

should be reviewed in a most careful manner, for the purpose of assisting "the teachers of operative dentistry" who took part in the discussion to a better understanding of some things which they seem to be in the dark about. But I have never been busier in my life, and so at present am unable to make the explanation. I am using time which should be devoted to other things, but I shall always be able to arrange matters to say a few words in a cause that so justly demands it as an answer to the ideas contained in the above paragraph.

Dr. Davis says: "For if the teeth are eternally slaughtered, like in Dr. Black's preparation," etc.

I had hopes that now, after 17 years of consideration, during which time the members of the dental profession have had ample time to discuss, assimilate and digest the teachings of Dr. Black, that such absolutely unnecessary and needless cruel talk had become a thing of the past. But it seems that such is not the case. It appears that there are still a few men remaining who "have eyes and yet they see not, and ears, and they hear not." For such I have the greatest sympathy.

To make a comparison of the Black methods with other methods is not within the province of this letter. The multitude of intelligent men who are following advanced methods, as promulgated by Dr. G. V. Black, need no encouraging words from my pen. Those who are like Dr. Davis it would be perhaps an impossible task to persuade them to look at things in the broad and comprehensive way which it is so necessary to do, in the consideration of any ideas which we feel are different from those upon which we base the security of our belief. So why attempt to disturb the ideas which Dr. Davis feels are correct? What good would it do? Que Bono! Que Bono!!

One thing, however, I am compelled to say, out of pure love, esteem and greatest gratitude for my master, Dr. G. V. Black.

You, Dr. Black, have had a teacher of operative dentistry make an attempt to insult your intelligence and cast a slur upon the results of your life-long work for the welfare of humanity. You have had this act done to you in the autumn of your existence, when only kind and cheerful things should greet your ears as well as your eyes. We who love you so dearly are a multitude, and each and all of us deplore, from

our very souls, such unjust and such uncalled for sayings which surely must have emanated from the brain of a person wholly unacquainted with your methods, for otherwise we should not have seen such things in print.

The advanced, therefore intelligent and enlightened men in the dental profession the world over, honor and respect you; they fully recognize that without having you in our profession that the standard of dentistry today would have been that which was in vogue in 1870. To no one man, nor to any one body of men, do we owe so much, for it is a debt too great for us to pay, just as you are too great a man for the generation in which you are living. You are so great that your contemporaries do not know where to place you, and while trying to find the place you will leave us.

Every man who with heart and soul works for the upbuilding of any profession must occasionally hear things that are disagreeable, and we, living in this middle northwest, are sore at heart that such an assault has come from a person living in our midst.

Dr. Davis says: "But I had the pleasure of seeing 16 of his pupils or disciples preparing cavities in one corner of the national convention at Buffalo, N. Y., two years ago," etc.

Now, let us examine into this statement.

There were 19 operations made, by the men operating under the Black standard, at the N. D. A. clinic at Buffalo, in 1905; 12 of these were operations in the proximo-occlusal surfaces of molars and bicuspids; three were made in cuspids and four were made in the upper incisors, two in lateral incisors and two in central incisors. (See page 564, May Dental Cosmos, 1906. Dr. A. G. Fee, of Superior, is neither a member nor a friend of the Black club).

Dr. Davis says that "most of them had both angles cut away." He leads, not only those who heard his discussion, but those who will read his words, astray. By his talk one is led to infer quite a number of different things.

That 16 men, operating under the Black club standard, were making operations in cavities in the proximo-incisal surfaces of central incisors; that these men deliberately and ruthlessly sacrificed tooth structure in their zeal to carry out certain ideals, deliberately extended cavities to involve other surfaces where decay did not exist; that the men comprising

this body of operators have no intelligence; that he, Dr. Davis, would not have sacrificed the angles from any of these 16 operations, etc., etc.

Now, I am very sorry that any such statement has been made that would lead his hearers or the readers of his discussion to any such conclusion.

Let us turn to page 564 and read the report of the N. D. A. clinic in reference to what Dr. Davis has said, and what shall we find? That on the first day Dr. K. E. Carlson, of St. Paul, Minn., one of the most artistic operators the dental profession has, made an operation in the mesio-incisal surface of an upper right lateral incisor; that Dr. G. D. Moyer, of Montevidio, Minn., made an operation in the mesio-incisal surface of an upper right lateral incisor. These were the only two operations which were made in the incisor teeth on the first day of the clinic.

Dr. Moyer was very highly complimented for the good judgment which he displayed in making his operation as he did. Not only did I compliment him, but dozens of other men did the same.

On the second day, Dr. G. N. Beemer, of Mason City, Ia. made an operation in the mesio-incisal surface of an upper right central incisor. Dr. Beemer is too well and favorably known, so he needs no words of praise from me. I can not recall Dr. Beemer's operation, and I am unable to speak of it; but I know Dr. Beemer and his ability as an operator, and that carries all the weight that is necessary, so far as I am concerned. (Later I shall speak of this case).

The second operation made upon the second day, the last of the four, was made by Dr. Carlson in the disto-incisal surface of an upper right central incisor.

When Dr. Carlson had removed the decay from the cavity, he called me. The distal angle of the tooth was checked. Why, it was not even supported by any dentin. Dr. Corydon Palmer insisted that the angle be left in situ, and after examining the tooth, I said, "Remove it." At this time others became involved in the argument, and they, like Dr. Palmer, "knew" that it was not necessary to remove that angle. When, however, Dr. Carlson and Dr. Searl showed these others the check, Dr. Searl, using his magnifier, everybody was satisfied, with the exception of Dr. Palmer, that Dr. Carlson's idea of

removing the angle was the correct plan to follow, and it was done, as it should always be done, where we are dealing with similar conditions.

Now, there were two cavities filled in the mesio-incisal surfaces of upper lateral incisors on the first day of the clinic; the mesial angle on both teeth had been fractured prior to the patients being operated upon by the men; that leaves us two cavities in the upper central incisors, one of which had an angle that was unsupported by dentin and the enamel forming this angle checked, and the other case that of Dr. Beemer.

Of this operation, which Dr. Wilson reported, it is said (see 1906 Cosmos, page 567) that it was almost the same as the one made by Dr. Carlson, a cavity in the mesio-incisal surface of an upper right central incisor. (Dr. Carlson's operation was a cavity in the disto-incisal surface of an upper central incisor).

Dr. Wilson, who reported this clinic, is an intelligent man, and he knows sufficient about dental operations to be able to speak of the difference between cavity preparations. Now here we have a partial report of all the operations which were made in the upper incisor teeth by the G. V. Black club men at the N. D. A. clinic at Buffalo, 1905.

Not a cavity was cut so as to include the mesial and distal surfaces of an incisor. Two of the cases, as already stated, had the mesial angle fractured from the teeth prior to having the patients coming into the hands of the operators, while the other two had the angles unsupported by dentin; one of the last spoken of had the enamel checked. In view of these facts, Dr. Davis says, in speaking of the operations, "In many of these cavities I would not even have removed the incisal angle, and the majority of these had the angle cut away—yes, most of them had both angles cut away, as well as the incisal edge, and were filled with gold," etc.

Now, what does Dr. Davis mean by making such statements? **Not one** of these four cases had "both angles removed," and yet he says **"most of them had."** Dr. Davis says, "In many of these cavities I would not even have removed the incisal angle." Are two **"many"**?

Somewhere it is written, "All ye like sheep have gone astray," and I am a little afraid that Dr. Davis, in his zeal, has gone somewhat astray.

I am unable to understand the attitude which he has assumed in so far as it related to the methods of cavity preparation as advanced by Dr. Black and the position which he has taken regarding the methods which are followed by the men of the G. V. Black Dental Club of St. Paul. If Dr. Davis were in the ranks with the rest of us, all would be different. But in another part of his discussion he assures us that he is "a teacher of operative dentistry." I do not know as I care to preach, but it seems to me that a "teacher" of others has certain well-defined duties to perform. It is the duty of a teacher to seek diligently that which is highest and best, and in the atmosphere of those higher things he should live. He should investigate everything which is new and instruct those who are under his care in those things only which will be productive of greatest good to humanity. He is not to condemn the methods of everybody, more especially when he has never investigated, studied, and to tell the truth, if we are to believe his words, shows greatest unfamiliarity with.

Such things a "teacher" should not do, for his position is one of the greatest trust, so much depends upon him, and he can ill afford to have his ideas criticised. He should be of assistance to every good work. In other words, a "teacher" should have his ideas indorsed and respected by all intelligent and advanced men in his calling, and he should aim to teach the best and to obtain the indorsement spoken of.

Dr. Davis goes out of his way to question the advisability of following the methods as displayed by the members of the Black club at the Buffalo clinic.

If the reader has any desire to inform himself what others thought of the operations which these men made, he has merely to read the words of that dearly beloved and greatly esteemed man, Dr. Edwin T. Darby, of Philadelphia, which were spoken at the N. D. A. at Buffalo, in 1905.

The words that Dr. Darby spoke are authoritative, at least they should be, for they come from a man who has practiced dentistry for over 40 years, and who is also a "teacher of operative dentistry." Dr. Darby knows what he is talking about, while Dr. Davis imagines that he knows.

The men comprising the membership of the G. V. Black Dental Club of St. Paul are at all times grateful for honest

criticisms of the methods of operating which they have and do display at public clinics. They welcome all just criticisms and they are pleased to know that others are also interested in the advance of our profession. But the members of this club are like all other men who are seeking and giving knowledge to others,—they do not care to be treated unjustly, they do not care to be pictured to other men as Dr. Davis has tried to picture them, as men devoid of any ability and men so enthusiastic in following certain methods as to be devoid of any judgment; and they do not thank Dr. Davis nor anybody else for placing in print things so far from the truth, in the opinion of the writer, as the statements in the opening paragraph of this letter.

E. K. Wedelstaedt.

St. Paul, Minn., Jan. 22, 1908.

# OBITUARY

## THOMAS FILLEBROWN, M. D., D. M. D.

Dr. Fillebrown died Tuesday, January 28th, 1908, at the Boothby Hospital, Boston, where he had been ill for over a week. Dr. Fillebrown was born in Winthrop, Me., January 13, 1836, the son of James Bowdoin and Elmira (Butler) Fillebrown. He married Miss Helen Dalton, of Kenfield, Me., and made his home in Boston until taking up his residence here about five years ago. He is survived by two sons, Dr. Charles D. Fillebrown, of Boston, and Winthrop Fillebrown, of this town, and two daughters, Miss Harriet, of this town, and Miss Helen T., a teacher at Syracuse, N. Y. The body was taken to Portland, Me., for interment.

Dentistry was Dr. Fillebrown's life work. His preparatory studies were at Wesleyan college, from which he graduated in 1859, and at Bowdoin graduating in the class of 1863. From there he entered the first class that opened the Harvard Dental College, and was graduated in 1869. He practiced in Portland, Me., for a number of years, and in 1883 received the degree of medicine from the Maine Medical School.

In 1883 he was called to the Harvard Dental School, and served in various capacities on the faculty till his retirement in 1904. From 1883 till 1897 he was professor of operative dentistry, and in 1897 was made professor of oral surgery. He served on the administrative board of the school from 1899 till his retirement.

He was president of the American Academy of Dental Science from 1875 till his death, and was an active member in other leading medical organizations. He was a member of the Massachusetts Dental Society, the Harvard Dental Alumni Association, of which he was president from 1873 to 1874; a member of the Massachusetts Society of the Sons of the

American Revolution, of the World's Columbian Dental Congress at Chicago, 1893; the Fourth International Dental Congress at St. Louis, 1904; the National Dental Association, of which he was president, 1897 to 1898; the Massachusetts Medical Society, and the Maine Medical Society.

# SOCIETY

## TOLEDO DENTAL SOCIETY.

The Toledo Dental Society held its second meeting this year in the Y. M. C. A. building, Friday evening, January 10, 1908, the president, Dr. Van Deman, presiding. After the reading of the minutes of the last meeting, Dr. Park L. Meyers gave us a talk on the subject, "Some Thoughts on the Cause and Relief of Aching." He spoke in part as follows:

Although that "Modern Madonna of the Muddle," Mrs. Eddy, would endeavor to persuade us that pain is something unreal, does not exist, is an error of the mortal mind, the dentist seems to be the fellow that can demonstrate to the satisfaction of his patient that it is something real, tangible and to be reckoned with. Pain may be divided into two general classes—

I. Mental;
II. Physical;

and physical can be subdivided into—

(a) Physiological, as in childbirth and eruption of teeth, although, if in accord with Nature, these processes should be practically painless.

(b) Instrumental (accidental)—
In the cutting, for instance, the crowding together of the cells causes a pressure, disturbing the union of the cells, sets up little currents to the brain, and lets in oxygen, which, uniting with cell constituents, form new compounds more or less erosive.

(c) Chemical—
Probably the chief cause of pain under this head would be largely pathological, caused by bacteria, the result of whose action is always acid, which, so to speak, tears at the tissue to get at the bases (po-

tassium, ammonium, etc.) in the tissues, causing pain.

The pains of colic in babies are often due to chemical changes, due to mental disturbance in the mother at the time or before nursing the child. The milk does not digest, and putrefies in the little stomach, gases form, there is distension of the alimentary canal, absorption of toxins, and pain. The acid condition of the blood stream frequently causes skin eruptions, etc.

While the pains of old age may be traced to disordered digestion and the attendant putrefactions, there are still other causes. It is said that we no sooner begin to live than we begin to die. Each particular cell in the body, in doing its work, has left in it a minute residue like the dust in a room not frequently used. Call this faulty elimination. This gets greater as the years go by, till we call it rheumatism, a stiffening of the joints, etc. The glands of the stomach change and the particles circulating in the blood stream needed for the repair of the tissues are not so well shaped as formerly, and don't fit.

These bacteria living in us throw off an offal called toxins, which, when of sufficient quantity, are destructive to their life. It is so with any living thing, it will be killed by its own offal if generated in sufficient quantities.

These toxins loaded into the blood come knocking at the cells as burglars to rob them of the potassium, sodium, calcium, magnesium, etc., contained in them. The remedy seems to be to have an adequate police force at each door. This we find in milk of magnesia. This unites with all the weaker acids not engaged by the stronger bases. This milk of magnesia unites with these acids, forming compounds or salts of magnesia, that in themselves are cathartics of a mild form. These unload the alimentary canal of the putrescent compounds and prevent the formation of the irritating acids.

One can so regulate the diet, eating the whole grains, so as to get the hulls in which are the phosphates and mineral bases, and get in this natural way much that is needed to satisfy these acids. While any of the group of mineral bases, potassium, sodium, calcium, and magnesium will satisfy the acids in the tissues, the particular compound of magnesium in Phillip's seems to better do the work. Taken a half hour before

meals it will be ready at hand to take care of any putrefactive products that may be formed. Then, on retiring, a like amount will act as a gentle cathartic, cleansing and purifying the whole tract.

At the conclusion of the paper there was a very able discussion by Drs. Barber, Canfield and Zarbaugh. Many questions were asked Dr. Meyer, who, in answering them, added much to the enjoyment and instruction of the evening.

Dr. Meyer was unanimously voted an honorary member of the society. BURT ABELL, Sec'y.

## SEMI-CENTENNIAL JUBILEE MEETING OF THE INDIANA STATE DENTAL ASSOCIATION.

The Indiana State Dental Association will celebrate its fiftieth anniversary, June 4, 5, 6, at Indianapolis, with one of the largest meetings ever held.

The state associations of Michigan, Ohio, Kentucky and Illinois have accepted invitations to meet with us.

There will be five essayists: Drs. G. V. Black, Illinois; T. W. Brophy, Illinois; Charles Zederbaum, Michigan; M. H. Fletcher, Ohio; H. B. Holmes, Kentucky.

There will be 50 clinicians from these four states, and practically all other state associations will be represented by clinicians.

All ethical dentists are invited, as this will be the big meeting of the year.

## MARYLAND STATE DENTAL SOCIETY.

The thirteenth annual union meeting of the Maryland State Dental Association and the District of Columbia Dental Society will be held in Baltimore, Md., June 4, 5 and 6, 1908, at the dental department of the University of Maryland.

Special effort will be exerted to make this meeting a great success. Clinics will be given and important papers read by eminent members of the profession and a cordial invitation is extended to all ethical practitioners to attend and take part in the proceedings.

F. F. DREW, Cor. Sec'y.,
Maryland State Dental Association.

## NEW JERSEY STATE BOARD OF REGISTRATION AND EXAMINATION.

The New Jersey State Board of Registration and Examination in Dentistry will hold their semi-annual meeting to examine candi-

dates, beginning Monday, July 6th, and continue through the 7th and 8th, in the assembly chamber of the state house at Trenton, N. J.

Professional attainments, preliminary qualifications and photograph must accompany the application or it will not be accepted.

Sessions begin promptly at 8 a. m. each day.

For full particulars address the secretary,

CHARLES A. MEEKER, D. D. S.,
29 Fulton St., Newark, N. J.

## ODONTOTECHNIQUE SOCIETY OF NEW JERSEY.

The regular monthly meeting and banquet of the Odontotechnique Society of New Jersey will be held Thursday evening, March 5th, at the Elks' club, 37 Greene street, Newark, N. J.

The paper of the evening will be read by D. A. Webb, M. D., of Scranton, on the subject of "Malignant Growths of the Jaw: Fractures, Etc."

Stereopticon views will be used to illustrate the lecture.

JOHN A. VOORHEES,
Journal Correspondent.

## NEBRASKA STATE DENTAL SOCIETY.

The thirty-second annual meeting of the Nebraska State Dental Society will be held in Omaha May 19, 20 and 21, 1908, at the Creighton Dental College. All reputable members of the profession are cordially invited to attend.

E. H. BRUENING, Sec'y.
Omaha, Neb.

## VERMONT STATE DENTAL SOCIETY.

The thirty-second annual meeting of the Vermont State Dental Society will be held at the Hotel Pavilion, Montpelier, Vt., May 20, 21 and 22, 1908.

Preparations are being made for an excellent program, and members of the dental profession are cordially invited.

C. H. KENT, Pres.,
Barre, Vt.
THOMAS MOUND, Sec'y,
Rutland, Vt.

## LAKE ERIE DENTAL SOCIETY.

The forty-fifth annual meeting of the Lake Erie Dental Association will be held on May 19, 20, 21, 1908, at Hotel Rider, Cambridge Springs, Pa.

All reputable dentists are cordially invited to be present.

V. H. McALPIN, Sec'y.

## THE TEXAS STATE DENTAL ASSOCIATION.

The next annual meeting of the Texas State Dental Association will be held at Dallas June 11, 12 and 13, 1908.

Visitors from other states cordially invited to attend.

J. G. FIFE, Sec'y,
Dallas, Tex.

## ARKANSAS STATE DENTAL ASSOCIATION.

The next meeting of the state association will be in the city of Little Rock, May 26th and 27th, 1908. We fully desire that all registered dentists in the state shall become members of the state association. I have digressed somewhat in the committees, formulating some new ones, I fully believe for the progress and welfare of the association. After investigation I have concluded to call the meeting for two days, but wish to say we must do business promptly without delays. I will call the meeting to order at 9 o'clock sharp, May 26th, and will expect all officers and committees to be ready to report. No reason exists why we should not have the best state meeting we have ever had.

The program committee will have the programs out in due time, and we wish all to take part. We cannot afford to fall behind other state associations.

The following are the committees:

Executive Committee—Dr. J. M. Flenniken, Camden; Dr. J. T. Newman, Little Rock; Dr. H. P. Hopkins, Argenta.

Arrangement Committee (all of Little Rock)—Dr. J. P. Easley, Dr. T. Y. Cooper, Dr. W. H. Buskley, Dr. W. H. Marshall, Dr. T. J. Hunt, Dr. Elbert Stewart.

Invitation Committee—Dr. Charles Bergstresser, Eureka Springs; Dr. J. E. Andrews, Harrison; Dr. Ed. L. Watson, Camden; Dr. J. C. Settles, Arkadelphia; Dr. J. R. Southworth, Fayetteville.

Program and Printing Committee—Dr. H. P. Hopkins, Argenta; Dr. L. K. Charles, Eureka Springs; Dr. W. T. Rowland, Bentonville.

Reception and Entertainment Committee (all of Little Rock)—Dr. A. T. McMillin, Dr. W. H. Buckley, Dr. W. H. Marshall, Dr. J. T. Newman, Dr. C. G. Farrow, Dr. T. J. Hunt, Dr. T. Y. Cooper.

Clinic Committee—Dr. Charles Richardson, Fayetteville; Dr. C. G. Farrow, Little Rock; Dr. R. P. Saldler, Paris; Dr. A. T. McMillin, Little Rock; Dr. W. H. Marshall, Little Rock.

Essay Committee—Dr. R. W. Quarles, Van Buren; Dr. C. C. Sims, Dardanelle; Dr. J. K. Moose, Gentry; Dr. J. S. Stilwell, Searcy; Dr. J. P. Easly, Little Rock.

Railroads and Hotels Committee (all of Little Rock)—Dr. T. J. Newman, Dr. J. H. Hammett, Dr. J. M. Baker, Dr. J. M. Pickard, Dr. J. W. Markwell.

Legislative Committee—Dr. A. G. Ragland, Ft. Smith; Dr. J. A. Bond, Warren; Dr. R. S. Woodward, Stuttgart; Dr. L. K. Land, Pine Bluff.

Statistics Committee—Dr. W. H. Buckley, Little Rock; Dr. W. T. Cate, Ft. Smith; Dr. J. F. Wright, Monticello.

Necrology Committee—Dr. T. M. Milam, Little Rock; Dr. L. G. Roberts, Eureka Springs; Dr. S. L. Linsey, Mena.

Exchange Committee—Dr. Ed. L. Watson, Camden; Dr. J. R York, Prescott; Dr. J. F. Hereford, Hope.

Fee List Committee—Dr. J. M. Flenniken, Camden; Dr. R. S. Woodward, Stuttgart; Dr. W. D. Jacoway, Dardanelle.

P. A. SKEEN, Pres.

## ANNOUNCEMENT.

The fifty-first annual meeting of The Northern Ohio Dental Association will be held at Canton, Ohio, May 26, 27, 28, 1908.

The sessions will be held in the city's auditorium, one of the largest in the middle west, with headquarters at the Courtland Hotel. There are numerous other hotels in Canton so there will be accommodations for all. Hotel rates may be had at from $1.50 to $5.00 per day., American plan.

Canton is essentially a dental manufacturing town, having three large and busy plants. The exhibits will be first class.

The committees are sparing no time nor expense to make this an especially attractive meeting. The program will be up to the standard of previous years. Men of international reputation have been secured to read papers and give clinics.

Remember the time and place, May 26, 27, 28, '08, Canton, Ohio.

The Executive Committee,

W. H. WHITSLAR,

J. H. WIBLE,

F. M. CASTO, Chairman.

# AFTERMATH

**Married.**—Dr. LeRoy W. Lewis, Shenandoah, Ia., and Miss Grace Padmore, of Marshalltown, Ia., January 4.

**Massachusetts Dental Examinations for 1907.**—Two hundred and eight persons examined, of whom 107 passed and 101 failed.

**Dr. R. P. Welch Dies as Result of Accident.**—Dr. R. P. Welch, a dentist of Waynesboro, Pa., who fell from the rear platform of a car, died January 14 of concussion of the brain.

**Black Hills (S. D.) Dental Society** elected the following officers. President, Dr. F. M. Gantz, Deadwood; vice-president, Dr. L. E. Eaton, Hot Springs; secretary, Dr. A. L. Revell, Lead; treasurer, Dr. G. E. LeMar, Rapid City.

**Appointed Member of N. H. State Dental Board.**—Dr. H. R. Beals, of Keene, was appointed a member of the State Board of Registration in Dentistry. He succeeds Dr. Fred. H. Brown, of Lebanon, whose term expired October 27, 1907.

**Rock Island County (Ia.) Dental Society** elected the following officers: President, Dr. J. W. Gluesing, Moline; vice-president, Dr. W. H. Carl, Rock Island; secretary, Dr. Albert H. McCandless, Rock Island; treasurer, Dr. John Taylor, Rock Island.

**Fires.**—Toronto Painless Dentists' Office, January 21, $2,000; covered by insurance. T. R. McCoy's dental office, Waterloo, Ia., January 22. J. F. James' dental office, Moro, Ore., January 23; losses unknown. J. E. Parker's office, Elmo, Tex., January 29; loss $500; no insurance.

**Retires from Practice**—Dr. Sloan, a prominent dentist of Canajoharie, N. Y., who has been in practice 47 years, has retired. He is the oldest dentist in this part of the Mohawk valley, and lays aside his labors to enjoy a well-earned rest, and leaves a most honorable professional career to perpetuate his memory.

**Burned by Alcohol Lamp Explosion.**—Dr. B. W. Trask, of Rumford Falls, Me., was severely burned, January 13, by the explosion of an alcohol lamp which he was using. The patient who was in

the dentist's chair at the time of the explosion escaped without injury. The damage from the fire amounted to about $50.

**Rhode Island Dental Society** elected the following officers: President, Dr. John J. Dolan, Providence; vice-president, Dr. A. M. Potter; secretary, Dr. Clarence E. Carr, of Newport; treasurer, Dr. Ernest Charbonnel, of Providence. Executive committee—Drs. J. E. Heap and J. H. Manning, Providence, and M. M. Maloney, Woonsocket.

**Ohio State Board of Dental Examiner's Report,** submitted to Governor Harris, shows that during the year there were 104 certificates to practice the profession in Ohio issued, of which 91 were on examination. A total of 4,166 certificates have been issued since the organization of the board, May 31, 1892. It is estimated that there are now 3,000 practicing dentists in the state.

**Central Dental Association of Northern New Jersey,** held Jan. 20th, elected: President, C. F. Alfred Hane, D. D. S., Jersey City; vice-president, R. C. Fowler, D. D. S., Harrison; secretary, Edwin W. Harlan, D. D. S., 56 Madison avenue, Jersey City; treasurer, Charles A. Meeker, D. D. S., 29 Fulton St., Newark. Executive committee—S. C. G. Watkins, D. D. S., Montclair; M. R. Brinkman, D. D. S., Hackensack; Dr. Frederick W. Stevens, Newark; Dr. Oscar Adelberg, Elizabeth; D. G. Farrington, D. D. S., Caldwell.

**Deaths.**—Dr. Leonard Hanks, at Dubuque, Ia., aged 65 years. Dr. John R. White, of Los Angeles, at Uplands, Cal. Dr. Henry A. Smith, Springfield, Ill., January 15, aged 56 years. Dr. John Brown, Sawtelle, Cal., January 21. Dr. C. M. Calvert, Eau Claire, Wis., aged 57 years. Dr. Fayette Herrick, Greenville, Pa. Dr. George A. Foster, New Albany, O, January 23, aged 48 years. Dr. Harvey E. Harrison, Chicago, Ill., January 23. Dr. Ritchie, Salt Lake City, Utah, at Los Angeles, Cal. Dr. Frederick M. Snook, Waverly, O., February 5, aged 69 years.

**Robberies.**—Dr. Lanier, Macon, Ga., small quantity of gold. Drs. H. H. Johnson, W. L. Smith, A. M. Jackson, and Holmes Mason, Macon, Ga., $200 worth of gold. Dr. Wm. McL. Bethea, Augusta, Ga., gold and bridge-work valued at $175. Dr. R. L. Henry, Augusta, Ga. Dr. F. P. Adams, Elkhart, Ind., materials valued at $65, January 24; twentieth century teeth and other base metal pinned teeth were not disturbed, but gold, porcelain facings and Logan crowns were taken. Dr. C. M. Dowell, Elkhart, Ind., material valued at $35, January 17. Drs. L. Powell, H. A. Fisher and J. T. Holmes, Wabash, Ind., $100 worth of gold. Dr. E. D. Slawson, Bay City, Mich., $40 worth of gold, January 31.

**New Harvard Dental School.**—The Harvard Dental School has received a promise of funds necessary for the erection of a new building. Already an extensive educational center is growing near

Longwood avenue in Brookline, due to Simmons college, the Harvard medical school and the Carnegie laboratory; and this vicinity has been chosen as the site of the new dental school. It will be built on the lots bought by the corporation in 1905 for $36,000. The situation is considered to be an excellent one by reason of its proximity to the medical school, and because the new hospitals and other institutions which are soon to be built in that section will contribute to the clinical work of the dental students. Work on the new building will begin when the frost is out of the ground. Different plans from those of last year will be drawn. Then $500,000 was considered adequate for erection and endowment purposes. In the new building students will have greater opportunities to extend their services among the poor people, and the change will result in bringing the Boston departments of the university into a single large plant.

**Dentists Tender Banquet to Dr. C. A. Meeker.**—More than 200 dentists and civilians from a dozen states, many of them from New Jersey, paid high tribute, January 11, to Dr. Charles A. Meeker, of Newark, N. J., who was the guest of honor at a banquet given in the Astor gallery of the Waldorf-Astoria. Dr. W. W. Walker, of New York city, presided as toastmaster. He spoke of the excellent work done by Dr. Meeker during the last 25 years towards advancing the profession of dentistry. Others present spoke in glowing terms of Dr. Meeker's efforts to further the interests of the profession. Dr. Meeker was presented with a solitaire diamond ring. In responding to the eulogies of his fellow-dentists, Dr. Meeker reviewed the work of advancing dental science. Other speakers who were listed by the toastmaster to "make merriment for ye few interesting minutes" were Dr. Charles S. Stockton, of Newark; Dr. Wilbur F. Litch, of Philadelphia; Dr. William H. Taggart, Dr. Truman W. Brophy, both of Chicago; Dr. S. G. Perry, of New York; Dr. J. N. Farrar, of New York; Dr. B. F. Luckey, of Paterson, and Messrs. John J. O'Toole and John J. Leidy, of Newark, in addition to which list he received responses from several others.

**Anniversary of the St. Louis Society of Dental Science.**—The St. Louis Society of Dental Science held its annual meeting at the Jefferson Hotel, St. Louis, Mo., January 21st, 1908. Dr. Edward C. Kirk, Philadelphia, presented a paper on "The Life Work of W. D Miller." The discussion was opened by Dr. N. S. Hoff, Ann Arbor, Mich., and Dr. L. P. Bethel, Columbus, O., and continued by Drs. Whipple, Thorpe, Kirk, and others. The paper dealt with the scientific work Miller had done, and cleared up a number of points that seemed to be not generally understood. The remarks following the paper were in the main eulogistic. In the evening a complimentary banquet was tendered Prof. Edward Cameron Kirk. It was an enjoyable affair, long to be remembered by the many dentists present. Dr. Burton Lee Thorpe presided as toastmaster. The post-prandial

speeches were as follows: "Our Honored Guest," Dr. W. L. Whipple; "As It Seems to the Man on the Fence," Dr. Edward Cameron Kirk, Philadelphia, Pa.; "Why We Laugh," Rev. Dr. Henry Stiles Bradley; "The Dental Educator and His Influence," Dr. Nelville S Hoff, Ann Arbor, Mich.; "The Dental Editor and His Influence," Dr. Louis Prentiss Bethel, Columbus, O.; "Before and After Taking," Dr. Frank G. Worthley, Kansas City, Mo.

**American Dental Supplies Abroad.**—Consul-General Robert P. Skinner, of Marseille, forwards the following information concerning American dental supplies in France: There are few industrial fields in which American supremacy is so fully recognized as in the manufacture of dental supplies of all kinds. The American dentist had become a feature in Europe years before there was any talk of an American industrial invasion, and he was silently and modestly creating a demand for dental supplies from his own country, which has extended more or less to all dentists, native and foreign. At present, under the influence of laws prevailing in several European countries, including France, the American dentist is prohibited from engaging in practice under the diplomas of his own country, and the older practitioners who had established themselves in Europe before this legislation became effective are gradually becoming fewer in number, so that henceforth American manufacturers must look more and more to themselves to encourage the use and sale of their goods. It is somewhat singular that, in spite of the considerable European demand for American dental supplies and the extremely favorable conditions under which they have been introduced, American manufacturers have almost invariably preferred to do business through foreign houses, who place American products on sale alongside of similar wares of British, French, or German manufacture. There may be a few strictly American firms, limiting themselves to goods of their own importation, in England or Germany, but I am told that there is no such house in France, and I am not able to discover that Marseille dentists have ever been waited upon by a traveling salesman representing a line of American goods. The difficulty, therefore, in finding openings for such supplies is rather in securing a satisfactory general agent than in actually selling the goods. Newcomers in this field, as in many others, find the established, reliable houses already handling full assortments and ordinarily indisposed to increase their lines. Yet, if my inquirers have the capital and patience necessary to such an enterprise, they might very likely come abroad themselves and profit by the high standing of American dental supplies generally, working for French business in their own way and controlling the trade so created in their own name, without danger of losing it at the first suggestion of cheaper goods from some other manufacturer or dealer. English and American artificial teeth practically control the French market; gum teeth are little employed. American chairs are expensive and are

used by fashionable dentists. Greater energy in presenting them would bring adequate reward. There is English, French and German competition in most lines of supplies. Marseille dentists are mostly supplied by a local firm, with whom correspondence is recommended. Traveling agents also visit this city from various Parisian firms. (A list of wholesale dealers in dental supplies in Paris and Marseille is on file in the bureau of manufactures).—Monthly Consular and Trade Reports.

**Recent Patents of Interest to Dentists:—**

874379—Dental crown driver, Clarence R. Averill, Webster, N. Y.

874489—Dental pliers, Gilbert J. Clark, Mayville, Wis.

875885—Barbers' chair, E. Berninghaus, Cincinnati, O.

876043—Tooth crown, T. A. Davis, Warsaw, Ill.

875992—Dental tool, H. A. Gollobin, Newark, N. J.

876526—Dental extractor, O. Cholinsky, Prague, Austria-Hungary.

876842—Dental tool, L. S. Robinson, Alameda, Cal.

Copies of above patents may be obtained for 15 cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

**Toothpick Factory.**—The largest quill toothpick factory in the world is near Paris, where there is an annual product of 20,000,000 quills. The factory was started to make quill pens, but when these went out of general use it was converted into a toothpick mill.—Dental Record.

**Objects to Terms "Mesial" and "Distal."**—Mr. Joseph A. Woods, (England), thinks that some objection might be raised against the use of the terms, "Mesial" and "Distal." It seems to him that if Angle had used, say, the terms, "Anterior" and "Posterior," the descriptions would have been much more apt and easier to follow.—Dental Record.

**Knows a Good Thing When He Sees it.**—"After one glance at The Dental Summary, I find it full of just the practical literature we dentists should read.

Find enclosed subscription price, $1.00."

C. C. HAWORTH, D. D. S.,
Lees Summit, Mo.

**A Reorganized Dental Company.** On account of the deaths last December of the two senior members of the Ransom & Randolph Co., a reorganization took place February 13, 1908.

The business will be conducted under the same name as before and under the management of C. S. Bigelow, President, and F. G. Crandell, Secretary-Treasurer.

# REGULAR CONTRIBUTIONS

## THE CONTRIBUTIONS OF PIONEER DENTISTS TO SCIENCE, ART, LITERATURE AND MUSIC.

By Burton Lee Thorpe, M. D., D. D. S., St. Louis, Missouri.

(Continued from page 193 March Dental Summary.)

Horace H. Hayden

To Horace H. Hayden, known as "The Father of American Dental Surgery," belongs the honor of conceiving the idea of the formation of the first national society of dentists. Hayden was a broad-minded, liberally-educated man, born at Windsor, Conn., Oct. 13, 1769, of a long line of military ancestors. As a boy he exhibited a great liking for natural history; also became proficient in the ancient languages. At the age of 14 he made two voyages as cabin boy to the West Indies; at 16 he

learned the trade of carpenter and builder from his father, and became well versed in architectural drawing and writing. At the age of 25 he went to New York city and studied dentistry with Mr. John Greenwood, who afterwards acquired fame as "Dentist to His Excellency, General George Washington." In 1798 Hayden located at Baltimore, Md. He was examined by a medical and surgical board for the state of Maryland, to regulate the practice of medicine and surgery, found qualified and duly licensed in 1810. To better perfect himself in his specialty he studied medicine and surgery and soon gained the respect of the medical profession. Both the Jefferson College of Medicine, of Philadelphia, and the University of Maryland, in 1837, conferred the honorary degree of Doctor of Medicine on him. Hayden rose rapidly in the public confidence. He associated with the most celebrated physicians and medical teachers in Baltimore, and his opinions carried great weight. He was first to give the profession caste in Baltimore.

In 1825 he accepted an invitation to deliver a course of lectures on dental surgery to the medical students of the University of Maryland, the first course of its kind ever delivered in the United States. He contributed many essays on dentistry and medicine to the public and medical journals. He also went into physiological and pathological research and made several new discoveries, especially investigating the glands of the human system. Besides being a pioneer dentist, Dr. Hayden was also a pioneer geologist. All through his career he was constantly examining mineral peculiarities and was far ahead of his age in scientific discoveries. He discovered a new mineral, which was named "Haydenite" in his honor. He collected a valuable cabinet of American minerals, which became, in 1850, the basis of a now complete collection of Roanoke College, Virginia. So limited was the literature of geological science in English that he mastered the French language to be able to read the text books on geology, from which he made translations. In 1821 he published an interesting work of 400 pages entitled, "Geological Essays," the first general work on geology published in the United States. As a botanist, also, he was well versed, and wrote on silk worm culture, etc. He also excelled with rod and gun, being an enthusiastic sportsman. After having obtained personal success and secured a high professional standing, he was anxious to

improve the standing of his profession in general. It was he who is known as the "progenitor of the science and art of American dental surgery." He took the initiative with Chapin A. Harris and others in founding the first dental college and first dental journal, and after consultation with his professional brethren in the eastern cities, who favored his idea of an associaton of dentists, he issued a call for a meeting of organization, at the American Hotel, New York city, August 18, 1840, at 10 a. m., and the American Society of Dental Surgeons was organized.

Chapin A. Harris

**Chapin Aaron Harris,** a man of many talents, whose persistent energy as an organizer and promoter of the best interests of the profession also materially assisted in uniting dental surgery to science.

Harris was a man of large conceptions, a fertility of ideas and resourcefulness, and so generous with his time and money, in the interest of our calling, that he died poor, leaving his large family in want. Born May 16, 1806, in Pompey, N. Y., at the age of 17 removing to Ohio. He studied medicine, and later dentistry, with his brother John, and traveled for several years as an itinerant, finally locating in Fredericksburg, Va., for a short while, locating permanently at Baltimore in 1835, where he became a close friend of Horace H. Hayden, and assisted him in organizing the American Society of Dental Sur-

geons, the Baltimore College of Dental Surgery and the American Journal of Dental Science. Harris was a prolific writer. In 1838 he published his first book, "The Dental Art," a practical treatise on dental surgery, afterwards called "Harris' Principles and Practice of Dentistry." He also produced "Harris' Dictionary of Dental Science," and numerous other works of much value. Being a diligent reader and student, his great fad was the collection of rare books, his collections being one of the finest in the east. Without doubt he was the leading spirit of his time, as writer, editor, teacher, organizer and society worker. His name will go thundering down the long road f the future, to echo and re-echo, as long as time lasts. On an unpretentious tombstone in Mount Olive cemetery, Baltimore, is carved this epitaph, "E mortuis resurgam" (I shall rise from the dead).

Levi S. Parmly

**Levi Spear Parmly,** a native of Vermont, and a pioneer of the Parmly family in dentistry, traveled as an itinerant, located at New Orleans, and in 1817 went to London, where he opened an office, and soon commanded a large clientele, where he also formed the friendship of Messrs. Thomas Bell, John Tomes, Sr., Alexander Naysmith, and George Waite, the foremost dentists of the day. He also was intimately acquainted with the three most famous surgeons of the time, Sir Astley Cooper, Anthony Carlisle, and Dr. Baillie, physicians and surgeons to

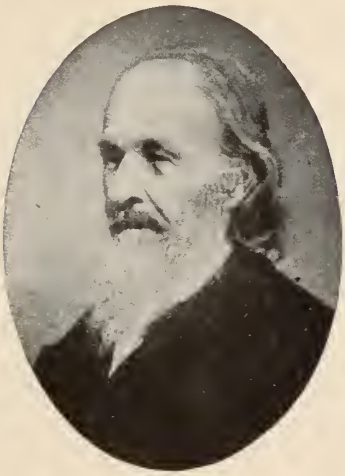
His Majesty George IV. These men indorsed him as a skillful dentist. He is one of the first, if not the father, of oral prophylaxis and hygiene. His writings were all along this line. In them he styles himself as "Dental Professor". The following is the list of his writings: "Teeth," "A Practical Guide to the Management of the Teeth," "A Practical Guide to the Management of the Teeth, Comprising a Discovery of the Origin of Decay, with Its Prevention and Cure;" "Natural History and Management of the Teeth;" "Lecture on the Natural History and Management of the Teeth, the Causes of Their Decay, the Art of Preventing Its Accession, and Various Operations Never Before Suggested for the Preservation of Diseases of Teeth;" "On the Best Mode of Preserving the Natural Teeth;" "A Dissertation on the Management of the Mouth and Teeth;" "The Importance of the Preservation of the Teeth". We may safely term him the "First Apostle of Dental Hygiene." He arduously advocated the use of tooth-brush, floss silk, and the port polisher. He early advocated the correction of irregularities of teeth by the simple use of floss-silk ligatures. He died in France, July 8, 1859, and was buried at Perry, Lake county, Ohio, which was then the home of the Parmlys. He was one of the charter members of the American Society of Dental Surgeons and present at its organization in New York city, Aug. 18, 1840.

Eleazer Parmly

**Eleazer Parmly,** one of the most cultured ornaments of our calling, a farmer's son, born at Braintree, Vt., March 13,

1797, and raised at Perry, O., where he worked on his father's farm until, at the age of 17, he learned the printers' trade in Montreal, and studied dentistry with his elder brother, Levi Spear Parmly, of Boston. He next toured the southern states, and later went to London and Paris, where he was tutored by the best men of the profession, and began practice in London, associated with his brother Levi where he soon attained prominence and the friendship of the most celebrated medical and literary men of the day. He returned to America in 1823, and located in New York city, where he attained wealth, honor and reputation as a dentist, and was closely identified in the organization of the American Journal of Dental Science, of which he was one of its first editors, associated with Chapin A. Harris and the American Society of Dental Surgeons, of which he was president after Dr. Hayden's death, in 1847, and member of the faculty of the Baltimore College of Dental Surgery. He was endowed as a poet and man of letters. He wrote several valuable works on dentistry and was a born poet. In 1867, at the age of 71, he published a volume of six hundred pages of his original poems, entitled "Thoughts in Rhyme," which are delightful reading, and express the sentimental side of his nature.

He was a handsome and distinguished-looking man, of Chesterfield manner, and known as "the best mixer" of the profession in his day, though a pronounced temperance advocate, an athlete and a fearless horseman. He added luster and dignity to our calling in the day when the profession was just blossoming from a trade into a profession.



Solyman Brown

**Solyman Brown,** a student of Eleazer Parmly, was another of the brilliant literary lights of our profession, the first literarily-educated member of the profession at the time he entered it. First a preacher of the Gospel, later a teacher of the gospel of hygiene, of idealistic and poetic nature. He wrote much that was worth reading, and was known as the "poet laureate of the dental profession. In 1833 he wrote and published a classic poem, which was an excellent literary production that did much to elevate dentistry, entitled "Dentologia," a poem on the diseases of the teeth and proper treatment, which portrays a young lady in verse showing the value of the teeth to the human form divine. The following shows the beauty and technique of his efforts:

Behold Urilla, nature's favored child—
Bright on her birth indulgent fortune smiled;
Her honored grandsire, when the field was won,
By warring freeman, led by Washington,
Nobly sustained, on many a glorious day,
The fiercest fervors of the battle-fray;
Survived the strife, and saw at length unfurled
Our Union banner floating round the world;
Then found a grave, as every patriot can,
Inscribed "Defender of the Rights of Man!"

Her sire, whose freighted ships from every shore
Returned with wealth in unexhausted store

Was doubly rich—his gold was less refined
Than the pure treasures of his noble mind,
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.

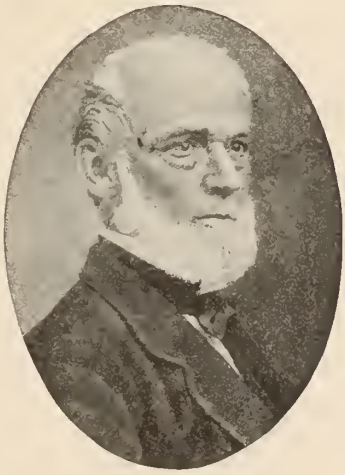
When first I saw her eyes' celestial blue,
Her cheeks' vermilion, and charming hue,
That melted on her lips—her auburn hair
That floated playful on the yielding air:
And then that neck within those gracious curls,
Molten from Cleopatra's liquid pearls;
I whispered to my heart: We'll fondly speak;
For 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,
Or orient gems reflecting snowy light,
Hope, disappointed, silently retired;
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" in 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 molded 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."

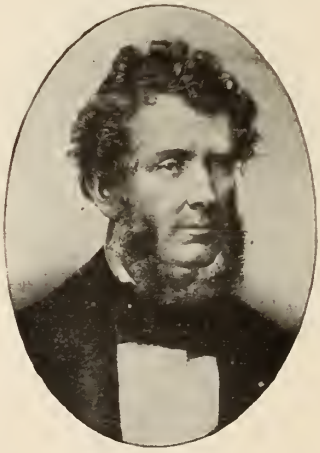


Amos Westcott

**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.

Westcott was of an inventive turn and invented many dental instruments of merit, amongst them the Westcott jack-screw 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 Westcott, was the author of "David Harum".



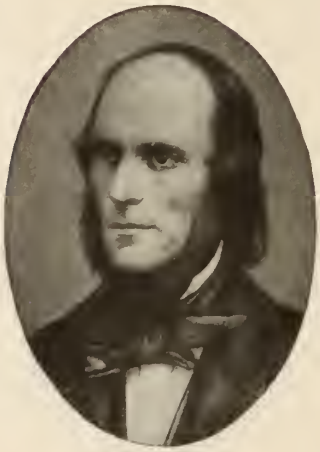
Elisha Townsend

**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, co-originator and founder of the American Dental Convention, first dean of the Philadelphia College of Dental Surgery, also first dean of Pennsylvania College of Dental Surgery. He was a close

friend of Hayden and Harris, and Robert Arthur, and imbibed much of their enthusiasm and talent.

John R. Spooner.

**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, and one of the first to use porcelain teeth instead of bone and ivory. He soon established a reputation along this line. He is credited with the use of arsenous acid for the devitalization of the dental pulp, using this in preference to silver nitrate, nitric acid, or actual cautery, which were employed those days.



S. Spooner

**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. 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

**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, in 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 fire-arms, amongst them the Maynard rifle, the first breech-loading rifle that proved equal to the best muzzle-loader. He revolutionized the fire-arms of the civilized world. A man of rare genius was Maynard.

(To be Continued.)

# OUR DUTY TO THE CHILDREN IN THE PUBLIC SCHOOLS.*

By Russell W. Bunting, D. D. S., Ann Arbor, Mich.

In the past few years more attention has been given than formerly to the condition of the mouths and teeth of our public school children. It has only been in recent years that much has been said in our dental offices as to the care and preservation of the temporary teeth, and we find even today that the large majority of our children have no dental attention whatever. Dr. Zederbaum, of our state, has done considerable examining of the teeth of children in the country schools round about Charlotte, and has found the mouths generally uncared for and in a filthy condition, the teeth decayed and many cavities unfilled. He reports whole schools where he did not find a single filled tooth.

It has been my privilege to examine the mouths of over 1,600 school children in the schools of Ann Arbor and Detroit. In Ann Arbor we have the dental college with the free clinic, and its influence was clearly discernable in the examinations in that the great majority of the children had received some dental attention, and their mouths were in fair condition. That is not to say that our college clinic took care of all of the 1,500 children, but its presence there, together with the educational influence of the university, in a way educated the public up to a realization of the importance of dental attention for the children. So that we found, especially in our better schools, that the children were brushing their teeth religiously, most of the cavities were filled and irregularities were being reduced. Of course the conditions were not all good, for in the schools which our poorer classes attend, we found many bad cases, but no general conditions comparable to what Dr. Zederbaum describes in his paper.

In direct contrast to this state of affairs we examined about 150 children in several schools in the poorer districts of Detroit and the conditions found are almost impossible to describe. The mouths of a large percentage were absolutely filthy, many teeth being lost by caries, both temporary and permanent. The filth in some of the mouths was so bad that

*Read before the Toledo Dental Society, February, 1903.

one could not look into them without a feeling of revulsion, and could hardly imagine that a human mouth could get into such a condition, unless he had seen it for himself. Of course these children were none too clean in other respects, although the school board is establishing bath tubs and making rigid rules in regard to cleanliness. In some of the schools we found that a great deal of attention was given to the personal cleanliness of the children—they were forced to scrub and scour their faces and hands, and in some instances are given a complete bath in the school, this being kept up until habits of cleanliness are established. In only one instance did we find that the teachers were taking any decided stand for the tooth brush and oral hygiene, and in that same school we found that the children, both colored and white, were cleaner and neater in their general appearance.

School boards are coming to the realization that if they want to make good, healthy, intelligent American citizens, they must first get them clean and inculcate the habit of cleanliness. A child lives better, a child thinks better, and develops both morally and mentally much faster when he is clean than when he is dirty. Many of the teachers and principals of the schools think that when they have succeeded in getting the child's outward appearance fairly presentable that they have done their whole duty and do not seem to realize that they are leaving the avenue, through which all the food and air goes into the body to nourish it, and through which is exhaled the air that pervades the school room, they have left that avenue a foul and filthy place which must pollute everything that goes through it. It is doubtless true that in these foul mouths disease germs do lodge and propagate and in fits of coughing are sent out in a fine spray that may be a source of danger to the neighboring scholars in the room. Then, too, the odor which comes from such a mouth is obnoxious, if nothing more.

As we examined those mouths that were in such a bad condition it seemed to us that the very best service that we could have rendered those children would have been to have removed the subgingival tartar, which was present in a great many cases, and other filth deposits, and then to have instructed the children as to the necessity of using a tooth brush and how to use it. There seemed to be a more crying need for

cleanliness in those mouths, than there did for fillings even though there was much decay present. It would be a great pleasure to anyone, who is interested in children, to be able to clean porperly some of those children's teeth and to get them interested in the care of their mouths, and then watch their further development. I believe the results would be surprising.

There have been many attempts made in various parts of the country to establish regular dental examinations in the public schools and to provide free dental clinics for children of the poorer classes who could not afford dental attention. To accomplish this several methods have been attempted. In some instances the dentists give as much of their time to the work as they can afford, at stated intervals, without any compensation, and much has been done in this manner. In other cases a fund has been established, either by private subscription or by a municipal grant, which has gone toward the maintenance of a dental inspector, whose business it is to examine the teeth of the school children as far as he can and give lectures upon the care of the mouth and the teeth to the teachers and the parents of the pupils. There is also, at present, a movement on foot, which is backed by a certain commercial house, which proposes to furnish funds for carrying on a campaign for oral hygiene in the public schools in various places in the United States, but, philanthropic as it may appear at first sight, this is only a clever advertising scheme of sharp business men, and as such, is not worthy of our professional co-operation. Some of the attempts have been in a measure successful, but many of them have lapsed from lack of organization of the work, and lack of co-operation on the part of the dentists.

There is not yet an adequate appreciation on the part of the members of the dental profession for the need of this work being done in the schools. There will be no possible doubt in the minds of anyone who will investigate the matter, at first hand, as to the reality of this need, and if each and every dentist understood the conditions which exist in the schools of his own district, he could not help but be stirred to action. That dental education of this sort pays can be readily proven by comparing the schools of Ann Arbor with any other town of its size, not having like advantages. In Ann Arbor

there are about 18,000 residents and 4,000 students, and to care for the teeth of these people 24 practicing dentists are kept busy, and a free dental clinic of 65 chairs has more patients than it can accommodate. This means that there is a great deal of dental work done for the size of the town, which is due to the general appreciation of the public for their teeth —and this has been accomplished without one word having been said in the public schools about dental hygiene—how much more might have been accomplished had the people been trained in their earlier years to value their teeth, instead of awaking to the realization of their worth after half of them had been lost.

It is only by concerted action that any great good may be accomplished, for if the burden of the whole work falls on the shoulders of a few men, the enterprise can not last long; but if every dentist is willing to give a portion of his time and energy, there is no reason in the world why a great work may not be done.

If we could look far enough into the future we might be able to see a time when there would be a paid corps of dentists who would have the care of the poor of our schools, and the direction of the teaching of oral hygiene, but at present the day seems far distant when this condition will exist. In the mean time, we as dentists, must take a step which will lead up to this, by volunteering our services, gratuitously, to do what we can for the children today. In the large cities it is out of the question, at the present time, to attempt to fill all the teeth of the children of the poorer classes, but it is possible to get their teeth clean and to teach them to keep them so. For this work dentists are needed. The teacher, or even the nurse in attendance, does not always know what the child's mouth requires. We saw many cases where the gums were puffy and swollen from the presence of subgingival calculus and filthy deposits, and should those children begin to brush their teeth while such conditions exist they would probably do more harm than good. We also found many small pieces of temporary roots remaining, which irritated the gums and in many cases deflected the erupting permanent teeth.

We need dentists, one or two for each school, who will take, say one or two rooms a week, examine the teeth of all the scholars, make such slight operations as are required, call-

ing the teacher's attention to all serious conditions, and teach the children how to use the tooth brush. At a subsquent visit review the same children's mouths to note the progress made. Records may be made, if deemed necessary, to be sent to the parents indicating the condition of the child's teeth, but if once the pupil's mouth is made clean and he has become interested in his teeth he will very likely be inclined to go to the dentist and have his cavities attended to. Children are great imitators and are very impressionable, as we found that even in our statistical examination where little in the educational line was attempted, yet, a marked influence on the children was apparent. It does not seem that it would be necessary to continue this work through the whole year, but a few weeks a year, together with the continued co-operation of the teachers, should create an interest that would be permanent.

Of course there may be difficulties in inaugurating this work in that the boards of education may not be wholly sympathetic at first, for they, as well as some of your fellow dentists, may think that you are doing this for your own personal aggrandizement. But when they understand the conditions and the motive which prompts your action they can not help but come into sympathy with it. The school board should understand that the work will be of great benefit to the children, that it can be carried out without any interruption of the school work, and that the pupils will not be forced to do anything that they or their parents will object to. The co-operation of the school board should first be obtained, and then the teachers and parents should be enlightened on the subject through the medium of the teachers' and mothers' meetings, and if necessary, the daily press. Both in Ann Arbor and Detroit, in our examinations, we met with the hearty co-operation of both the school authorities and the teachers; each expressed the desire to know just what the work was to be and of what benefit to the children, and when it was explained to them they were very ready to assist us in any way possible.

Here is a work to be done, a need to be supplied, and it depends upon the inclinations of us as dentists whether it will be accomplished or not. If each and every one of us do his part it will be no hardship on any one in particular, and the energy which we expend will be returned to us, not in material

gain, but in the consciousness of the fact that we have been able to aid the rising generation to a cleaner and better life.

It may be of interest to know what our method of work was. Our charts, as shown below, were for statistical purposes and may not be entirely suited to the needs of a hygienic examination, however, a modification of this card might answer the purpose very well. I would call attention to the size of the card, being 3 by 5 inches, the size of a card filing case and very suitable for filing purposes. Then, too, all of the symbols used are of the ordinary type and therefore can be printed at a small cost. The class "type" referred to the type of the individual and was made in four divisions; blondes, brunettes, intermediates and negroes. The remainder of the chart is probably self-explanatory. It would be very desirable if, in all the examinations made in the various parts of the country, a common system, which best answers the purpose, could be adopted, and these records preserved in order that from them statistics may be compiled. These statistics would indeed be very valuable.

Name..... Age.....
Type..... Weight.....
Color of teeth..... Height.....
Malocclusion..... Oral hygiene.....
Abnormalities.....

Nationality of { Father..... Occupation.....
Mother..... Occupation.....

| | | |
|---|---|---|
| | m m m p p c i i | i i c p p m m m |
| R | m m c i i | i i c m m L |
| | m m c i i | i i c m m |
| | m m m p p c i i | i i c p p m m m |

Key—Erupted teeth marked with line beneath.
Lost or extracted teeth marked by x.

Decayed teeth marked by \ drawn through.
Erupting teeth marked by v.

In our work we took great care that no infection be carried from one mouth to another. As we were simply making examinations two of us worked together, one examining and calling off the condition found, to the other, who recorded the same. The one who examined used no instruments in the mouth and did not get his fingers in any more than was absolutely necessary. He would have the child stand in front of a good light, tip the head back and gently distend the mouth

by pulling at the corners of the lip. Between each patient he rinsed his hands in an antiseptic solution and dried them. In case instruments are used strict asepsis must be maintained, preferably using two sets of instruments so that one may be sterilizing while the other is in use.

In the school room it was arranged that the children should come out in a certain order, and when one returned to his seat the next one to him started of his own accord, causing no commotion or confusion in the classes. The children themselves seemed to enter heartily into the plan and with the exception of a few individuals showed no fear or hesitation, in fact they were very much interested in the work, and took it all very seriously.

Ways and means must be devised which will best suit the needs of each community, but the most important thing is that some work of this kind be begun, and it is for the dentists of that community to say whether or no it shall be done.

## DISCUSSION.

**Dr. Zarbaugh:** Dr. Bunting says, "A child lives better, thinks better and develops both morally and mentally much faster when he is clean than when he is dirty," I want to add, and when he is free from pain.

Those of us who have had toothache, earache, etc., know how very difficult it is to concentrate our thought on any subject, for there is the pain, and it is persistent and demands all of our attention. So how hard then must it be for a child of from 6 to 16 years to enter upon its school duties when the pulp chamber is inhabited by an outraged and insane pulp, who, after handling all the material of which the tooth is built and finishing the structure according to specifications to the best of its ability with the material furnished, settles down to a quiet life in a cozy little chamber built for ONE.

What, then, must be his surprise when his tranquillity is rudely shocked by icy blasts from an ice cream cone, or a shower of sweets from a chocolate drop coming in through a leak in the roof. He is forced to take up his work again, to protect himself, with a secondary layer of dentin, and sometimes the leak is so bad that he will make his chamber smaller, as well as himself, and recede from the trouble, never, however, without sending warnings and protests that there is a leak.

Now at this stage of the trouble if the child were so fortunate as to be instructed (in the public school, or elsewhere) to visit the family dentist and have the leak in the roof repaired, the painful events which follow would not occur.

But, after long suffering and many shocking experiences, Mr. Pulp at last gets desperate. He sends a petition in boots, as it were, to the owner of the tooth, or he has a brain storm, and his form of insanity, for he is not normal, usually runs to music, and as he hums his little tune he enlists the sympathy of all the nerves on that tract, and sometimes the ear will join the merry chorus, as well as the owner of the tooth.

If the child is in school he is sent home because the grand concert is disurbing the thought waves of the teacher and the pupils in recitation. The child goes home where he is received in as many different ways as there are different homes. He may be accused of playing hookey via the toothache route or he may be severely jawed, and no further attention given the matter, by an indifferent parent, for many adults think that children's teeth do not ache as "hard" as grown people's. Or perhaps a loving mother will apply the hot water bottle, dope his tooth and gums with all sorts of home treatments, and at last in desperation threaten to take him to a dentist and have the tooth extracted, which usually frightens the child so badly that the toothache is scared out of him; then there is peace and quiet in the home, but not for the child. The next time the tooth aches he says nothing about it, but, remembering the previous accusations and threats, he bears it in silence, and every day there are thousands of little children trudging off to school with the fortitude of martyrs, bearing pain that an adult would not tolerate for one minute.

Under such conditions it is no wonder that children do not keep up with the class and that they make unsatisfactory recitations. Most parents, when a child complains of toothache, think it is a temporary tooth and that they will soon shed it. No further attention is given it until they are told by a dentist that the tooth is ruined; whereas, if the parent's attention had been directed to the child's tooth, as we propose to do, and the tooth cared for, how much suffering could have been avoided and how much better work would have been done by the child in school.

Dr. Zederbaum, in a paper given before the Michigan State Society last June, says:

"I have examined, in all, 500 mouths of school children between the ages of 6 and 16 and found out of that number 450 in need of dental attention; in aggregate there were 2,700 teeth, thus bringing the average of 6 teeth to the mouth."

The doctor said further that in his county there were 3,000 pupils; at the average given 2,700 children in school would need dental work, and at 6 teeth per capita there would be 16,200 to care for and that it would take 10 dentists, filling 50 teeth a day, one year to attend to the teeth of the school children of that one county.

Now we all know the conditions. What are we going to do about it?

The first thing to do, as Dr. Bunting suggests, is to enlist the

sympathy and get the consent of the board of education and the superintendent of schools, then follow out some definite plan to make the examinations, sending the report of same to the parent, who, in turn, will have the work done by their dentist (not the one who makes the examination, for his identity need not be known.)

For those who have not the means, we as a society can arrange to open a free dental clinic every Saturday during the school term, and by each doing his part, say one-half day two or three times during the term, we can do a splendid work for humanity and for the dentists who follow us, also help to make the work of the teacher easier and the pupil a brighter and more willing student. We who are in the resident districts see more of the children than those of you who are in the large office buildings, and I want to say to you that the rich are as bad as the poor in neglecting the children's teeth.

**Dr. Phelps:** Our great work is to educate the people as to why this work should be done and to show them the real condition in the children's mouths. This can not be brought about in the dental office alone; we must use the newspaper.

**Dr. Harper:** This work lies with the truly professional men. We can not co-operate with any financial scheme no matter how plausible it may appear on the face of it. I may say this work is now in the prophylactic stage. We are just starting in to prevent disease.

Foreign countries are away ahead of us in this work. We've got to get busy and be pioneers. The sooner we educate the people the better for our country. Let's be patriotic. We won't get rich, but we'll have the satisfaction of doing good to mankind. If we are going into this work we'll have to make up our minds we'll have to sacrifice. The public won't appreciate it but we mustn't care for that.

**Dr. Phelps:** That's just it; a patient came into my office a few days ago and I was explaining about this work for the children in the schools, and she said, "Yes, it will be a fine thing for you dentists."

**Dr. Van Deman:** It will depend upon the men to demonstrate that there is no desire to do this to gain practice, but that it is done in an unselfish spirit and to better the public health. In the end it will be appreciated. We have with us tonight a member of the board of education who has braved the storm to be with us and I'll ask Mrs. Steinem to discuss this matter with us.

**Mrs. Pauline Steinem:** Mr. President and Gentlemen:—I have been exceedingly interested in Dr. Bunting's paper and these discussions and am more than pleased at the unselfish spirit among you. What Dr. Phelps tells of his experience is a sad comment on

the average mind. People can not see how one should do something for nothing. They forget that there is one pleasure in life to "do for others." Your subject tonight opens up the question of medical inspection for the schools. The question is not how you may get the consent of the school board, but it is one of the law. Some time ago when the physicians desired to examine the school children, the city solicitor ruled that the school code did not cover anything of this nature. The law is that the code covers all activities permitted under the law, and anything not mentioned in the code can not be introduced.

For example: The necessity for vacation schools is apparent, but as there is no provision for them in the code, there can be no appropriation for them, so we don't have them.

In Germany these clinics are established by the government and examinations are made twice a year.

In Chicago, the board of health engage physicians who hold themselves subject to the teachers when they think there is need for their services. One physician lectures to the teachers as to how to detect different diseases and to make out reports to the board and parents.

There is great need for the socializing of our public schools. It is frequently necessary to feed the children, as well as to see that they are clean. The state will have to come to the point of slipping in and doing what the parents can not. There is an effort being made to have our law changed so this can be done in Ohio. While we are waiting for this the teachers could teach the care of the teeth just as well as to teach the effects of alcohol if their attention were called to it.

**Dr. Van Deman:** Dr. George Wilson, of Cleveland, tells me the same thing about the school code, and also that pressure is being brought to bear to alter it. Many of us have the school teachers for patients and we can present the importance of this matter of the care of the teeth of the children to them as they are in our chairs. I hope we shall all get so enthused that each will give up six half days each year.

**Dr. Harthorn:** We shall have to impress upon the public and the rest of the profession that we go into this thing honestly without looking to the money end of it. We can safely trust to the future for the profits. We must make up our minds we will have to contribute time and money and that we will have to sacrifice. The public will gradually see we are unselfish.

**Dr. Megginson:** I believe the examination of children's teeth of more importance than we know. We are in charge of the men and women of tomorrow. When we open some of these little mouths we find the conditions simply awful, the rich are as bad as the poor, the teeth are neglected and covered with tartar, the

saliva is acid, and what is the result? Decay and all the attendant evils of pain, eye trouble, tuberculosis, bad breath, and even death may follow neglected mouths sometimes, no doubt. In our grandfathers' day people didn't have such a lot of tooth trouble as they do today, and why? To be sure customs have changed, but these are not alone responsible; it is just because the teeth are neglected.

Now, gentlemen, we want to do this work honestly and establish good habits in our little patients, and when they grow up they will thank us. Spend a little time showing them how to care for their teeth. You can put in tin and gold for them and the saving in the cost of material will pay for your time in teaching them.

Parents are to blame for the fear children have of the dental chair. They wait and wait before having the teeth cared for and then when they do come they find the teeth can not be filled without more or less pain and are surprised at the devastation. If the parents can see this matter in its true light they will never raise the question of graft. It is my ambition to have a charity practice where I can care for the children especially at but a little above the cost of materials. If we can get the children's mouths sweet and clean, teeth all filled and pain stopped, the health of mind and body will be better and school work will be better and they will be better all around.

**Dr. Park:** There is no doubt that there is a crying need for this work in the schools. There is a generation growing up better educated concerning the evil effects of alcohol, and it is just as necessary that they should be educated concerning the evil effects of germs in the mouth and swallowing them and so contracting disease. The children are anxious to learn the care of themselves and of their health and they can and will learn to keep this portal of the system right if we teach them. Many parents are ignorant of the value of the teeth. Many a time I've spent, maybe a half hour, trying unsuccessfully to get them to save a child's tooth. We are going to have our trials in educating people, but it is a forward movement and we must be willing to spend time at it.

**Dr. Zarbaugh:** There is no time to strike like when the iron is hot. It is time to do something. I move you, that the chair appoint a committee to see what can be done this year. (This carried and president asked time to consider and would report later.)

**Dr. Bunting:** (Closing.) Well, I am surprised. Why, we in Michigan have you beat a mile. Why, we have medical inspection in our schools, doctors, nurses and the whole thing. You have got to have it in Ohio, yes, and dental inspection also, for this is as important as any other method of hygiene, and even more so, for it is more important that the mouth should be clean than that the hands and face should be. Why, a dog's mouth is cleaner than the mouths of some of the school children. Some of you have

children in school sitting next to these bad mouthed children and when they laugh or cough your children get a flood of these disease-producing germs.

Now, concerning this graft question. I want to say that of all the children examined in Ann Arbor not one, so far as I knew, ever came into my office afterward. The one who examines must go incognito, so to speak. There must be no such a thing as handing out cards, etc. This is really a philanthropic business. If we can not do any more we can instruct the teachers. They are overloaded, it is true, but they will find the time and opportunity if once their attention is called to the importance of oral cleanliness. Why, do you know that in our text books on physiology there is less than one page on teeth?

In some of the poorer homes the children never saw a tooth brush. Some of these children had clean teeth, due probably in a measure to the hard substances they had to chew, but for the rest they needed dental attention badly, some having so much tartar under the gums they could not eat hard substances.

If free clinics are given they should be given under the supervision of the teachers. It will be much easier as they seem to hold the scholars in something of a military order. For example: A physician sends his son to my office and while there I can do scarcely anything with him. He was among those who lined up at the school and presented himself, opened his mouth, and did whatever he was told without any fuss at all.

Extensive clinics, of course, would have to be held in a convenient place, but all examinations should be at the school.

## THE GOLD FILLING VS. THE PORCELAIN INLAY.*

**By W. H. Green, D. D. S., Lebanon, Indiana.**

It is with a feeling of hesitation that I attempt to read a paper on this absorbing subject, before such an august body I realize that many of you are more able, better located and better prepared to handle this question. It seems to me that some of our learned porcelain men have their guiding light hitched to a moving star instead of one of the fixed stars; the star of true knowledge and truth. I feel that they should receive a gentle reminder of the true and practical things of dentistry before their wandering imaginations lead us into error.

It is well to hitch our ideas to a fixed star high up and afar, and then reach out enough to investigate new ideas, and

*Read before the Indiana State Dental Society, 1907.

thoughts, and each one experiment for himself. Yet we should be sane enough to keep our heads on our shoulders.

Pope, in his "Essay on Man," says:

> "Say first of God above or man below,
> What can we reason but from what we know?"

So in dentistry, we should always keep in mind one ultimate aim and end, and that is to preserve the natural tooth in a way to make it give the best service possible; and we can only do this by the practical experiences of the past, and also by our own experience. I believe that every dentist who uses gold as his principal filling material has this formula:

1. Preserve the natural tooth.
2. Make it useful.
3. Aesthetic ( last).

While the porcelain inlay dentists in their articles get the horse before the cart, with this formula—

1. Aesthetic.
2. Practical.
3. Preservation or usefulness.

A few others have this formula:

1. Easy way to make money.
2. At little cost.
3. Aesthetic.

By so doing they leave out the essential thing the dentist should try to do: that is, to preserve the natural tooth in a way to make it the most useful. With these formulas attached to their moving star, they sail away, and never stop to consider that each human being that falls a victim to their chair deserves to be remunerated with something useful in return for his hard-earned cash he has saved by stint, care and economy. We alone are accountable for our sins of omission and commission.

In dentistry, when we find we can do a thing, and do it well, we should hold to it until we find something better before we lay the old aside for the new. A good gold filling seems to be almost a lost art. Every dentist can select his own filling material, but he can not select his own choice of cavities or teeth to fill. He has to take what comes. In my town he can't be a specialist or enthusiast. The enthusiast is the one

who grabs everything that has anything new about it, such as pulp capping, pulp mummification, White Oxide of Zinc Paste for root-canal filling, Archite Cement, Cataphoresis, and so forth.

The conservative gold workman stays by his best judgment of what he can do, and has confidence in his own ability to do it. He forgets the uncertain aesthetic wave against his success to preserve the natural tooth. Dr. Mitchell says he has 81 kinds of cavities where he uses the porcelain rod in inlay work, while the good gold workman has a practical way of adapting every cavity to his ever-resourceful mind, and he proceeds to fill it in the best way to preserve the tooth and make it useful. Every dentist should have a mind that is a law unto itself, so that when it sees the cavity, it also sees the result to be obtained, which should be to preserve the tooth and make it useful. Dr. J. Q. Byram says: "You have to cut away more solid tooth-structure for a gold filling than you do for a porcelain inlay." That I most certainly deny, and I will go one step farther and say you never need cut away as much solid or frail tooth-structure as for the inlay, and not so much separating space for the gold filling as for the inlay. The inlay must go in as a whole body, while the gold filling is put in in small pieces with instruments curved to adapt each part perfectly to every part of cavity, making a complete stopping for the cavity. It takes little if any more under-cuts for the gold filling than the inlay. You can use the gold anywhere, in any cavity, while the porcelain inlay is limited.

I haven't found any one recommending porcelain for root-canal filling, while gold is a good root-canal filler, although expensive. I don't quite agree with Dr. Thompson Madin, L. D. S., of England, who has an article in the February Cosmos of 1907, which would make you think that gold fillings are as easy as amalgams, although it has some valuable suggestions.

Dr. Herbert Johnson, of Macon, Ga., read a paper on "Retention of Gold Fillings," before the National Dental Association at Atlanta, Ga., last year which was interesting to read, but one forgets it in general practice. The mind that is a law unto itself in every dentist finds that law is framed by his practical experience with his own successes and failures, and the successes and failures of the other fellow. The enthusiast's experiments are valuable because he experiments with every-

thing new, giving one an opportunity to see the strong and weak points of the new. He usually has more failures than successes for one to profit by.

Dentistry is progressing rapidly, and has for the last 25 years. It seems almost to go by leaps and bounds, when one compares the present with the slow development of the past. But the progress is not quite as great as the enthusiast, laboratory man and dental supply man would have you think it is. It took 26 years for the porcelain inlay to find it had its limitations, and yield back to the gold filling the one essential thing, and that is the gold filling is a fixture in the household of dentistry. The good gold filling seems to be relegated to the background by the new student of dentistry, because he is not taught (by a doctor of experience) how to do the work required for a good gold filling, and to make it stay in place for any length of time. When his failures come back to him he turns to cement, amalgam, or porcelain, as a means of escape. I wonder if, in his college days, he met some red tape and got lost over "Buccal, Labial, Lingual, Grooves, Fossas, Fissures, Seats, and Steps, and Extension for Prevention," and forgot the essentials, or is he just too cussed lazy to work?

I don't believe the practitioner, in the days of the golden art (or lost art), or even the gold workman of today, ever consciously thought or thinks of seats and steps, or extension for prevention.

When a cavity was examined, the thought was to fill it, and proceeded to open up the cavity, remove the decay, shape it, and cut retention; and then, with a willing hand and will, he thoroughly condenses the gold to all parts of the cavity and cavity walls, making a complete stopping for it.

The porcelain inlay has its dark margins of cement, discolored and dissolving out after a time, leaving a rough edge for bacteria and new decay.

I have written to several dental colleges as to the time required by the juniors and seniors for gold fillings and inlay work. Their replies, by the way, were very interesting, because of the difference in time allotted to the gold filling compared to the inlay.

When the porcelain inlay craze was at its highest zenith of

sublimity, and before the dawn of its setting sun, shadows began to gather and mark its limitations.

The porcelain man said porcelain is aesthetic.

The gold man said gold for service.

The porcelain man said porcelain is practical.

The gold man said gold will preserve the tooth.

The porcelain man said porcelain is better than gold.

The gold man said aesthetic last.

The porcelain man now says porcelain in the anterior teeth and gold inlays in the bicuspids and molars. The gold man says gold anywhere, in large or small cavities, will preserve the tooth and make it useful.

In the next few months or years, at least, the porcelain inlay will be knocked sky high with a cement of 12 or 15 colors of pulverized glass, and a liquid. I recently saw some gold fillings that Dr. W. H. Stevenson put in 24 years ago, also some that Dr. T. H. Martin put in 40 years ago, and they were in good shape yet. I said to myself, gold will preserve the natural tooth and make it useful, and some good gold workmen still live.

The porcelain inlay dentist says life is too short to spend two or three hours for a gold filling; yet he will compel you to make two or three trips for the inlay, and to have another one put in, which will possibly come out.

One of the leading dentists of Indianapolis told me of one of his experiences with an inlay in his own mouth; it came out three times in 30 days. I will say there is not a doctor who stands higher in his profession than this doctor does, in my estimation. Dr. Nyman, of Chicago, said before this state dental association a few years ago that the pressure of one tooth, mesio-distal against the other tooth, would help to hold an inlay in. That was a new one on me. My experience had taught me that such pressure might keep a loose gold filling from falling out.

It requires as much strength to resist the power of mastication for an inlay as for gold filling.

To make a good gold filling for all kinds of cavities, one needs to know how to use non-cohesive gold, mat-gold, and cohesive to finish with. I believe if one tries one can make a good gold filling with any of the golds used for filling. What is stronger and tougher than the good gold filling for practical

use? Which the more unsightly, a smooth-polished gold filling, thoroughly adapted to the walls of the cavity, or a discolored porcelain cement line, with a poorly matched porous porcelain? I have failed to find a perfectly matched inlay to the natural tooth as to lustre and smoothness.

You can use gold where you can't use the inlay, in such places as small fissures, pits, and small, tiny cavities.

In regard to the unsightliness of gold, the very one who makes such a big ado about it will usually be seen with it in his necktie, on one or two fingers, across his vest, or in one pocket.

## DISCUSSION.

**Dr. E. R. Kibler, Indianapolis, Ind.:** The subject of the essayist is one that is attracting the attention of the whole dental profession today. Some favor inlays and some believe they should not be used, and it is evident the writer of the paper you just listened to thinks there is no place for inlays. He has taken a very radical view of the subject, therefore his paper is very narrow. The paper shows the writer is practicing just as he did 10 years ago; I am judging him thus, not because he is condemning inlays, but because he says he pays no attention to flat seats and parallel walls and extension for prevention in the preparation of cavities. The essayist says some of our porcelain men have their guiding light attached to a moving star, instead of one of the fixed stars—the star of truth and knowledge. I feel that they should receive a gentle reminder of the true and practical things of dentistry before their wondering imaginations lead us into errors. I believe the essayist was sincere in his efforts to save us from such a downfall, but judging from the tone of his paper, he is the one that needs saving.

The inlay men, I am glad to say, have their ideals on something higher than the fixed stars. Our every aim is to advance and to keep up with the new things that are given us, and not condemn every thing, because it has not been used for 40 years.

The essayist gave the advantages of gold fillings as—

First. Preserving the natural tooth.

Second. Making it useful.

Third. Aesthetic.

Dr. Byram gives the advantage of porcelain inlays in a paper entitled, "Advantages and Disadvantages, Indications and Contra-indications of Porcelain Inlays," in the June Items of Interest, 1907, as follows:

First. Fillings can be inserted which more nearly harmonize with the natural teeth.

Second. Porcelain is a poor conductor of thermal and non-conductor of electrical changes.

Third. The margins of the cavities properly filled with porcelain are not readily attacked by caries.

Fourth. The cement used as a retaining medium causes the filling to have the greatest adhesion of any of the filling materials except cement.

Fifth. The patient is relieved of sitting with the rubber dam adjusted over the mouth of a period of considerable length, and of the pain incident to adjusting the rubber dam and cervical clamps for cavities extending beneath the gum.

Sixth. The nervous strain of both patient and dentist is lessened thereby, relieving the patient of the shock which usually follows long, tedious operations.

Seventh. Busy patients need not spend so much time in the dentist's chair as the cavity is prepared. The matrix may be burnished to the cavity, or an impression of the cavity may be taken, and then the patient dismissed until the inlay is completed.

Eighth. Faulty fillings are easily dislodged, while porcelain has the advantage over gold in making a filling that not nearly harmonizes with the natural teeth, and one that is a non-conductor of thermal and electrical changes.

It has still another advantage which should appeal to all conscientious operators, in that imperfect fillings made of this material are easily dislodged. A large number of gold fillings, which do not preserve the teeth, are retained by deep grooves so that it is almost impossible to dislodge them. Such fillings deceive the patient and many times the dentist. If a porcelain filling is faulty, it is displaced, and the patient knows immediately that the services of a dentist are required.

The essayist says, "Some men do inlay work because it is an easy way to make money at a little cost." If the essayist would try to make a few inlays, he will soon find out the error of his statement. The essayist was a little strong with his language when he said: "With these ideas attached to their moving stars, they sail away and never stop to consider that each human being that falls a victim to their chair should be remunerated with something useful in return for his hard-earned cash he has saved by stint, carefulness and economy."

In defense of the men who save teeth with inlays, the writer will say their reputation for honesty is never doubted, and they are just as conscientious in their work as the dentist who never made an inlay. Even though the inlay is condemned by a great many dentists, the practice has grown wonderfully in the past few years.

I wasn't aware that the gold filling was a lost art. I believe most dentists with the proper efforts can insert a gold filling that will save the teeth.

It is very unfortunate for a dentist to be located in a town where he cannot be an enthusiast. Webster says, "An enthusiast is

a person of ardent zeal." I think the dentist who does not have these qualifications can't be progressing very rapidly in his profession and giving his patients a "square deal". An enthusiast is not one who grabs at every new thing as the essayist has said.

The essayist misquoted Dr. Byram when he said, "you have to cut away more solid tooth structure for gold filling than you do for porcelain." Quoting from Dr. Byram, in Cosmos, May, 1907, from a paper entitled, "The Present Status of Porcelain Inlays," Dr. Byram says, "The writer has found in many instances that more solid tooth structure is involved in the preparation of cavities for porcelain than would be involved in preparing the cavity for gold, in most cases." The essayist quoted Dr. Byram to his disadvantage. It is an acknowledged fact that it requires more cutting of a tooth for the preparation of an inlay than it does for gold. The essayist says, "You do not need as much separation for gold fillings as for the inlay The inlay must go in as a whole body, while the gold filling is inserted in small pieces with instrument curved to adapt every part perfectly to each part of cavity, making a complete stopping for the cavity. It takes little, if any, undercuts for the gold filling than the inlay. You can use the gold anywhere in any cavity while the porcelain inlay is limited." The person making such a statement has certainly a few things to learn about modern dentistry.

The essayist is condemning inlays when he apparently knows nothing about them. Inlays can be inserted in frail and loose teeth, when you could not think of putting in gold. When you do not cut away your frail tooth structure for either a gold filling or an inlay, you are going to have a failure. Only in a few instances does it take as much separation for an inlay as for a gold filling, and that is in the interproximal cavities in the anterior teeth, where you cannot cut your cavity so the inlay can be inserted without unusual separation. If you do not have ample separation for a contour gold filling how can you polish that filling and still have contact? As a rule with inlays, you do not get as much space as you do for gold fillings. It is the undercuts that we try to avoid in the preparation of a cavity for an inlay.

I never saw the man that could insert a gold filling successfully in every form of cavity. The essayist says, "when a dentist can't make a gold filling stay in, he then turns to inlays." I wish to state the men who have the ability to make successful inlays have the ability to make a successful gold filling. If the essayist has a better way of describing the surfaces of a tooth than with the terms buccal, labial, and lingual, then surely we will all be glad to hear it. The essayist says he doesn't believe in flat seats and parallel walls and extension for prevention. I really feel sorry for the essayist when I think of the difficulties he has to overcome in saving teeth, when he says he has no use for such things. Drs. C. N. Johnson and G. V. Black, two of the foremost men of the profession today, gave us what is termed scientific cavity preparation, and it is not often we hear their efforts being questioned in this regard. In fact, it is the

recognized system of cavity preparation of today, in all our colleges and by the leading men of the profession.

G. V. Black first gave us extension for prevention, and it has done more in the saving of teeth than any other one thing. If a tooth will decay in the beginning, in the inter-proximal space, when it was put there in a perfect condition by nature, how can we hope to make a mechanical joint that will not decay in that space? I have noticed that the majority of gold fillings that fail are the ones that are not made self-cleansing, and that is one of the reasons why inlays seldom, if ever, have recurrence of decay around them, as they must be extended to make the proper cavity preparation. I think the dental colleges of today are doing all in their power to teach modern dentistry and insertion of gold fillings. If there is any fault it is largely with the student. If the report from the different colleges were so interesting because of the difference in time allotted to the gold filling compared with the inlay, I don't see why the essayist did not tell us about it.

The essayist has compared the failure of inlays and all the successes of gold fillings, which is unfair. Stop and think how many gold fillings are in the mouth that are called successful, when in reality they are not, but are simply held in position, due to the deep undercuts, and are allowing the tooth to decay and deceiving the patient. The inlay is of more service to the patient than the gold filling. If it is a failure it will drop out and the patient cannot be deceived. The Indianapolis dentist that had the inlay to come out three times in 30 days was very unfortunate, and the chances are the inlay was not indicated at all. I will make this statement. When this dentist had the cavity prepared correctly and an inlay adapted perfectly to the cavity, he had no more trouble in this respect.

It is an acknowledged fact that cavities can be hermetically sealed with gold foil. It is also an acknowledged fact that a cavity can be hermetically sealed much easier if the tubuli are sealed first with a lining, preferably of cement. This being the case, I believe that gold inlays inserted in large approximo-occlusal cavities and porcelain inlays inserted in the anterior teeth, when indicated, will save more teeth when perfectly adapted than any other method we can employ. The principle is the correct one. The only question is for us to perfect ourselves in the new method, and we can save teeth with so much less strain on ourselves and the patient.

Our health is a vital point. We complain about dentistry being such laborious work. The inlays will relieve that to a great extent. We should consider our health before anything else. It is of more importance than all the teeth in the world. The dentist who uses the Logan crown or any post plate crown has the same faith in the cement that we do in the inlays, and expects to seal the joint just the same as the margins are sealed in the inlays.

I have some gold fillings and gold inlays, by way of comparison. They have been in my mouth five years. I will leave it to any dentist who is interested, to examine my mouth and see which are

doing the best service. I have had several dentists to tell me the fillings are leaking, and that the inlays are not. I will leave it to you. I saw two porcelain inlays in the upper second bicuspid and molars approximo-occlusal cavities, in the mouth of a lady 30 years of age, that had been inserted 15 years ago, in France, and they are just the same as the day they were inserted. No chipping of margins, no pits, and they were not leaking.

**P. I. Pentecost, D. D. S., Cicero, Ind.:** I heartily agree with only a part of what Dr. Green has said.

It is very true that we should always keep in mind one ultimate aim and end, and that is to preserve the natural tooth in a way to give it the best service possible. But I believe it is as necessary to make the tooth appear natural as it is to preserve the tooth. In the formula given, the preservation of the tooth and to make it aesthetic should be linked together, with preservation a little in the foreground, perhaps, but they should be inseparable. It is as soothing to the soul to see a perfect set of teeth as are the strains of sweet music, but when the continuity is broken by the unsightly gold it is as grating as the unharmonious discord.

When a tooth is preserved by a filling and is aesthetic, it naturally follows that that tooth is made useful.

Undoubtedly all agree that gold is a good filling material and will preserve the tooth under ordinary conditions if properly worked, and, I venture to say, is used exclusively in anterior teeth by half the dentists in Indiana. But it lacks at least two important qualities: method of introduction and it is not aesthetic. Why, then, should we be contented with a filling material that comes only half way up to the standard?

A good gold filling is by no means a lost art, but I sincerely hope before many years it will be.

We should all be enthusiasts to a certain extent, for it is always the enthusiast, or crank if you will, that is at the head of all movements toward progress.

To me it seems absurd for any one to think of filling a root-canal with porcelain, and it certainly would be a very enthusiastic gold workman that would fill one with gold.

The dentist of today who does not consciously think of extension for prevention, I am inclined to believe, does not always give his client value received for his hard-earned cash saved by stint, care and economy.

We are given a contrast between an ideal gold filling and a poor inlay, but contrast an ideal inlay with a good gold filling and the result is different.

If Dr. Green had seen the inlays that Dr. Byram showed at the national meeting at St. Louis, he doubtless would not have made the statement that he had failed to find a perfectly matched inlay as to lustre and smoothness.

"Every dentist should have a mind that is a law unto itself." That is very true; work that is a success in some hands may be an

absolute failure in hands of others. Not long ago I asked a dentist prominent in his locality why he did not work porcelain. He told me that several years ago, when porcelain was quite a fad, he tried it and failed, and was going to let the other man experiment this time. It is the other man who is going to succeed.

The time will come, I feel sure, when any large amount of gold will be used only where it can be concealed from sight.

Then, certainly, the persistent gold man of today will try to make a success of porcelain unless, in the words of the essayist, he is too cussed far behind the times.

**Dr. J. E. Cravens, Indianapolis, Ind.:** No doubt but that the porcelain inlay has come to stay, and it has its place, provided it is put in its place. I do not altogether approve of what has been said, because sarcasm and ridicule are not considered fair or proper in discussions before a parliamentary assembly. Ridicule and sarcasm are supposed to indicate some degree of scorn or contempt, and I insist that it is not fair to Dr. Green to ridicule him. Dr. Green is not at issue in this discussion.

Now, I did not arise to defend or to attack porcelain. I have a porcelain inlay in one of my anterior teeth, in a cavity which had been filled with gold at different times for 20 or 25 years, and the porcelain has been in there four or five years. It did not fall out two or three times; it did not fall out one time; it is there yet, and I expect to get good service out of it. It is in a central incisor, and there is considerable mechanical abrasive wear of these teeth. Though constantly wearing away, it is fair to suppose that I will be using that incisor 30 years yet; so the inlay was wisely applied. However, I would like to ask all of these porcelain workers taking into consideration this occlusive abrasiveness of the teeth, how many porcelain inlays introduced today will be in good condition and render good service 20 years from now? I think I can find a thousand or thousands of gold fillings which were inserted by Dr. P. G. C. Hunt 30 years ago that are in good condition today, and are giving good service.

**Dr. W. E. Kennedy, Indianapolis, Ind.:** I wish some people had a good strong voice, as I have not been able to hear everything that has been said, but I want to compliment the two gentlemen who were discussing this paper for the way in which they did it. I heard one or two words from Dr. Cravens, such as "sarcasm" and "personal attack". I do not know whether he had any reference to the paper or not, but I feel that no one will do it intentionally. However, the essayist undoubtedly has, as Dr. Kibler said, taken as narrow a view of the subject as is possible. In the beginning of gold work I had many, many failures, and they were just as filthy, dirty failures as I ever had with an inlay. Many failures are made in gold fillings that we are never able to see and of which the patient does not know about until there is a loss of tooth, or crown of the tooth at least

but with the inlay it tells its own story very shortly, and this is one great advantage of the inlay. We have not lost sight of the fact that this is the great age of the inlay.

I put down a point to discuss that was taken up in the discussion upon the subject, and that was the comparing of a perfect gold filling with a very imperfect inlay, which is very unfair. The essayist spoke about the time of the inlay having been ended, and the time of the perfect gold filling having been ended. I saw a gold inlay in an incisor which had been in for 14 years, and to my mind, this is the most trying position possible, and it had been inserted without a post. In dealing with this subject, as in dealing with any other subject, we should not compare the good to the bad, and I believe that we shall have to make an effort along the inlay line, as we did when we commenced to walk or commenced to work gold. If we do not do that, we shall never perfect the inlay, and will always be condemning it.

**Dr. J. Q. Byram, Indianapolis, Ind.:** I feel that I am in somewhat of an embarrassing position at the present time. In the first place, I wish to apologize to Dr. Green in that I was one of his teachers. He spoke of the colleges having young and inexperienced teachers, and I assure you that no one appreciated the ordeal at that time more than I; so I wish to publicly apologize to him for having been one of those inexperienced teachers.

Now, Mr. President, as all of you know, I have the reputation of being an enthusiastic porcelain worker, but I believe if you will follow my writings on the subject you will find that I have always pleaded for conservatism in porcelain work. I cannot see why the essayist will condemn porcelain because it has limitations, and will not condemn amalgam. Amalgam has its limitations just the same as any filling material. Simply because porcelain is limited to certain cavities is no reason why it should not be used where indicated.

I wish to say, now, Mr. President, that the gold filling is not a lost art. The percentage of gold fillings that are perfect 40 years hence will be greater than the percentage that have lasted for this length of time. We are making better gold fillings at the present time than were made 40 years ago; the percentage is higher, and I believe the essayist is wrong when he says that gold filling is a lost art. But are we to take one form of filling material and advocate it above all others, simply because it is more permanent? Grant that under certain conditions the gold filling is more permanent than the inlay, you will have to admit that under other conditions the inlay will be more permanent than the gold filling. There are thousands of teeth being preserved by gold inlays, and it is not fair to insert the gold filling in such teeth if the inlay is better. Gold fillings will always have their place in bicuspids and molars. I believe that any sane inlay worker will fill small cavities in bicuspids and molars with gold, but he will not attempt to fill extremely large cavities with this material, and find that in a few years the fillings are faulty.

Now, to get back to the subject of porcelain inlays. Most inlay

specialists believe at the present time that the principal indication for porcelain inlays is in the incisors and cuspids, and we also believe there are but few cases in vital incisors and cuspids that can not be filled properly with porcelain and be made permanent operations. Every gold filling that is inserted in an incisor or cuspid is not a permanent operation. Its usefulness ceases the moment the filling begins to leak, and it would be much better if we would be honest and say to our patients that this filling should come out. But we hate to do this; we only inserted that filling two or three years ago, and we fear that it would reflect upon us if we tell to the patient that the work is faulty. So we let that filling remain, and in the course of two or three years the patient returns with an exposure of the pulp. This occurs quite often, and if we are all honest with ourselves we will have to admit that we have such cases.

I should hate to think the essayist meant what he said when he spoke of the conscientiousness of the porcelain workers. It has been my good fortune, Mr. President, to meet many of the best porcelain workers, and I wish to say that these gentlemen are not lazy; they do not insert porcelain inlays because they are easy; they do not insert porcelain inlays because they feel that they are earning a larger fee, and not doing their patients the best service. They are conscientious, always giving their patients the best service possible. I can name dozens of men who stand highest in the profession today and who are recognized as the best porcelain workers in the country. These gentlemen are all conscientious, and are not doing inlay work because they may obtain a larger fee for a small amount of work.

It is never fair to cite individual cases as the doctor mentioned, and many times we take advantage in such arguments. I cannot show inlays that have lasted 40 years, because we have not been doing inlay work that long.

Inasmuch as I am the one referred to in Dr. Green's paper, I should like to relate the history of this case and put the association right on that point. The dentist was Dr. Tom Hacker. This was a case where a gold filling had been inserted for 25 years. He remarked: "Now, I want to see what you inlay workers can do; you go around blowing about it, and I want to see what you can do." A number of us agreed that the tooth should be crowned, and that we should not attempt to save it with a porcelain inlay. The first operation was done in Chicago in Dr. Frank Cheseman's office. Dr. Cheseman had a streak of bad luck; he was using a furnace, which gave him some trouble; the inlay rolled off the furnace onto the floor, and evidently checked in falling. The inlay was inserted about 4 o'clock that afternoon, and the next forenoon the labial face of it had broken away. So when we came home I offered to insert another. I made an inlay, but used a post which was too short, and the inlay broke from the post in a short time. Now, was that the fault of the inlay? If you prepare a cavity and do not cut proper retention for a gold filling, are you to condemn the gold filling because it falls out? It was my fault because this inlay came out the

second time. The third inlay is still in, because we used a larger and longer post to retain it. Inasmuch as I was the dentist who made two of the inlays, I thought it best to tell this association this experience.

While there have been a few dentists throughout the country who were so radical as to say that porcelain should be used in all cases, I do not believe such statements should be considered. Ninety-five per cent. of the porcelain workers have not been so radical. Now, are we going to judge the 95 per cent. by the 5 per cent.?

Dr. Pentecost did the kindness to refer to the case which I exhibited at the International Dental Congress at St. Louis. This patient came to Indiana to do some post-graduate work under me. It was also my good fortune to visit New York City last February, and after reading a paper before the society my good friend, in discussing it, told the members that he had never met an inlay worker who dared to cut the tooth as much as I did, and that it was a revelation to him. The inlays were inspected by the members of the society after the meeting, and they were found to be in just as good condition as they were the day they were inserted.

I wish to go on record as saying that I have probably made more failures than any dentist in the state of Indiana. Why shouldn't I? I have been in position where I could experiment more than any of you, and I feel, gentlemen, that if my experimental work has been of no value to the profession, then I had better quit it and spend my time with my wife and babies. It is not an easy task to do experimental work when one gives up his evenings and Sundays, and if those of us who do experimental work are to be considered radical and are doing no good to the profession, then I for one am ready to give it up, because if there is a man living who enjoys his family it is I.

I shall only mention the point he made in regard to extension for prevention. I do not believe Dr. Green meant what he said, because I believe he does practice extension for prevention. What he meant, I think, was that he did not always work that out mentally, as he did when he was in college; but you must bear in mind that we have to have classification and order, in order to teach things in a logical way, and that we must have terms to designate our walls, such as buccal, mesial, etc. I should hate to think that the essayist does not practice extension for prevention, and I believe he does.

**Dr. J. H. Prothero, Chicago, Ill.:** I am not in position to discuss this paper for the reason that I did not hear it. I heard a part of the discussion, from which I gathered something of the trend of the paper; but I am not going to jump into a discussion without knowing exactly what was said by the essayist. I will say, however, that we make a few inlays in Chicago, both gold and porcelain. We recognize the fact that both have their limitations. We also recognize that gold fillings have their places, and that amalgam fillings have their places. We are trying to discriminate; in other

words, we endeavor to place a filling of suitable material where it will give the best service. This, gentlemen, will be the solution of this inlay problem. There will be gold fillings inserted 40 years hence, and there will be porcelain inlays used at that time. No one can deny the fact that porcelain inlays are preserving teeth which could not be preserved by either gold or amalgam fillings.

There is much to be said on this subject. I am very much interested in fillings of this character, and frequently use them with very satisfactory results.

**Dr. C. D. Lucas, Indianapolis, Ind.:** I do not know how to feel about this subject. I believe there are men in the dental profession who do not believe their expounded ideas at all; there are men in the dental profession who would make you believe that black is white—some of them have been on the floor today; there are men in the dental profession who would have you believe that the sun will not rise tomorrow morning, but practically you believe it shall; there are men in the profession who are trying to make you believe that the inlay will stay in and preserve a tooth as well as a gold filling or an amalgam filling, but practically we know this has never been demonstrated. I know there are men in the profession who think the same as I do, but they are afraid to declare themselves. I have had porcelain inlays inserted in my own teeth, but these inlays were soon lost; I have inserted porcelain inlays which have likewise disappeared. Gold inlays will not do good service for any period of time, and I have seen gold fillings which have failed, due to the operator's lack of ability. A man who can make a gold filling which is creditable to himself and the profession at large ought to be able to make an excellent gold or porcelain inlay, so far as contour and adaptability are concerned. If he has manipulative ability enough to put in a good gold filling, with correct contour, and to get good margins, I can not see why that man does not have an equal manipulative ability to construct a good gold or porcelain inlay. I do not want you to think for one minute that I never put in porcelain inlays. I do put them in, but they drop out sooner or later; usually sooner. I have inserted some porcelain inlays which have been in possibly two years, and they are giving good service to date. I know tof two I constructed which have been in two years. I have inserted gold fillings when a junior student which are still in, and they look as good to me today as they did the day I put them in, however good that is. I believe any man who can deftly manipulate gold into fillings renders better service to the patient than any man who inserts either gold or porcelain inlays. I think the gold filling will preserve the tooth better, because it fills the cavity and does not rely upon soluble cement for retention. I know there are men in the profession, who are excellent mechanics, who do not insert gold inlays simply because they cannot see the mechanical principle involved for their retention. There are men in the profession, who are mechanics, who insert gold inlays because they think they do see the mechanical principle. I have seen inlays

which were inserted by supposedly the best inlay workers of Indianapolis, and of other cities of the state of Indiana, and, mechanically, it was absolutely impossible for any one even to imagine that they would stay in for any length of time. The cavity preparation for one inlay which I recall, prepared by one of the best inlay workers of Indianapolis, was absurd, to say the least. Just a little cup-shaped depression, on the distal side of a superior central incisor. A piece of porcelain had been fused and cemented against the smooth surface of this cavity. There was no rentention whatsoever, consequently the inlay came out. It was cemented in again by this same dentist, and I cemented it in two or three times myself. Finally a gold filling was inserted, and it is doing good service at the present time, and will continue to do so indefinitely. I insert quite a number of porcelain inlays for the aesthetic feature only. I can not insert them and expect them to be permanent operations, as compared to a good gold or amalgam filling. I do not claim that I have any great ability to construct porcelain or gold inlays; in fact, I know that I have no ability to construct gold inlays because I have not been guilty of inserting any of them.

I know there are men in this room who have exactly the same conviction about this subject, men who have excellent mechanical ideas and men possessing superior mechanical ability. I do not know whether they will respond upon the subject or not, but I should like to hear from some of them.

**Dr. C. E. Redmon, Peru, Ind.:** Dr. Lucas said he put in porcelain inlays because he liked the appearance of them. I put them in for a reason that I heard Dr. Head give one day at the National association, in Buffalo. Some man from Chicago read a paper on porcelain inlays. Dr. Hunt and a number of others were discussing it. Dr. C. N. Johnson, of Chicago, took the conservative side of gold, and said he thought some men were getting too enthusiastic over porcelain. Dr. Head was next, and after some discussion, told of a European lady who once came to his office, and in the course of conversation with her, she remarked that she did not like American dentists, as they use too much gold in front teeth. This remark made him see more clearly than ever that porcelain work would some day take the place of gold, and if he would retain this European practice he must continue his porcelain inlays. I, too, find I must put in porcelain inlays or lose my European practice, so I am an enthusiastic porcelain worker.

**Dr. Ames:** I came just in time to hear Dr. Prothero say that undoubtedly gold inlays were saving many teeth at the present time which could not be saved by means of gold fillings. We know that gold inlays will preserve teeth, and you can construct gold inlays and insert them where it would be out of the question to insert gold fillings. It is rather a difficult question to size up dentistry today, and methods which seem best at the present time may, in the near future, not be so considered. When we consider what porcelain and

gold inlays have done up to date, and if, for instance, some of the cements which are being vaunted at the present time, with proper handling, are as good as they seem to be, a very marked evolution seems to be in store for us.

While I surely was among the earliest to make gold inlays, I am sometimes called the father of gold inlays. I early made a number of clinics, and with the amount of inlay talk you hear nowadays I am certainly very well pleased with the crude work I did in the early times.

**A Voice:** I should like to ask Dr. Ames when he put in his first inlay?

**Dr. Ames:** What kind of inlays do you mean by the question? The first inlay I made, I think, was in November, 1889, and if the woman is alive I dare say that it is still in place, because it was a good gold inlay, set with that good old Justi cement. There are others which were made in 1889 and 1890 that I know are still doing good service. The first inlay I made was by burnishing platinum into the cavity and flowing pure gold into the platinum. I also made hollow inlays, but soon found that I was spending too much time making them that way, and soon gave up the method. I made them by burnishing a matrix as deep into the cavity as was necessary, and then went through various schemes to get the pure gold into the matrix. It was not for aesthetic results that I made these inlays, therefore I was satisfied with getting an approximal contact without exact anatomical form. I have great admiration for the inlays made by some late swedging and casting processes.

**Dr. W. H. Green, Lebanon, Ind.:** I hardly know how to sum up or reply to the discussion of my paper, for Dr. Kibler rather tried to roast me than to discuss the paper; in fact he hardly replied or discussed any phase of it. It rather irritated Drs. Byram and Kibler. Dr. Byram spoke of his babies and Dr. Kibler was so irritated that he could hardly read his paper for choking.

If my paper hit a weak spot, "let the galled jade wince."

By the time they have had 10 years' experience in a general office practice, they will see things differently.

Each one graduated, started an office, but soon turned to their alma mater, and both are connected with the Indiana Dental college, and the clinic of a college is always changing, and not permanent like a general practice, and they fail to see long results of their work.

All dentists know, in a dental operation, when one touches a sensitive point, the patient flinches, and it has been demonstrated here that the porcelain inlay has a tender spot, from Dr. Byram's and Kibler's remarks and actions. I wrote this paper with the idea of bringing out a good discussion of this question, and it seems to have had the desired effect. What Dr. Kibler said about seats and steps

and extensions for prevention is a matter that any good gold workman does.

When a cavity is presented to me, I (or any gold workman will) proceed to open it up, shape it and cut retention, and if I use seats or steps or extension for prevention, I do it unconsciously and rarely, if ever, think of such in the operation.

And I say again, the dentist's "mind that is a law unto itself has only one aim, and that is to preserve the tooth and make it give service."

When the cavity is prepared for the filling, go to work with a willing hand and will to thoroughly condense the gold to all parts of the cavity, and you have a result that will last for years.

I don't believe God Almighty gave us the natural tooth with the idea that man could cut one-half or one-third of it away for extension for prevention and insert a porcelain inlay when a small gold filling will save it for years. When God, in his infinite wisdom, gave humanity the tooth, it was for our benefit and use, and not for a few dentists' theories to see how much a few dentists can cut away and replace it with a piece of porcelain or anything artificial.

I will say that I have been experimenting with porcelain inlays, but have never felt that I could match the colors up satisfactory to myself and to my patient, and have never seen a perfect match of any one else, when cemented in place, and you could notice it at a distance of 10 or 11 feet.

In reference to gold fillings, will say that I have put them in and I have had them come out, and I will venture to say that there is not a porcelain inlay worker here but that has had the same experience.

## A FEW THOUGHTS THAT CONCERN THE IMPORTANCE OF THE TEMPORARY TEETH.*

**By F. M. Casto, M. D., D. D. S., Ph. G., Cleveland, Ohio.**

In presenting the part of the subject that has been assigned to me this evening. I desire to take up only a few things which seem of special importance.

First, however, let me say that I am very much pleased that it fell my lot to respond to the call of duty when there was a division of the subject, because it certainly lessens my embarrassment, and will necessarily diminish the sufferings of my audience.

For the purpose of elucidation, I will divide the subject into three parts.

*Read before the Cleveland City Dental Society, 1907.

First—The development of the temporary teeth, their subsequent eruption and the simultaneous development of the process and maxillae.

Second—The function of the temporary teeth and arches.

Third—The evil results that are liable to follow the premature loss or the prolonged retention of the temporary teeth.

In regard to the development of the teeth, it is not my desire nor intention to elaborate upon or discuss the embryological phenomena. Authorities hold divers opinions with regard to the early stages of development, probably because of the difficulties with which the experiments are conducted. Frey has well said that "tooth development is the most difficult subject that the embryologists are called upon to demonstrate." Most authorities agree, however, that the teeth are developed in the mucous membrane, and are a part of the outer or dermal system of the body, and grow by a process of involution.

The first traces in the beginning of the development of the temporary teeth are to be found about the seventh or eighth week of intra-uterine existence, when preparation is made for the development of the enamel germ or matrix. After this time their growth progresses with a wonderful regularity. The teeth are gradually developed from small papillae which, as they slowly increase in size, assume the shape of the crown of the particular class of teeth they are destined to become.

Dentinification first begins upon the cutting edges of the incisors, the points of the cusps of the cuspids and molars. From these points the process continues laterally over the entire surface of the crown until a layer of dentin envelops them within the enamel cap. Then follows the solidification by the formation of the dentin, layer after layer, one within the other. The formation of the dentin differs from the ossification in that the deposition of dentin is only from one side of the odontoblast, while in ossification the bone is formed circumferentially from the osteoblasts.

At birth the general forms and outlines of the crowns of the temporary incisors and cuspids are practically complete. The crowns of the temporary molars are formed shortly afterward (six months). They are all contained in their crypts within the substance of the body of the jaws.

The eruption of the teeth and the coincident development of the jaws are practically the same in the upper and lower jaws. Therefore, for the purpose of facilitation, I will only consider the mandible.

Examination of the mandible at birth shows it to be short mesio-distally, thin vertically, and the ramus joins the body at quite an obtuse angle (about 25 degrees). It develops in three directions: mesio-distally, vertically, and labio or bucco-lingually.

Most authors claim the development in an antero-posterior direction takes place between three points, namely, the symphysis, mental foramen and the angle of the jaw.

In the growth of the mandible there are periods of activity and periods of rest. The periods of activity occur in certain parts which correspond to the formation and eruption of the teeth situated in those respective parts; that is to say, during the formation and eruption of the incisors, growth in that portion of the jaw in which they are located becomes actively stimulated. So also does the same process occur during the formation and eruption of the cuspids, premolars and molars. It therefore behooves us to be familiar with the time of the formation and eruption of the various teeth, both temporary and permanent, in order to determine whether or not normal development is taking place.

As the eruption of the teeth takes place, the crowns are pushed upward and the alveolar process is developed. Simultaneous with the upward movement of the crowns of the teeth, their roots grow downward, which causes development along the lower border of the body of the jaw. At the same time there is growth in an antero-posterior direction. Consequently the vertical diameter is increased, the angle becomes less obtuse, and the jaw is lengthened mesio-distally.

The increase in the vertical diameter is due to the formation of bone on the lower border of the body of the jaw, and the development of the alveolar process on the upper aspect. That the alveolar process is subservient to the uses of the teeth is proved by the following facts: It first develops with the temporary teeth, and is resorbed when they are lost; develops again with the permanent teeth and likewise is resorbed when they are lost. So there are two separate and distinct formations of the alveolar process, just the same as there are two

separate and distinct sets of teeth. This fact, I believe, is not generally understood, or at least not generally thought of. Most men labor under the impression that the succedaneous teeth occupy the same positions and are supported by the same process as their predecessor. It is universally recognized, however, that no matter what positions of irregularity the permanent teeth may occupy, and regardless of whether or not the temporary teeth are still in position, they are always supported by an alveolar process.

The angle of the jaw becomes less obtuse because of two reasons: First, as the occlusion of the teeth is established and the muscles of mastication are developed, there is a bending of the jaw at this point. Second, there is a growth of bone on the posterior borders of the ramus that is continuous with the growth on the lower border of the body of the jaw, which is coincident with the formation of the teeth and the forward development of the body of the mandible.

Dr. Cryer claims that the increased length, mesio-distally, is due to an interstitial development caused by the lateral pressure of the teeth in contact, and to the stimulus created by the formation of the crowns of the teeth in the body of the jaw. For illustration, let us assume that the temporary laterals and temporary first molars are in place. When the temporary cuspids erupt they will wedge in between these teeth, exerting a lateral pressure that causes the so-called interstitial development, and thereby creates space for their accommodation. For further consideration, let us assume that the temporary denture is complete and in situ. At the age of six years the formation of the crown of the first permanent molar has stimulated growth in the body of the mandible, and while the tooth is erupting it advances between the ramus and the second temporary molar, thereby wedging into position and causing all the teeth mesially to move forward. Thus the mandible is lengthened in an antero-posterior direction. For another illustration, let us assume that the temporary laterals are in position, and the permanent centrals are forming and erupting. They advance side by side, their mesial surfaces in contact and their distal surfaces exerting pressure, first against the roots of the temporary laterals and next against their crowns, thus acting as a wedge, consequently producing growth in that region. The lateral incisors wedge between the central incisors

and temporary cuspids, the cuspids between the lateral incisors and temporary molars, or more usually, the first bicuspids.

In a normal temporary denture at five years of age there are spaces between the incisor and cuspid teeth. These spaces are due to the formation of the crowns of the permanent teeth and the consequent development of the jaws. This condition usually indicates that the permanent teeth are undergoing a normal process of development, and that they are placed in their "regular irregularity". In such cases, however, it does not always follow that the permanent teeth will erupt in normal occlusion. I have seen such cases in which malocclusion followed in the permanent denture. So also have I observed cases in which there were no spaces between the temporary teeth, and yet the permanent teeth assumed their correct positions in the arch. I have no doubt that many of you gentlemen here tonight have observed such cases. For instance, have you not observed children in whose mouths the lower central incisor erupted in a lingual position to normal, and have you not later seen those teeth push forward into proper alignment?

The functions of the teeth and arches may be said to be as follows:

First—To aid in the development of the jaws.

Second—To incise and masticate the food.

Third—To perform a certain part in the phenomena of speech.

Fourth—To give shape and beauty to the jaws and face.

Fifth—To form the inner fortification against the accidental entrance into the mouth and throat of foreign substances.

The functions of the teeth are very closely allied and are to a very large extent dependent one upon the other. Any interference is quite liable to act detrimentally and prevent to a greater or lesser extent the fulfillment of the proposed work. I have already discussed the function of the teeth that relates to the development of the jaws, so I will pass to function number two and consider the temporary teeth as masticatory organs.

Since the interesting and instructive lecture Dr. Sawyer gave us recently, I think we all have had more consideration and thought regarding the necessity of the proper mastication of the food. For how many of us realized the terrible sequellae to improper mastication?

The temporary denture is, or should be, complete at the age of about two and one-half years. By this time the child is ready for a solid diet. The temporary molars serve as the masticatory apparatus from this time until about the sixth year, at which time they are reinforced by the eruption of the first permanent molars. After the eruption of these molars the temporary molars are relieved of a considerable part of their work. They render active service, however, until the child reaches the age of 10 or 11, at which time, by resorption of the roots of the temporary molars, caused by the advancing crowns of the permanent teeth, they become loose, unstable in their sockets and unfit for further duty.

The service of the temporary molars as masticatory organs extends over a period of some seven or eight years. This service is rendered at a period in life when it is absolutely necessary that mastication be thorough. It is essential to the health of the child and to the development of the bones and muscles, and to all the organs of the body. For what untoward results might not follow malnutrition in a growing child? At this tender age all the organs of the body are being taxed to their utmost capacity, and I know of nothing that will cripple a child's vitality so quickly as to have their masticating apparatus impaired, either by partial or complete loss of some or all of the teeth. Sometimes I wonder whether or not the temporary teeth are given due consideration. I have seen a few cases where most all of them had been lost under 6 or 7 years of age, and it is not an uncommon thing to observe the premature loss of some of the temporary molars. There is no doubt that in many cases it is almost impossible to save temporary teeth; but I am rather inclined to conclude from my observations that quite a number of them are lost hat might be saved by persistent and painstaking operations.

Function number three—to perform a certain part in the phenomena of speech. Speech is the most direct and the most important instrument for the conveyance of thought. By it men are put in possession of the thoughts and experiences of their fellow-men, so that the development of mind itself may be said to depend greatly upon speech. The organs uniting in the production of speech are the vocal cords, lips, tongue, teeth, dental arches and the intellectual faculties.

The teeth and arches are directly concerned in articula-

tion. Articulation consists in the correct and distinct utterance of the elementary sounds in syllables and words. In nearly all of the many definitions given by lexicographers and elocutionists, the prevailing ideas have been distinctness. In the process of articulation the organs of speech constitute what may be termed a set of molds, capable of changing position at will, and any imperfection in the molds or in their arrangement will produce a corresponding imperfection in the sound. The normal-shaped dental arches and the correct positions of the teeth contribute much to the purity and richness of the tones and enable one to have much better control of the voice. In proportion as the teeth and arches are imperfect, so will speech be imperfect. I have had the pleasure of examining the mouths of a few prominent actors and public speakers, and without a single exception I found they had well developed jaws and dental arches. I do not believe that the magnificent voices possessed by actors such as Richard Mansfield, E. H. Sothern, Otis Skinner, and William Farnum, and singers such as Melba, Nordica, Shumann-Heink and Patti, could be produced in any other than those who have normally-developed jaws and arches.

I have observed marked improvement in speech in a number of cases of mal-occlusion of the teeth that have been treated. One case in particular was of considerable interest. The patient was a boy of 11 years old. He had a distal occlusion of the lower arch in its relation to the upper, contracted upper arch, protruding upper incisors, and was a mouth-breather. The posterior naso-pharyngeal space was filled with adenoids, completely occluding the nares. He had a very bad impediment in his speech, so bad, in fact, that at times he was unable to utter a word for several seconds. While endeavoring to talk during one of his worse spells, he would twist and draw the muscles of his face into all kinds of contortions. The adenoids were removed and the nares properly opened. The orthodontic operation extended over a period of about two years, during which time there was a gradual improvement in speech. The improvement continued until the defect was entirely cured.

Function number four—to give shape and beauty to the jaws and face. The alveolar process and teeth contribute very largely to the formation of the maxillae; they are prom-

inently situated upon these bones and bear an important relation to the establishment and maintenance of facial harmony and contours. Perhaps the extent of this relation is not realized until one has had the opportunity to observe patients who have had malocclusion of the teeth and abnormally-formed jaws corrected, or patients who have lost all the teeth, and the subsequent resorption of the process had taken place and later the facial harmony had been restored by artificial dentures.

The attachment of the muscles, the form of the lip and cheeks are all more or less dependent upon the shape of the process and arches. In most people there is a good balance in the upper part of the face; indeed, it is rare to see a person in whom the nose, eyes and forehead are not in proper balance. Nearly all the deformities of the face are, at least a very large per cent. of them, in the lower part of the face. The mouth plays an important part in producing the various facial expressions. It is a difficult matter to distinguish whether one is laughing or crying if the face is covered below the eyes. The lips are, of all the features, the most susceptible of action, the most direct index of all the feelings. We can have no better illustration of how much depends on the function exercised by the mouth, for the particular character impressed on the lower part of the face when the lips are in motion, than to watch the features of a public speaker engaged in his vocation. In the most impassioned discourses the action is almost entirely confined to the lips and associated muscles of the mouth.

The type of the individual and the state of intellectuality is determined in a great measure by the characteristic shape of the process and dental arches. For illustration, I would call your attention to the contrast that exists between the skull of the negro and that of the European, caused by the inordinately larger size of the jaws and the projection of the teeth and process in their relation to the brain case in the former, while the well-formed skull of the latter is distinguished by having the jaw, process and dental arches placed in a harmonious relation with the brain case. My conclusions are that the deformity in the face will be proportionate as the process and dental arches are abnormal; for what is beauty but the absence of deformity?

Function number five—to form the inter-fortifications

against the accidental entrance into the mouth and throat of foreign substances. There is not much for me to say regarding this function. The shape and location of the dental arches is such that they prevent anything from entering the mouth or throat by accident should the substance pass the lips by force or otherwise. This is a wise provision on the part of nature, because there is no question that in many instances foreign particles would be forced into the throat that might result disastrously to the unfortunate victim. It may seem that I have digressed somewhat from my subject in the presentation of the functions of the teeth and arches. I have not intended to do so, for I believe that the subject covers a larger scope than directly concerns the temporary teeth and arches in situ. They may be said to be foundation stones upon which the normal permanent dentures are to be built.

The evil results that are liable to follow the premature loss or the long retention of the temporary teeth may be classified as follows:

First—Impairment of the occlusion and masticatory apparatus in the temporary denture.

Second—Lack of development in the jaws and process.

Third—The impaction of the permanent teeth.

Fourth—Deflection of the permanent teeth during their eruption.

Impairment of the occlusion of the masticatory apparatus in the temporary denture.

The occlusion of the temporary teeth is not unlike the occlusion of the permanent teeth. The upper arch describes a larger circle than the lower arch. The labial and buccal surfaces of the upper teeth overhang the lower teeth. The cusps of the molars interdigitate. The arches describe a parabolic curve. The teeth are all in lateral contact. The arrangement is such that it will give each tooth the support of two neighbors in the same arch and the support of the relative teeth in the opposite arch. By such an arrangement of the teeth the maximum amount of grinding surface is provided. It is necessary that this condition of the teeth be maintained. Should a first temporary molar be prematurely lost the occlusion not only will suffer from its loss, but the teeth on either side will tilt toward the space. Very often the lateral movement will extend around the entire arch, affecting all the remaining

teeth. I have observed a few cases where mastication was severely crippled by the loss of a single temporary tooth.

Lack of development in the jaws and process.

I have previously dwelt upon the mechanical assistance rendered by the teeth in the development of the jaws and process. The permanent teeth are larger than the corresponding ones of the temporary set, except the second bicuspids. The permanent teeth, therefore, require a larger alveolar arch and the alveolar arch requires a correspondingly larger jaw-bone. The temporary teeth are designed to remain in position until succeeded by the permanent ones, for they serve to retain the space and to allow the corresponding permanent set to wedge into position. As previously stated, the dental arches move forward in phalanx during the formation and eruption of the permanent molar. When the upper second temporary molar is prematurely lost and the upper first molar makes its appearance, it meets with the resistance of the tuberosity of the upper jaw on its distal side, while no resistance is offered on the mesial side. The erupting molar will move forward into the space previously occupied by the temporary molar. There will be no development, and the jaw will be short mesio-distally the extent of the width of the lost molar. The upper temporary cuspids are more frequently lost prematurely than any other of the temporary teeth. When they are lost the eruption of the first molar will force the temporary molars mesially and will impinge upon the space of the permanent cuspids, and sometimes will obliterate the spaces entirely. In such cases there will be a lack of development and a consequent irregularity. The same process will occur should any of the temporary teeth be prematurely lost. The development in the jaws and process will be deficient to the extent of the width of the tooth lost.

The impaction of the permanent teeth.

Teeth are said to be impacted when they form in the jaws and are prevented by some cause from erupting. Perhaps the lower second bicuspids are more often impacted by the premature loss of the temporary teeth than any of the other teeth. The loss of the second temporary molar will allow the first permanent molar to move forward into the space, while the first bicuspid will move distally and hold the crown of the second bicuspid, preventing its eruption. The long re-

tention of the upper cuspids will sometimes cause impaction of the permanent cuspids. The failure of the roots of the temporary teeth to resorb prevents the advance of the crowns of the permanent teeth. The stimulus imparted by the formation of the root and the inherent tendency to erupt produces new growth of bone, which in many cases completely envelops the crowns and holds them securely in the jaw.

Deflection of the permanent teeth during their eruption. The crowns of the permanent teeth should occupy a position beneath or adjacent to the roots of their temporary predecessors. As the crowns of the permanent teeth advance, the roots of the temporary teeth are resorbed; when finally the temporary crowns are removed, the permanent teeth advance and assume the positions previously occupied by them. Sometimes it so happens, from various causes, that the roots of the temporary teeth are not resorbed. The advancing tooth is deflected from its course and forced to erupt out of correct position. Many times a small spiculum of the root will be sufficient to deflect the course of the erupting tooth. When a tooth erupts out of its proper position on account of the retention of a temporary tooth, it cannot be moved into alignment without creating more space, except in the case where the width of the temporary tooth is equal to the width of the tooth that displaces it. For instance, should the upper lateral incisor be deflected lingual to normal, there will not be sufficient space to move them into alignment, for two reasons. The teeth posterior to the laterals will move forward and occupy a portion of the space intended for the laterals, and there will not be sufficient development because of the absence of the wedging influence of the laterals.

In conclusion, let me urge the necessity of treating the temporary teeth with every consideration. On the normal retention and the normal loss of the temporary denture will depend, in a great measure, the future usefulness of the permanent denture.

For most of the facts expressed in this paper I am indebted to the following gentlemen: Dr. G. V. Black, Dr. Eugene V. Talbot, Dr. W. Xavier Sudduth, Dr. Hopewell Smith, Dr. I. N. Broomell, Dr. E. H. Angle.

## THOUGHTS THAT CONCERN THE IMPORTANCE OF THE TEMPORARY TEETH.

By Varnay E. Barnes, D. D. S., Cleveland, Ohio.

Our essayist has given us the evidence that he has been thinking and reading on this subject, and his conclusions are based generally on what has been some of the best thought of the past. The points in regard to speech, the beautifying of face and jaws, incision and mastication of food and inner fortification against foreign dangerous particles in food, are all well taken and elaborated upon. To the assertion that tooth formation is a most difficult subject for study we must all agree, and for the present must accept the theories given. Timely attention is called to the formation of the temporary alveolus with the teeth, resorption of their roots, and the formation of a new alveolus for the permanent teeth. The evil results following loss or long retention of the temporary teeth are well covered, and this needs consideration, especially, as today, the child under eight years of age is seldom brought to the dentist. Yet much of the decay in the temporary teeth has obtained a good start at four years. The prolonged retention of temporary teeth has been given and is well known as a cause of irregularity in the permanent set. Our essayist has given the usual attention to this point, and so far as he has gone has given us much for consideration, yet he has overvalued this cause. He has undoubtedly been limited so much by two papers on the program that some very important points that concern the temporary teeth have been given no consideration whatever.

I refer to what may be styled the pathological or physiological functions of the temporary teeth.

First—The temporary teeth serve as a very definite guide or base of diagnosis in determining the certainty of irregularity and consequent malocclusion of the permanent teeth.

Second—The temporary teeth serve as a means of regulating or mimimizing the irregularity of erupting permanent teeth.

It is most important that regulation be begun very early

*Read as a discussion of Dr. Casto's paper, "A Few Thoughts that Concern the Importance of the Temporary Teeth."

in life. Many irregularities begin pre-natally, are aggravated post-natally, and should be treated as early as the patient can be handled. I find that age at from 5 to 7 years; that is, **before any of the permanent teeth erupt.** It is possible to tell when irregularities are coming, as absent or deficient growth spaces are almost positive indications of deficient development, or at least tardy development. The prevention of coming irregularities—this includes filling, etc.—is the highest achievement of the orthodontist and dentist. Second to this comes the correction, or, more properly, the treatment, of irregularities already developed in the permanent teeth. Eight years, yes, often five, is too late to begin to get the best results, yet we often have to be satisfied with cases much older. The most successful orthodontists know that **early** treatment must be given, and that the bulk of the treatment must be expended **through the temporary teeth at an age when their roots are resorbed and when pressure upon them can be distributed to the bone, alveolus and permanent teeth beneath.**

Our essayist has given first place in function of the temporary teeth to **their aid in developing the jaw.** Yet he later on calls attention to the **mechanical aid of the temporary teeth in forming the jaws.** With this classification I cannot agree. The jaws have as their primary function the support of the teeth muscles, and glands, nerves, etc., in order that food may be properly prepared for entrance to the remainder of the digestive tract. Therefore, I would say that the first or principal function of the temporary teeth is to incise and masticate the food.

The other functions I would name as follows, adding to the essayist's:

2. To serve all the purposes of teeth with the least amount of calcium salts in their composition, while the permanent teeth are being formed.

3. To aid in the eruption of the permanent teeth by providing a channel of travel during eruption, through resorption of roots.

4. To aid in the development of the jaws **by mechanical means**; that is, by their presence.

5. To guard against foreign bodies entering digestive tract.

6. To aid in speech.

7. To co-operate with the rest of the head to give shape and beauty.

These, in addition to the new-found pathological functions given, as aids in diagnosis and treatment of irregularities of permanent teeth and jaws.

We have heard the statement that most authors agree that the mandible develops in an antero-posterior direction between the symphysis, mental foramen and the angle of the jaw. This leaves out one very important antero-posterior development—that produced by the lengthening of the ramus, which projects from the body of the jaw at an angle. It adds depth and length to the mandible. This growth must be considered in treatment of distal positions of the lower jaw—yes, in all regulations. We have heard it asserted that growth of the jaw takes place most actively in that part of the jaw containing the erupting tooth. This is made regarding both the temporary and permanent teeth. As the primary function of the jaw is to support the teeth, I believe in the theory that the jaw contains the initial force and the tooth develops later or simultaneously, possibly the crypts of the temporary teeth (not the teeth) being centers of aid in development of the jaws. In well-developed jaws the temporary teeth do not erupt in contact. In the infant I believe the periods of growth of jaws and eruption of the temporary teeth are practically coincident to a certain point, but I also know that the development of the jaws should continue on beyond any possible lateral pressure of the incisors and cuspids. Dr. Eugene Talbot says there are growth spaces between the teeth at from four to five years of age in the normally developed child. I came to a similar conclusion four years ago, from my own observations in practice, without knowing of Talbot's coincidence. Our essayist says there are spaces between incisor and cuspids, but will not admit they are necessary. I believe he is judging from the old theories that the jaw continues to develop in width until the permanent teeth are erupted, each tooth forcing and wedging its way. **This theory is the one which has been responsible for the now exploded theory that we must wait till all the teeth anterior to the first molars are erupted before beginning regulation.** Witness the thousands and thousands of cases where teeth have come in crowded and have not righted themselves. There may be spaces, and a proper amount, distal to the tem-

porary centrals, laterals and cuspids (the amount should be approximately the width of the tooth plus the amount necessary to make the width of the permanent tooth), and yet we may have still an irregularity resulting from accident, disease, arrest or delay in development or delayed loss of temporary teeth. We may have teeth erupt where there are no, or slight, growth spaces between the temporary teeth, and have **seemingly a perfect arrangement of the permanent teeth resulting**. This fact puzzled me for a long time, until finally it occurred to me that **this seeming regularity** was, in fact, an irregularity, an explanation of why third molars were so often found impacted in what seemed an otherwise perfect occlusion, that it meant narrowed and shortened arches to **what nature intended the individual to have.** Also, that the seeming regularity was at the expense of other teeth. I believe the permanent teeth should erupt from their crypts into their arch with a little more space than they require, eventually. The bicuspids have that provision. Why should not the cuspids and incisors? It is true that **that eruption** is a rarity in our civilization· crowding is the rule, and **irregularities are acknowledged to be universal.** Temporary teeth, too long retained and lost too early, are causes of some irregularities, but they are given too much credit, since the jaw development is the real fundamental cause that so often leads to too long retention.

If the permanent teeth have so great an eruptive force to aid in the development of the jaws, why should we consider the retention of the temporary teeth?

**We know** that the greatest per cent. of irregularities are found in the region of the temporary teeth. Is not that proof that early growth had been stopped and did not begin again?

We have seen well-developed jaws containing irregular teeth (all present). Is not this evidence that the teeth are but mechanical aids in development? If teeth are such great aids in development—why do we have such prevailing irregularity?

We have seen repeated cases in which some teeth are wholly missing, yet there is a space provision and a jaw development sufficient for the missing tooth.

The temporary teeth crypts may be an aid to development, in a physiological sense, before their eruption, but after

eruption the teeth perform a mechanical function which is the function performed by the permanent teeth.

In conclusion, I would say that tooth position mainly depends upon the growth of the jaws, and if the jaws do not develop properly and on time, the teeth cannot assume their right positions. Therefore, if you do not find the growth spaces in the mouth of the child of 4 or 5 years, look for irregularities in the permanent teeth. Pay especial attention to the preservation of the temporary molars, maintaining their full mesio-distal width, and **especially try and preserve their pulps alive,** for on this point hinges the proper resorption of the roots.

A point concerning the temporary teeth that may be of value is that **the pain** and difficult eruption of the temporary teeth is a good diagnostic indication of too slow or small jaw development, with consequent irregularity of permanent teeth.

## CLOSING DISCUSSION.

**Dr. F. M. Casto:** In closing the discussion I wish to thank the members for the kind and generous manner in which my paper has been received. The title of the paper, "A Few Thoughts that Concern the Importance of the Temporary Teeth," is self-explanatory that it was not my purpose to exploit all the important points that concern the temporary teeth. There are many other things not mentioned that are of vital importance. There are an innumerable number of different theories regarding development. Most all authorities offer what they consider absolute proof for their particular theory, proof backed up by scientific research and clinical facts. Many theories which might be called old theories have never been disproved, or at least, have never been scientifically replaced by better ones. Again, many theories which are considered new are only the revival of the old. When we delve into development and attempt to submit new theories based on the observation of a few cases, we are indeed plunging into deep water. Nature oftentimes does her work in a most peculiar way. Sometimes it is done contrary to every law laid down by man. The fact, however, that such things do occur is not just cause to condemn that which would most often occur under certain conditions.

Regarding the part that the teeth play in assisting in the development of the jaws and process, I would say that the teeth should be considered from the first evidence of their formation until they assume their positions in the dental arch. The latest and best authorities agree that the formation of the teeth is an imporant factor in the development of the jaws. To what extent this factor is

responsible no one has been able to determine. We know that there are numerous other factors to be considered in development, some of which are no doubt equally as important as the teeth. I did not intend to give the impression that the teeth were totally responsible for the development of the jaws and process.

In listing the functions of the teeth they were not arranged in the order of their importance. They were placed in a certain order as a matter of convenience. The function named first, that of aiding in the development of the jaw, was so placed because it is the first function performed. I agree that the principal function of the teeth is mastication. The functions of the teeth added by the discussers are acceptable and valuable.

Something was said regarding the development of the mandible by a lengthening of the ramus, which projects at an angle from the body of the jaw. By such a development the mandible would be carried forward in its relative position to the bones of the head and face, but there would be no development in the body of the mandible, which part contains the teeth, and which I discussed in the paper.

Regarding a normal temporary denture. It is quite evident, if we recognize that spaces exist between the incisors and cuspids in a normal temporary denture at 5 years of age, that to have a normal condition the existence of the spaces is an absolute necessity. We must also know that the spaces indicate growth and that growth is necessary to allow the permanent teeth to erupt into their correct positions. It does not make any difference how the growth is produced—it must take place or else trouble will result. I was not aware that Tomes had discovered the necessity of spaces in a normal temporary denture 50 years ago, but I do know that it was taught in the college I attended 10 years ago. There is no method for determining the exact amount of space required for the accommodation of the permanent teeth. The use of the X-ray enables the closest calculations.

It was not the purpose of the paper to discuss treatment. However, that I may not be misunderstood regarding the age at which treatment is admissible, will state that I am governed by the following rule: "Whenever a condition exists that definitely indicates a future malocclusion, or whenever a malocclusion has been definitely established, correction should be made regardless of the age." This rule applies to the condition of the teeth and jaws alone. There may be, and often are, causes which militate against its enforcement.

I fail to see a logical connection between the existence or nonexistence of spaces in a temporary denture and the impaction of the third molars where all the other permanent teeth have erupted in their correct positions. In conclusion, I desire to thank you again for your consideration. I have learned a great many things tonight.

Dr. Terry's paper was very interesting and instructive. The discussers have brought out some good thoughts. If through my efforts any of you have added a little mite to your storehouse of knowledge, then I feel repaid a hundred-fold.

## PRESIDENT'S ADDRESS.*

By H. C. Brown, D. D. S., Columbus, Ohio.

A most pleasant duty devolves upon me at this time, when, as your duly elected presiding officer for the forty-second annual meeting of the Ohio State Dental Society, I extend to all a most cordial welcome and trust that each person in attendance may receive much from this meeting that will be of marked benefit to himself, and indirectly to his clientele.

But few except those who have rendered similar service, realize the time and energy required and given by the executive, clinic and arrangement committees in preparing our annual program, and to them, as well as all other officers, committeemen and members, who have so faithfully performed the duties assigned, I take this opportunity to publicly express my deep appreciation and thanks.

It is with profound regret that I report the death, during the past year of Dr. J. B. Beauman, who died June 18th.

Dr. Beauman was one of our charter members and recently served our society as president, besides rendering valued service in many other capacities.

He practiced dentistry for more than 57 years, most of this time in Columbus, and possessed rare ability, especially in porcelain and gold. He has left a permanent record in dental history, and his loss is keenly felt by those who knew him best.

The dental profession of the world was greatly shocked to hear of the death of our great scientist, Prof. W. D. Miller, who died at Newark, this state, July 27th, following an operation for appendicitis. In his death we lose one of our greatest students in the prime of life, and our profession suffers an irreparable loss.

Our society should deeply feel Prof. Miller's death, inasmuch as he was born in Ohio, very near here, and had promised to meet with us on this occasion.

I recommend that a committee be appointed to draft suitable resolutions relative to the death of Drs. Beauman and Miller, and any other members of our society who have died during the year, and present them at some later session of this meeting.

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*Read before the Ohio State Dental Society, December, 1907.

Presidents usually have some recommendations to make which, in their opinion, will better the conditions of the organization over which they preside, and in this particular I am no exception.

Dental history informs us our first dental college was founded in 1839, and the first dental society organized in 1840. While this is not so long ago, our progress has been most marvelous, notwithstanding some occasional contra evidence, yet the question arises, are we doing our full duty considering our present opportunities?

In my opinion this can be consistently answered in the negative. It is to be regretted that we should be so derelict in our duty to the public, and especially the school children of today, the men and women of a not far distant date, as to seemingly offer an opportunity for a manufacturer of toilet preparations to adopt a plan appropriating annually a large sum to do that which should be done by our profession, educate the public to the importance of the care of the teeth; therefore, I would recommend that our society express its disapproval of such methods of advertising under the guise of an "Educational Association," unless the name it bears at present be omitted. I would also recommend that we should use our individual and united efforts to the end that oral hygiene may soon be recognized, and taught as a requirement in our public schools; and further that we should encourage members of our profession, with recognized qualifications, to appear before schools, teachers' associations and such other organizations, as will aid in disseminating information which will be of benefit in directing the public's attention to the proper personal, as well as professional, care of the oral cavity and its organs.

Our state has very generously provided for its wards, as is demonstrated by our eighteen institutions, furnishing homes temporarily at least, for some twenty thousand more or less unfortunate persons.

That these wards never received more considerate treatment than is accorded them today is evidenced by the interest our governor is giving these institutions, visiting each of them at least once during the past year.

However, from personal observation while practicing in a small city in close proximity to one of these institutions, I was impressed with the necessity for better dental service than

was their privilege to receive, and have studied this condition, with reference to other institutions, more or less since that time.

It is a well recognized fact that thorough mastication is quite essential to the healthy individual and likewise faulty mastication produces its detrimental effects upon the normal individual, to say nothing of such influences upon those weakened and highly nervous, usually found in such institutions, together with dental irritation in its many forms with its far-reaching effects, which are becoming recognized more and more; therefore, the question of better dental service for this class of persons has strongly appealed to me.

In order to secure facts relative to what is being done in this particular, I wrote to the superintendent, or head, of each institution and submitted the following questions:

"How long have you been connected with institution work?

What positions?

How long as superintendent?

How many patients are under your care at this time?

How do the general conditions of the teeth of the inmates, as you observe them, compare with those of others coming under your observation?

Is the brushing and care of the teeth made a toilet requirement?

Who extracts the teeth of the inmates when such is deemed necessary?

If assistant physician extracts these teeth, do you consider his training has been such as to fully qualify him to discriminate between those that should be extracted and those saved?

Do you consider the medicine and confinement, in connection with your institution, the probable cause of more decay of the teeth than under ordinary conditions?

What arrangements have you at your institution for the care of the teeth requiring the attention of a dentist?

Does the patient or state bear this expense?

If state, what is the approximate amount spent annually for dental services?

Does it not usually require an attendant and a conveyance when it is necessary to take a patient to a dentist in your city?

Do you think the general condition of the average patient

at your institution would be benefited by regular dental service?

Would you approve of an institution dentist with the same rank standing as an assistant physician?"

With two or three exceptions the replies were prompt and courteous, but varied more or less as to answers given. Without going into detail, I will state that the information received discloses the fact there is no adopted or universal system employed with reference to this service; while, so far as I can ascertain, certain general methods are provided by statute for the conduct of the most important matters, as well as uniform practice in other items of management not specifically prescribed by law.

After carefully reviewing this information I am fully convinced that the wards and state would be better served, without any great additional item of expense, if our state institutions, which have one thousand or more inmates, had a dentist employed to devote his entire time and attention to the care and treatment of the teeth. The smaller institutions should employ a dentist to devote that portion of his time necessary to render a similar service.

There seems to be some question as to the power that the management of institutions has in regard to this service. With very few exceptions the state institutions were established for a definite purpose, and sections 631 and 632 of the Revised Statutes, provide that clothing, traveling and incidental expenses shall not be paid by the state, but shall be paid by relatives, friends or the county to which the inmate belongs. However, a liberal interpretation of the statutes will lead one to believe that there is no restriction from the employment of dentists at this time; but since some question may be raised in this particular, it would seem advisable to establish a uniformity in this connection, by supplementing the present statutes with a section that will grant authority to the boards of trustees of each of the benevolent and correctional institutions to provide for the necessary dental service and that the board may appoint a dentist who shall devote his entire time to this work, or in an institution where, in the judgment of the board, there is not sufficient work for the entire time of a dentist, they may contract with a dentist for such service as in

their judgment necessary, and that this expense shall be paid from the appropriation for current expenses.

Probably some may think that this is none of our affairs, but each progressive movement must receive definite form and support from some source, and to me it seems that our State Society is not assuming an unwarranted position in taking the initiative in this important and much needed service for our afflicted wards; therefore, after a very careful study of this matter I refer this recommendation to you for such action as you may deem proper to accord it.

I have presented these two subjects as briefly as possible, inasmuch as I did not desire to encroach too much upon your time, but cannot refrain from referring to an article in the Ohio State Journal, of December 2, 1907. This is a news item from Washington, D. C., and in my opinion is the strongest endorsement our profession has ever received, coming as it does from the surgeon-general of the United States navy. He says:

"That the services of skilled dentists are required by the navy cannot be questioned by those acquainted with the conditions and know the far-reaching results of neglected dental disorders. With the increase of the personnel, the question of attention to the teeth of the enlisted men with the navy is becoming more and more pressing each year, and there are few matters within the province of medical officer that at times cause him more embarrassment.

"Like the eyes, the teeth are coming properly to be regarded as intimately associated with the various organs and functions of the body, and that defective teeth may be responsible for such ill-health is recognized by all who keep in touch with the accumulating truths of medical science.

"The teeth and the mouth are indubitably important factors in the causation of certain diseases of bacterial origin. This is not a hypothetical conclusion, it has been proven without a doubt that not only are bacteria found in great numbers in uncared for and neglected mouths, but their disease-producing properties are greatly increased, particularly in and about decayed teeth."

For the past two or three years we have had some reference to the reorganization of our society, but it is to be regretted that no action has been taken.

At present our membership list is quite large as compared with many other states, containing some 536 names as active members, but this is quite misleading, since only those in attendance, and not all of these, pay dues.

Our treasurer reports that last year only 223 paid dues and it is fair to presume that this is as many, or more, than in any previous year, but those of you, who have been present may recall that our attendance has been remarkably good for some years, showing that this is not always a true indication of attendance or interest.

We probably have three thousand legal practitioners of dentistry in Ohio and should have at least one half this number as members of our State society, but it can never be accomplished under our present system.

The Ohio State Medical Society and the Illinois State Dental Society, as well as others, have demonstrated to us what can be done. We are very fortunate in having with us at this time, Dr. Arthur D. Black, who has been at the head of reorganization committees in Illinois, and who can be of much assistance to us if our society should decide to reorganize.

I have conferred with several members of both these societies and every one interviewed was quite enthusiastic over present conditions.

"Facts and figures" are convincing, and for your information will state that the Illinois State Dental Society had 274 paid members in 1904, prior to reorganization, and 1,400 members in 1906, two years after reorganization.

The Ohio State Medical Society had 656 members in 1902, prior to reorganization, with 2,278 in 1903 after reorganization and 3,615 in 1907.

This information is secured from their records and should convince any doubtful person of the efficiency of this plan, as they are both similar. In this particular, Dr. Black writes that this plan "is a modification, in some detail only, of the plan on which many state medical societies have been reorganized under the guidance of the American Medical Association".

Briefly, the plan is as follows:

Make the state society the head organization of the profession in the state, with district, county or local societies in various sections of the state as component societies thereof;

membership in these carrying with it membership in the state society; the component society remitting that portion of dues collected and required by constitution and by-laws of the state society, or in other words, a per capita from every member in good standing of a component society.

Some of the advantages to be enumerated are as follows: The possibility of making our state society a more positive representative body of our profession by increasing our membership, therefore increasing our influence for usefulness in any way that should seem advisable.

The offering of opportunities and inducements for an increased number to develop, a thing easily neglected without some such opportunity, for no one will question but that many thoroughly capable men are practicing in some sections of the state where it is nearly impossible for them to develop under their present conditions; but by having the advantages of a society, a recognized component of our state society, conditions are changed, and these men have more encouragement to give the best that is in them, both to the public and the profession, neither of which will be slow to recognize their merit.

The component society elects the members which make up the state society, and no one will question but that they are in a much better position to pass upon the eligibility of an applicant on account of limitation of jurisdiction, and necessarily a better opportunty to familiarize themselves with existing conditions.

At present we have our state society, the Northern Ohio, and some eight others, which are local societies with a total membership of some 1,250, but in these figures you must bear in mind that they are not only counted like our 536 members of our state society, but many of these persons belong to their local, the Northern Ohio and the state society, which would greatly reduce this number.

Have no information as to how any local society would look upon such a reorganization, but feel that all would give such a plan just consideration; nor do I consider that such a reorganization would affect the Northern Ohio society and its good work, in any way, except to increase its usefulness.

I would not consider it advisable to endeavor to organize a society in each county, as conditions would not seem to justify that at this time, and probably not for years, but two,

three or more counties could unite and have their section of the state represented.

Bear in mind such a reorganization will mean much hard work for a reorganization committee and considerable expense for our society, but we have funds, and no one will question but what the other asset named is far more abundant than the financial one.

A committee on revision of the constitution and by-laws was appointed last year, of which I was chairman, but it was impossible to do justice to this at that time, and after being elected president, and on my motion, the committee was granted further time, and the retiring president, Dr. H. L. Ambler, was substituted for the president-elect.

My information is that this committee will submit a report in harmony with the plan just outlined, and I would recommend that you give this report, together with the subject of reorganizing, your careful consideration.

### REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

The committee on Dr. H. C. Brown's presidential address reports as follows:

Dr. Brown's address is to be highly commended because of timely reference to a number of needed changes and reforms, as well as suggestions to be followed out:

1st. Advises that a committee be appointed to draft resolutions on the death of Drs. J. B. Beauman and W. D. Miller (others if there are any).

2nd. Recommends that the study of oral hygiene in schools be advocated and pushed throughout the state.

3rd. Heartily seconds disapproval of proprietary educational work as conducted by some companies exploiting dental adjuncts.

4th. Revision of constitution be brought about as speedily as possible.

5th. Appointment of residence dentists (or otherwise provided for as individual conditions might demand) in our state

institutions be referred to the legislative committee, with recommendation of action as soon as possible. The committee further desires to commend Dr. Jackman upon his report, and especially upon the thorough work he has given the subject, and suggests an active co-operation of the committees on legislation and hygiene in institutions.

W. H. Whitslar.
Com. H. M. Semans.
S. D. Ruggles.

# EXCHANGE OF PRACTICAL IDEAS

[This department being an exchange of practical ideas, it depends upon our readers furnishing material to keep it going. Just a few practical ideas from each subscriber will make it of mutual benefit and practical worth. Are you willing to do your share? Help the good cause along by sending the editor a few practical suggestions. Send something today. Address Dr. L. P. Bethel, 1255 Neil Ave., Columbus, Ohio].

## GOLD INLAYS.

**By Dr. Howard S. Engle, Lineville, Iowa.**

Prepare cavity in usual manner for inlay, take impression in modeling compound, make plaster model, cut on either side of tooth with cavity, break, which gives model of tooth and cavity alone, press into moldine and secure die of Mellott's metal.

For matrix I use 34g. pure gold, burnish into die, then in the cavity in mouth as we expect the die to be inaccurate. After thoroughly adapting matrix remove, invert and fill about one half with 22k. scrap gold sweated to place with 20k. solder. Then reburnish in cavity and build to desired contour with scraps and solder as before, roughly dress inlay and try in cavity. If necessary, add more gold or grind to proper contour. Cement and finish in usual way.

## USES OF DENATURED ALCOHOL.

**By Dr. W. H. Reaben, McComb, Miss.**

In denatured alcohol we have a clean, efficient, ever-ready and comparatively clean fuel.

As a fuel, it ought to supersede coal oil and gasoline in the dentist's laboratory to a great extent. For the vulcanizer, in place of coal oil or kerosene, it answers admirably, being clean and reliable.

Some months ago I became tired of the frequent smoking of coal oil in the use of my vulcanizer, and poured the oil out, substituting immediately therefor denatured alcohol, which went right along doing the work of the coal oil. The whole vulcanizer was since painted with aluminum, and the latter, in several month's use, has not burnt off, nor become greasy nor dirty.

Coal oil is unreliable; it is very apt to get to smoking, in which case gases are formed that ignite and run up the heat, and consequent steam pressure to a point where the plate is ruined, and in many cases the vulcanizer explodes. I read in the current issue of this journal accounts of three explosions, two of them very serious. Think of it!

In this connection I will say that all these accidents could have been prevented by the use of automatic heat-regulating and timing vulcanizers. No dentist should be without one. The pressure can not get beyond a certain point, the light being automatically lowered. And when the time is up the timing clock puts the light out.

Another use for denatured alcohol is in fusing porcelain—Jenkins low fusing porcelain, if you please.

It is not necessary to have a furnace or muffle for the majority of small inlays, though I do occasionally use my furnace for large inlays. I fuse nearly all my inlays by simply holding the matrix in a pair of tweezers over a denatured alcohol flame. You can then see what you are doing and are not near so apt to burn out the color. If the porcelain comes in contact with the flame there is no harm done, if it is not held there too long, for the heat is intense and your color would disappear.

I have never been able to get the colors from the bottles, with my Turner furnace, nor otherwise, to correspond with sample; the colors I get are several shades lighter.

On account of the above I made a shade-guide, baking samples from each bottle.

## METHOD OF TAKING A BITE FOR ARTIFICIAL DENTURES.

By J. H. Bristor, D. D. S., Mansfield Ohio.

I first cut a piece of soft pine to a width that when placed in the mouth edgewise the jaws are horizontal. The stick of pine is then placed into a piece of soft beeswax large enough to extend to the rami of the jaws. The whole is then placed into the mouth and the patient instructed to close the mouth until both jaws strike the stick, then hold in place until it hardens. I never use a bite plate and very rarely have a protrusion. This method was used by my father, James R. Bristor, who was also a dentist for forty years.

## GOLD PLATING.

By E. A. Hanna, D. D. S., Lincoln, Nebraska.

The outfit as here given is not original but shows how simply it is made, operated and the results gained.

It is composed of an ordinary dry battery or cell, a glass vessel, some bell wire and one-half pound of potassium cyanide(crude). Put the potassium in a vessel holding from a pint to three-fourths of a pint of water, connect the wires to the dry cell, put some pure gold on the wire running to the carbon pole and the article to be plated on the wire running to the zinc pole. These are placed in the potassium solution (making sure that they do not touch one another while in the solution), for an hour or so, then polish with a hair buffer and whiting. If a heavier plate is desired, plate again, polish, plate, etc.

## TEMPERAMENTS GOVERN THE ARRANGEMENT AND OCCLUSION OF ARTIFICIAL TEETH.

By Gustavus North, A. M., D. D. S., Cedar Rapids, Iowa.

The Bonwill system of grinding and widening the space between the cusps of the bicuspids and molars in artificial teeth for the lateral movement of the lower jaw, is very essential for persons of certain temperaments. Those of sanguine and sub-sanguine temperaments rotate their jaw in masticating, the occlusion is only moderately firm, therefore it

is necessary to have a free lateral movement of the jaw without the cusps interfering. In the lymphatic and sub-lymphatic temperaments the occlusion is generally loose and flat with short cusps.

The Bonwill system of grinding and shaping the cusps for a free lateral movement of the jaw in the use of artificial teeth is very important for the sanguine, lymphatic and their sub-temperaments, especially the sanguine. Persons of nervous and sub-nervous, bilious and sub-bilious temperaments have but little lateral movement of the jaw in masticating; the occlusion is generally firm and close with long cusps.

# EDITORIAL

## WHAT IS A DENTIST'S DUTY?

Recently there appeared in one of the New York dailies an article that ran as follows:

"I wish tomorrow were over," said a dentist on Friday night, "for Saturday is children's day and by night I haven't a nerve in my make-up that isn't on edge. The children invariably cry, but I'm accustomed to that. If that was all they did I wouldn't mind, but they bite down on my fingers, wriggle all over the chair, and what is worse, they romp about the office and make life miserable for the patient in the chair. If I were beginning my practice over again I wouldn't touch a child. I can't stop now without losing some of my best patients."

As deplorable as it may seem to conscientious dentists, the above but expresses the sentiments of many a dentist of the present day and generation. They do not care to work for children for "they cry, and wriggle about in the chair, and bite down on the dentist's fingers, or romp about the office." And dental work for the children is discouraged; first, by not informing parents of its necessity, and, second, by permitting or encouraging parents to believe that it is not essential to have the deciduous teeth cared for so long as they are to be replaced by others.

That dentist who wilfully does such a thing should be ashamed of himself. If he does not know better, all the more cause for being ashamed. The conditions found in the mouths of school children and reported by investigating committees are something astounding. A large per cent., from eighty to ninety, of those examined needed more or less dental attention, and the mouths of many of the children were in a filthy condition owing to badly decayed, and in some instances abscessed, teeth, accumulations of calculus and food debris,

swollen and congested gums, etc., the teeth unbrushed, and mouth unclean; a veritable breeding place for infection and disease.

Then there is the younger class of children under school age who receive little or no attention from the dentist. Now, reader, how many children, such as enumerated above, belong to your own patients? Patients who have implicit trust in you and your work, and expect you to do all that is necessary for the welfare of the teeth and physical condition of the family so far as it lies within your power?

Have you ever stopped to fully consider what proper attention to the teeth of a child may mean to that individual or what may be the ill results of neglect?

Neglect of the teeth of children has caused suffering from toothache, derangement of digestion through bolting of food, vitiation of the digestive fluids by bacteria propagated by fermentation and putrefaction of accumulations about the teeth, and pus from abscessed conditions, mal-occlusion of the teeth with more or less disfigurement of the features, and so on. You can enumerate the ill effects as well as I. And looking then at these ill effects from dental neglect and the benefits from rigid oversight of the teeth by the dentist, is a practitioner doing his duty if he shuns the children and does not encourage attention to their teeth?

I venture the assertion that there is today scarcely a dentist but who could have more child patients if he really wanted them.

What is the duty of the dentist?

The dentist referred to in the beginning of this article says: "If I were beginning my practice over again I wouldn't touch a child." Would such a man be doing his duty? Can he select agreeable patients and reject other suffering persons and do his duty?

It may be his privilege, but not his duty. His duty is to serve humanity to the best of his ability and neglect nothing or no one.

In accepting a family of patients it is implied that that dentist will give them every attention possible for the welfare of their teeth, and anything short of that is breaking the implicit trust those patients have imposed in the dentist, and an injustice that may bring serious results to humanity.

Children are comparatively easy to manage if the dentist is tactful, and there should be no excuse for their neglect. If dentists in general prefer to not work for the children, then it is time that those who love children began to specialize in the treatment of them. But don't let them suffer, nor bring affliction on the innocents through sheer neglect.

# LEGISLATION

## NEW DENTAL LAW IN OHIO.

The following bill passed both branches of the legislature of Ohio, the House in February and the Senate in March, and is now a law.

The measure was introduced in the House by Representative Dr. J. O. Hawkins, a dentist of Wellston, Ohio, and he and Dr. H. C. Brown, chairman of the legislation committee, Ohio State Dental Society, deserve great credit for their energetic and persistent work in securing the passage of the new law.

The following is the text in full:

**A BILL**

**To Regulate the Practice of Dentistry, and to Repeal Sections 4404 and 6991, Revised Statutes.**

Be it enacted by the General Assembly of the State of Ohio:

Section 1. Within thirty days after the passage of this act the governor, with the advice and consent of the senate, shall appoint a state dental board consisting of five persons, each of whom shall have been in the legal practice of dentistry in this state at least five years next preceding his appointment. No person so appointed shall be an officer of a dental college or a member of the faculty thereof.

Sec. 2. One member of the state dental board appointed under the preceding section, shall serve for one year, one for two years, one for three years, one for four years and one for five years from the date of appointment. Annually thereafter the governor shall appoint one menber of the board who shall serve for a term of five years, and until his successor is appointed and qualified, but no person so appointed shall serve to exceed two terms.

Sec. 3. The state dental board shall organize by the election from its members of a president, a secretary and a treasurer. It shall hold a meeting on the third Tuesday in June and October of each year, and other meetings as it deems necessary at such times and places as the board designates. The October meeting shall be

held in the city of Columbus; the June meeting may be held at such place as the board designates. A majority of the members of the board shall constitute a quorum but a less number may adjourn from time to time. The board shall make such reasonable rules and regulations as it deems necessary.

Sec. 4. Before entering upon the discharge of the duties of his office, the secretary and the treasurer of the state dental board shall each give a bond to the board in such sum and with such sureties as the board directs. Each month all moneys received by the secretary shall be paid to the treasurer of the board.

Sec. 5. Each member of the state dental board shall receive ten dollars for each day actually employed in the discharge of his official duties, and his necessary expenses incurred. The secretary shall receive an annual salary to be fixed by the board, and his necessary expenses incurred in the discharge of his official duties. The compensation and expenses of the secretary and members and the expenses of the board, shall be paid from moneys received under this act, upon the approval of the president and secretary.

Sec. 6. The state dental board shall have an official seal and and shall keep a record of its proceedings, a register of persons licensed as dentists and a register of licenses by it revoked. At reasonable times its records shall be open to public inspection. A transcript of an entry in such records certified by the secretary under the seal of the board, shall be evidence of the facts therein stated.

Sec. 7. The state dental board may hear testimony in matters relating to the duties imposed upon it by law, and the president and secretary of the board may administer oaths.

Sec. 8. Unless legally qualified prior to the passage of this act, no person shall practice dentistry in this state until he has obtained a license from the state dental board as hereinafter provided.

Sec. 9. Each person who desires to practice dentistry within this state shall file with the secretary of the state dental board a written application for a license and furnish satisfactory proof that he is at least twenty-one years of age, of good moral character, and present evidence satisfactory to the board that he is a graduate of a reputable dental college, as defined by the board. Such application must be upon the form prescribed by the board and verified by oath.

Sec. 10. An applicant for a license to practice dentistry shall appear before the state dental board at its first meeting after the filing of his application, and pass a satisfactory examination, consisting of practical demonstrations and written or oral tests, or both, in the following subjects: anatomy, physiology, chemistry, materia medica, therapeutics, metallurgy, histology, pathology bacteriology, prosthetics, operative dentistry, oral surgery, anesthetics, orthodontia and oral hygiene.

Sec. 11. If such applicant passes the examination, he shall receive a license from the state dental board attested by its seal

and signed by the president and secretary, which shall be conclusive evidence of his right to practice dentistry in this state. If the loss of a license is satisfactorily shown, a duplicate thereof shall be issued by the board.

Sec. 12. The state dental board may issue a license without examination to an applicant who furnishes satisfactory proof that he is a graduate from a reputable dental college of a state, territory or a district of the United States, and holds a license from a similar dental board, under requirements equal to those of this state, or who, for five consecutive years next prior to filing his application, has been in the legal and reputable practice of dentistry in a state, territory or district of the United States and holds a license from a similar dental board thereof, if in either case the laws of such state, territory or district accord equal rights to a dentist of Ohio holding a license from the state dental board, who removes to, resides and desires to practice his profession in such state, territory or district. No license shall be issued under this section unless authorized by an affirmative vote of all the members of the board present at such meeting.

Sec. 13. The state dental board may revoke a license obtained by fraud or misrepresentation, or if the person named therein uses intoxicants or drugs to such a degree as to render him unfit to practice dentistry, is guilty of immoral conduct, or has been convicted of a felony subsequent to the date of his license. If such conviction is vacated, reversed or set aside, or the accused pardoned, his license shall be operative from the date of the vacation, reversal or pardon.

Sec. 14. No action to revoke a license shall be taken until the accused has been furnished a statement of the charges against him and notice of the time and place of a hearing thereof. The accused may be present at the hearing in person, by council, or both. The statement of charges and notice may be served personally upon such person or mailed to him at his last known address at least twenty days prior to the hearing. If upon such hearing the board finds the charges are true, it may revoke the license. Such revocation shall take from the person named in the license all rights and privileges acquired thereby.

Sec. 15. A stenographic report of each proceeding to revoke a license shall be made at the expense of the state dental board, and a transcript thereof kept on its files. A person whose license has been revoked may file with the secretary within thirty days of the decision of the board a written notice of appeal therefrom. Upon filing such notice the secretary shall transmit to the governor and attorney-general the record of such proceedings. Such officers shall review the proceedings as disclosed by the record and their decision affirming or overruling the action of the board shall be final.

Sec. 16. An applicant for a license to practice dentistry in this state shall pay to the secretary of the state dental board, the following fee:

An applicant for a license granted upon an examination, twenty-five dollars. Such fee shall not be refunded unless the applicant is unavoidably prevented from attending the examination, but he may be examined at the next regular or special meeting of the board without additional fee. An applicant failing at first examination may be re-examined at the next regular or special meeting of the board without an additional fee.

An applicant for a license without examination, with license from a board other than of this state, twenty-five dollars.

An applicant for a duplicate license granted upon proof of loss of the original, five dollars.

Sec. 17. Whoever engages in the practice of dentistry in this state shall keep his license displayed in a conspicuous place in the operating room, or rooms in which he practices, in such manner as to be easily seen and read.

Sec. 18. A person shall be regarded as practicing dentistry who is manager, proprietor, operator or conductor of a place for performing dental operations, or who, for a fee, salary or other reward paid or to be paid either to himself or to another person, performs dental operations of any kind, treats diseases or lesions of human teeth or jaws, or attempts to correct malpositions thereof, or who uses the words "dentist," "dental surgeon," the letters "D. D. S." or other letters or title in connection with his name, which in any way represents him as being engaged in the practice of dentistry.

Sec. 19. Nothing in this act applies to a bona fide student of dentistry in the clinic rooms of a reputable dental college or under the direct supervision of a preceptor who is a licensed dentist in this state, during the regular vacation intervals of a college course, if he has matriculated and is pursuing consecutive courses of study in a reputable dental college.

Sec. 20. Nothing in this act applies to a legally qualified physician or surgeon unless he practices dentistry as a specialty, or to a dental surgeon of the United States army or navy, or to a legal practitioner of dentistry of another state, making a clinical demonstration before a dental society, convention, association of dentists or dental college.

Sec. 21. Whoever sells or offers to sell, a diploma conferring a dental degree, or a license granted pursuant to the laws of this state, or who procures such diploma or license with intent that it shall be used as evidence of the right to practice dentistry by a person other than the one upon whom such diploma was conferred, or to whom such license was granted; or who with fraudulent intent alters such diploma or license, or uses or attempts to use the same when altered, shall be fined not less than one hundred dollars nor more than two hundred dollars, or be imprisoned not less than thirty days nor more than sixty days, or both. A subsequent conviction shall be punished by the maximum penalties prescribed in this section.

Sec. 22. Whoever being a manager, proprietor, operator or conductor of a place for performing dental operations, employs a person who is not a licensed dentist to do dental operations as defined in section eighteen of this act, or permits such person to so practice dentistry in his office; or whoever practices dentistry under a false name, or assumes a title, or appends or prefixes to his name, letters which falsely represent him as having a degree from a legal dental college; or who impersonates another at an examination held by the state dental board; or who knowingly makes a false application or a false representation in connection with such examination, shall be fined not less than one hundred dollars, nor more than two hundred dollars, or be imprisoned not less than thirty days, nor more than sixty days, or both. A subsequent conviction shall be punished by the maximum penalties prescribed in this section.

Sec. 23. Whoever violates a provision of this act, for the violation of which no penalty has been prescribed, shall be fined not less than fifty dollars nor more than one hundred dollars, or be imprisoned not less than ten days nor more than thirty days, or both. A subsequent conviction shall be punished by the maximum penalties prescribed in this act.

Sec. 24. All fines or forfeitures of bond in an action for violation of a provision of law relating to the practice of dentistry, shall be paid by the court receiving it, to the secretary of the state dental board.

Sec. 25. The secretary of the state dental board shall enforce the provisions of the laws relating to the practice of dentistry. The prosecuting attorney of a county, or the solicitor of a municipality, wherein a provision of this act is violated, shall, when so requested by the secretary of the board, take charge of and conduct the prosecution.

Sec. 26. The state dental board shall make an annual report to the governor, containing a statement of moneys received and disbursed, and a summary of its official acts during the preceding year.

Sec. 27. Sections 4104 and 6991 of the Revised Statutes are hereby repealed.

## ARMY DENTAL LEGISLATION.

The following bill having passed the U. S. senate, is now in the house in committee on military affairs. Dentists everywhere are urged to write their congressmen to use their efforts in support of the measure.

### AN ACT

**To Reorganize the Corps of Dental Surgeons Attached to the Medical Department of the Army.**

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That to the Medical Department of the Army there shall be attached a corps of dental surgeons, which corps shall not exceed in number the actual requirements nor the proportion of one to one thousand authorized by law for service in the Regular Army, and all original appointments to said corps shall be made to the rank of first lieutenant.

Sec. 2 That the appointees must be citizens of the United States, between twenty-two and thirty years of age, graduates of standard American dental colleges, of good moral character, and of unquestionable professional repute, and shall be required to pass the usual physical examination and a professional examination which shall include tests of skill in practical dentistry and of proficiency in the usual subjects in a standard dental college course: Provided, That dental surgeons attached to the Medical Department of the Army at the time of the passage of this Act may be eligible to appointment, three of them to the rank of captain and the others to the rank of first lieutenant, on the recommendation of the Surgeon-General, and subject to the usual physical and professional examinations herein perscribed: Provided further, That the professional examination may be waived in the case of dental surgeons whose efficiency reports and entrance examinations are satisfactory to the Surgeon-General; and the time served as dental surgeons under the Act of February second, nineteen hundred and one, shall be reckoned in computing the increase service pay of such as are appointed under this Act.

Sec. 3. That the pay, allowances and promotions of dental surgeons shall be fixed and governed by the laws and regulations applicable to the medical corps; that their right to command shall be limited to the members of the dental corps; that their right to promotion shall be limited to the rank of captain after five years' service and to the rank of major after ten years' service: Provided, That the number of majors shall not at any time exceed one-eighth nor the number of captains one-third the whole number in the said dental corps.

Sec. 4. That the Surgeon-General of the Army is hereby authorized to organize a board of three examiners to conduct the profes-

sional examinations herein prescribed, one of whom shall be a surgeon in the Army, and two of whom shall be selected by the Surgeon-General from the contract dental surgeons eligible under the provisions of this Act to appointment to the dental corps.

Sec. 5. That the annulment of contracts made with dental surgeons under the Act of February second, nineteen hundred and one, shall be so timed and ordered by the Surgeon-General that the whole number of contract and commissioned dental surgeons rendering service shall not at any time be reduced below thirty.

Passed the Senate January 29, 1908.

Attest: CHARLES G. BENNETT,
Secretary.


## PENNSYLVANIA STATE DENTAL SOCIETY.

The fortieth annual meeting of the Pennsylvania State Dental Society will be held at the Bellevue Stratford Hotel, Philadelphia, Pa., on June 30, July 1 and 2, 1908, and it is the intention of every officer and committeeman of this society to make this anniversary the best of its kind in the dental history of the state.

## NORTHERN INDIANA DENTAL SOCIETY.

The twentieth annual meeting of the Northern Indiana Dental Society will be held at Fort Wayne, Ind., Sept. 8th and 9th, 1908. An excellent meeting is expected.

J. A. DINWIDDIE,
Secretary.

## IMPORTANT NOTICE.

Owing to change in arrangements the meeting of the Southwestern Michigan Dental Society, April 14-15, will be held at Grand Rapids, Mich., instead of at Jackson. Every effort is being made to make the meeting a success and your presence is desired.

O. E. Lanphear, Pres.
C. W. Johnson, Sec'y.

## VIRGINIA STATE DENTAL ASSOCIATION.

The 39th annual session of the Virginia State Dental Association will be held at the main hall of the Medical College of Virginia, Richmond, Va., beginning July 14th, 1908. The intention of the society is to make this the most successful meeting in the history of the organization. Clinics will be given and papers read by eminent members of the profession. All ethical practitioners are cordially invited to attend.

## ILLINOIS STATE DENTAL SOCIETY.

The 44th annual meeting of the Illinois State Dental Society will be held at Springfield, May 12, 13, 14 and 15, 1908. The sessions and clinics will be held in the State Armory Building. Wednesday and Friday mornings will be devoted to clinics, other sessions to papers and discussions.

Arthur D. Black, Secretary,
31 Washington st., Chicago, Ill.

## NEW HAMPSHIRE DENTAL SOCIETY.

The 31st annual meeting of the New Hampshire Dental Society will be held at the Cheshire House, Keene, N. H., May 12, 13 and 14, 1908. A good program is being prepared and all reputable members of the dental profession are cordially invited to attend.

J. H. Worthen, President,
Concord, N. H.
F. F. Fisher, Secretary,
Manchester, N. H.

## STATE OF MICHIGAN BOARD OF DENTAL EXAMINERS.

The Michigan State Board of Registration and Examination in Dentistry will hold its next semi-annual meeting to examine candidates for registration in Michigan, beginning Monday, June 8th at 8 o'clock and continue through the 13th, in the dental department of the University of Michigan, at Ann Arbor. Applications must be in the hands of the secretary at least five days before the meeting.

For full particulars address the secretary,

E. A. Honey,
Kalamazoo, Mich.

## KANSAS STATE BOARD OF DENTAL EXAMINERS.

The next meeting for examination of applicants for registration will be held in Topeka, May 13, 14, 15 and 16, 1908.

The first session will begin in the evening of the 13th at seven-thirty. A graduate of a reputable college will not be required to take an examination. The fee is twenty-five dollars. The examination will be practical and theoretical. Applicants will be expected to furnish all instruments except vulcanizer. Those expecting to take the examination please write the secretary for full information.

The Copeland Hotel will be headquarters.

## ALUMNI ASSOCIATION OF ST. LOUIS DENTAL COLLEGE.

The Alumni Association of the St. Louis Dental College wish to announce that their annual clinic will be held at the college building (Grand and Caroline sts.) Tuesday and Wednesday, May 19th and 20th, 1908.

A good program is being arranged and all graduates of the college are respectfully requested to be present and aid in making this meeting a success.

W. M. COLLINS,
T. F. FLEMING,
Com. on Publicity.

## SEMI-CENTENNIAL JUBILEE MEETING.

The semi-centennial jubilee meeting of the Indiana State Dental Association, at Indianapolis, June 4-5-6, will have for essayists the following well known men:

Dr. Truman W. Brophy, Chicago, Ill., subject, "The deformity of cleft palate, its influence physically and mentally;" Dr. George Zederbaum, Charlotte, Mich., subject, "The education of a nation. Teeth;" Dr. H. B. Holmes, Louisville, Ky., subject, "The influence and benefits of associations;" Dr. M. H. Fletcher, Cincinnati, O., subject, "Alveolitis; the disease of which pyorrhea alveolaris is one stage;" Dr. G. V. Black, Chicago, Ill., subject, "Supernumerary teeth."

## MISSOURI STATE DENTAL ASSOCIATION.

The 43rd annual meeting of the Missouri State Dental Association will convene in St. Louis, June 1st, 2nd and 3rd, 1908, at the Planters Hotel. Rates $1.50 and up, per day. Efforts are being made to make this the most successful meeting in the history of the association. Distinguished members of the profession from out of the state will be present.

All ethical members of the profession are cordially invited to come.

O. J. FRUTH.
Ex. Com., St. Louis, Mo. J. F. AUSTIN.
P. H. MORRISON.
J. W. HULL, Pres., Kansas City, Mo.
E. P. DAMERON, Cor. Sec., St. Louis, Mo.

## NATIONAL DENTAL ASSOCIATION.

The 12th annual meeting of the association will be held in Boston on July 28th to 31st, inclusive, and promises to be one of the most important in the history of the society. It is 28 years since our National Society has held a meeting in New England and it is confidently predicted that the attendance and interest will surpass that of any previous session.

Hotel Somerset, on Commonwealth ave., has been selected as headquarters for the association and where all meetings will be held, including those of sections. The clinics will be held in Tuft's College Dental School, on Huntington ave., on the forenoons of Wednesday and Thursday.

Rates at Hotel Somerset:

Two in room with bath, $4.00 per day. One in room with bath, $3.00 per day. Two in room without bath, $3.50 per day. One in room without bath, $2.50 per day.

For reservations, etc., apply to chairman of the local committee of arrangements, Dr. W. E. Boardman, 419 Boylston st.

Membership in the association is limited to delegates from state societies, but a most cordial invitation is extended to all reputable dentists to attend the meeting.

Dr. William Carr, President,
35 W. 46th st., N. Y.
Dr. Chas. S. Butler, Secretary,
Buffalo, N. Y.

## MICHIGAN STATE DENTAL SOCIETY.

The Michigan State Dental Society will hold its annual meeting on Wednesday, Thursday, Friday and Saturday, June 10th to 13th inclusive, on board the steamer City of Mackinaw, on a trip through the Detroit River, Lake St. Clair, the Flats, and on to Mackinaw and the "Soo." The total expense of the trip, including passage, meals, berth, will be nineteen dollars for the round trip, and all our ethical dentists and friends are cordially invited to join us.

The principal features of the meeting will be table clinics, good papers, a complete dental exhibit and a good time.

Four days to find out what your fellow practitioners are doing, an ideal meeting under ideal conditions.

Those desiring to have accommodations reserved for them should apply at once to Dr. O. W. White, 406 Fine Arts Building, Detroit, stating the number of persons in the party, and whether it is a family party or all men.

A deposit of five dollars is required for each reservation.

O. W. White, Local Arrangement Committee.

# AFTERMATH

**Fire** destroyed the dental office of E. S. Cooper, Mobile, Ala., Feb. 16. No insurance.

**Married.**—Dr. A. L. Besore, Bentley, Ia., and Miss Francis Duff, Council Bluffs, Ia., Feb. 26.

**Miami and Shelby County (Ohio) Dental Society** elected the following officers: President, Dr. B. W. Jones, Troy; secretary, Dr. J. L. Crawford, Piqua.

**Died in Dentist's Chair.**—Miss Mina Wilkeson, aged 9 years, of South Bend, Ind., died in a dentist's chair, Feb. 27, while under the influence of chloroform.

**Appointed Examiners of Washington State Dental Board.**—Gov. Mead has announced the reappointment of Dr. E. B. Edgers, of Seattle, and Dr. G. S. Irwin, of Vancouver, upon the state board of dental examiners for terms ending the first Monday in March, 1910.

**Eighth District Society of Michigan** elected the following officers: President, Dr. W. R. Purmort, Saginaw; vice-president, Dr. H. B. Hulbert, Bay City; secretary, Dr. W. E. Moore, Saginaw; treasurer, Dr. C. J. Hand, Bay City.

**Theft in Dentist's Office.**—A chatelaine bag containing valuables to the extent of $80 was taken from a dental office in Newark N. J., Feb. 17. Two other people who were in the office when the purse was missed were arrested on suspicion.

**Council Bluffs (Iowa) District Dental Association** elected the following officers: President, Dr. Horace Warren, of Missouri Valley; vice-president, Dr. R. D. Miller, of Atlantic; secretary, Dr. S. W. MacCall, of Council Bluffs; treasurer, Dr. R. D. McEvoy, of Missouri Valley.

**Cadillac (Mich.) Dental Society** elected the following officers: Dr. F. R. Fletcher, president; Dr. Howard F. Kneeland, vice-president; Dr. A. W. Knight, secretary and treasurer. Professional advancement and co-operation are the objects. It is the expectation to affiliate with the state dental society.

**The Dentist's Rubaiyat.**

Sometimes when dancing in the gilded hall,
With some one who is not my choice at all,
And hangs most heavy on my arm, I still
Am gay, for she has teeth to fix withal.
—Howard N. Lancaster.

**Dr. R. R. Andrews is Honored Guest.**—Dr. Robert Robbins Andrews, of Cambridge, Mass., one of the foremost dentists, was given a banquet at the hotel Somerset, Feb. 29, in recognition of his research work and of his 50th anniversary of his entering upon the practice of dentistry. A silver loving cup was presented him by Dr. Eugene Smith of the Harvard dental school. More than 200 dentists were present.

**Lets Dentists Prescribe Carbolic Acid.** Without change, excepting addition of "dentist," the proposed ordinance restricting sale of carbolic acid was approved by the Newark, N. J. Public Health Committee of the Common Council. It was proposed that that section whereby physicians and veterinarians are permitted to prescribe the acid be amended so as to include dentists. This was decided on.

**Robberies.**—Drs. R. N. Halloway and L. C. Polk, Corsicana, Texas, gold leaf and fillings, valued at $50 and $35 respectively. Dr. O. J. Fortch, San Francisco, Cal., several pieces of gold and five gold teeth. Dr. Edward J. Weeks, New Bedford, Mass., gold and platinum to the value of $100, Feb. 12. Boston Dental Parlors, San Jose, Cal., materials valued at $100, Feb. 20. Dr. P. H. Derby, Springfield, Mass., instruments valued at $35, Feb. 26.

**Miller Library and Specimens Given to Universities of Michigan and Pennsylvania.**—It was announced to the board of regents, University of Michigan, Feb. 19, that Mrs. Miller, widow of the late Dr. W. D. Miller, dean-elect of the dental department, whose death occurred before he assumed active duty here, had presented most of his books, slides and specimens to the university. A few were reserved for the family and others given to the University of Pennsylvania.

**Dental Fees.**—The practicing M. D. charges for every office visit, be the time ever so small, while the average dentist really makes all the treatments, consultations, etc., free! He often performs an operation of an hour that requires as much skill as many a surgeon's operation, and probably receives $2, while the surgeon receives $200. Some operators may get an adequate fee, but the fact remains that dental fees are generally too low.—A. Waas, Dental Review.

**Deaths.**—Dr. Andrew S. Walsh, Cambridge, Mass., at Hillsgrove, R. I., aged 42 years. Dr. George A. Grace, Franklin, N. H., aged 71 years. Dr. A. A. Wofford, Columbus, Miss., Feb. 11, aged 65 years. Dr. Charles C. Wentworth, Milwaukee, Wis., Feb. 18, aged 55 years. Dr. Edward L. Jordan, Wollaston, Mass., Feb. 23, aged 49 years.

Dr. T. M. Sendering, Scranton, Pa., Feb. 26, aged 72 years. Dr. J. L. Moorman, Cloverport, Ky., March 2. Dr. Frank Creager, Fremont, Ohio, March 4, aged 55 years.

**The American "Doctor."**—We have, as you all know, fully qualified American dentists with us, some bad, some good; for these men I have a certain amount of leniency, for it appears to men that some of our best men are not satisfied unless they employ a doctor. It sounds very professional in the eyes of our patients, but the question is, is it professional? Have we not men from our own colleges, men fully trained in the art of dentistry—and even more fully trained as to their medical knowledge than the D. D. S.—so that we should take a delight in engaging such men, simply because they possess that astounding name, doctor? I say, I am not at enmity with these men, for some are good men and a credit to the profession, but in the eyes of the English law the practice is wrong. By engaging these men, gentlemen, we are encouraging quackery—to encourage quackery is not professional.—J. Morton, British Dental Journal.

**Dental Hygiene Compulsory.**—A law making the observance of the rules of hygiene compulsory, in England, went into effect January, 1908.

The recommendations emanated from the Admiralty and War Office Inter-departmental Committee, and were endorsed by the Inter-departmental Committee on Physical Deterioration and the British Dental Association.

They read as follows:—

1. "That the teaching of the elements of hygiene should be made compulsory in schools, and in this teaching the care of the teeth should receive special attention."

2. "That daily cleansing of the teeth should be enforced by parents and teachers."

3. "That systematic examination of the teeth of children by competent dentists, employed by school authorities, should be practiced where possible, to prevent caries extending, to stop carious teeth, and to remedy defects of teeth."—R. M. Capon, British Dental Journal.

**A Royal Dentist.**—Peter the Great particularly delighted in drawing teeth, and he strictly enjoined his servants to send for him when anything of that sort was to be done. One day his favorite valet de chambre seemed very melancholy. The czar asked him what was the matter.

"Oh, your majesty," said the man, "my wife is suffering the greatest agony from toothache, and she obstinately refuses to have the tooth taken out."

"If that is all," said Peter, "we will soon cure it. Take me to her at once."

When they arrived the woman declared that she was not suffering at all; that there was nothing the matter with her.

"That is the way she talks, your majesty," said the valet, "she is suffering tortures."

"Hold her head and hands," said the czar, "I will have it out in a minute." And he instantly pulled out the indicated tooth with great dexterity, amid profuse thanks from the husband.

What was Peter's indignation to discover a little later that his valet had used him as an executioner to punish his wife, who had never had an unsound tooth in her head.—Argonaut.

**Board of Dental Examiners for Mississippi.**—The newly appointed Board of Dental Examiners for Mississippi consists of Drs. P. H. Wright, Oxford; L. B. McLaurin, Natchez; A. B. Kelly, Yazoo City; C. T. Shumaker, Poplarville, and E. Douglass Hood, Tupelo. All are members of the State Association and represent the most ethical class of practitioners in the State.

The Board organized and elected Dr. A. B. Kelly, of Yazoo City, President, and Dr. E. Douglass Hood, of Tupelo, Secretary. The Board will meet to examine applicants May 19th, in Jackson. For particulars and requirements, address the Secretary.

**Board Examinations.**—Our entire system of examinations should be revised. They are out of date in the present necessities of dental practice and should be relegated to the junk heap of effete custom. To outline in full our idea of a proper examination would require too long at this time, but briefly stated it is this: A candidate should have placed in his hands a patient with the teeth and surrounding tissues in an abnormal condition. He should diagnose every trouble and suggest the remedy. Then he should demonstrate his ability to properly perform the necessary technical procedures to result in the greatest good to the patient. He should treat this case from beginning to end precisely as he would if he were conducting a practice, and the patient applied to him for dental service. He should be able to tell the examiner his reasons for every procedure, and the dangers to be guarded against in his conduct of the case. He should enter vitally into the management, not only of the teeth and mouth, but of the patient, and should demonstrate his ability to control patients professionally. He should do this with not only one case, but with a sufficient number to establish his ability to meet all cases. And in all this the examiner should observe the minutest detail of the candidate—his cleanliness, means of sterilization, demeanor, etc. Of course, there should be some written examinations to demonstrate the candidate's didactic grasp of the various subjects, but they should not be loaded down with catch questions, or foolish formulæ, or observations about the origin and insertion of the flexors of the great and little toes.

This is a plea not for narrowness, but for the principle of finding out a candidate's ability to properly serve the public. As at present organized, state boards can not be expected to carry out such examinations in their entirety, but they can do something toward improving their methods and they can in many cases revise their questions, all of which is to be devoutly wished.

Colleges should also rise to something higher and better in their preparation of students and in their examinations, but they cannot change their methods of instruction very materially so long as state board examinations are what they are. To put it briefly, colleges at present must aim to prepare their students to

meet State boards, which is sometimes far removed from the highest possibilities of college teaching as it relates to the proper preparation of the student for his future life's work. - Editorial Dental Review.

**Give Your Patients These Facts.**—1. Dental expense increases with neglect more rapidly than the interest on money.

2. The expense of dentistry is in proportion to the neglect of the patient.

3. The average pressure upon natural teeth is 150 pounds and only 25 pounds on plates.

4. Natural teeth are six times as serviceable as are artificial teeth.

5. With neglected teeth the greater part of the expense is *under* the fillings.

6. A good natural tooth though aching can be cured and do better service than a bridge.

7. Teeth may be deeply decayed and the patient not be aware of the cavities they contain.

8. Small fillings with strong surrounding walls save the teeth better than large fillings with frail surrounding walls.

9. Small fillings are less painful to insert than are the larger and deeper ones.

10. Small fillings take less time to insert than do the larger and deeper ones.

11. Dental expense is based in a measure upon the time reserved for the patient, therefore they should keep appointments promptly.

12. Decayed roots which cannot be crowned are injurious to the breath and health and should be extracted.

13. Health, beauty and comfort are dependent upon the proper care of the teeth.

14. If the natural teeth are put in good condition and attended to at frequent and regular intervals thereafter, they will render their owner many times over the service they have cost him.

—H. W. McMillan, Dental Review.

**Patents of interest to Dentists, recently granted:—**

876997—Electrical, dental and surgical appliance, H. F. Pressey, Bridgeport, Conn.

877585—Rubbing apparatus for the gums, L. J. F. Nicolai, Dresden, Germany.

878486—Tooth brush, L. H. Crowell, deceased, Halifax, Nova Scotia, Canada; E. R. and M. O. Crowell, executors.

878164—Tooth brush, W. N. Taylor, Diamond, Cal.

12753—Denture, reissue, R. M. Craig, Dennison, Ohio.

879537—Dental implement, J. Gartrell, Washington, D. C.

879254—Manually-controlled dental engine, J. L. Gauthier, Washington, D. C.

879179—Specialist's chair, W. H. Kersey, Indianapolis, Ind.

Copies of the above patents may be obtained for fifteen cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

# REGULAR CONTRIBUTIONS

## TEMPERAMENTS.

By Gustavus North, A. M., D. D. S., Cedar Rapids, Iowa.

### CHAPTER I.

Temperaments are individual peculiarities of mental and physical structure, and they may be defined as constitutional organization and credited primarily to hereditary conditions. The brain, heart, liver, lungs, stomach, digestion, respiration, innervation, circulation, etc., are all factors in the differentiation of temperaments.

Temperaments exercise an influence upon the teeth, as well as upon the general functions of the body. Marked differences are readily observed in the appearances of the teeth, gums, lips, tongue and secretions of the mouth of different individuals. The constitutional health depends to a greater extent upon the temperaments than pathologists generally admit.

Individuals of the same nationality exposed to the same climate, diet and surroundings may be susceptible to different indispositions as their temperaments may indicate.

Temperaments should always be considered by the physician and dentist in diagnosing and treating diseases.

The study of temperaments should interest the physician as much as the dentist in the study and practice of pathology and therapeutics, as his practice and success are governed by individual peculiarities of mental and physical conditions.

The dentist would be at a loss if he could not read temperaments in the study and practice of oral pathology and therapeutics and especially artistic dentistry. Each person

is made up physically of individual peculiarities and may require a different mode of treatment. Pulp treatments, capping and protecting sensitive structure in deep-seated cavities, pressure anesthesia, etc., are governed by the physical condition and temperament of the patient.

What is a stimulant for one person might prove the opposite to one of a different temperament.

Temperaments include almost the entire field of the dental profession. Without the knowledge of temperaments it would be difficult for the dentist to practice his profession successfully as so many types of individualities present themselves for his consideration.

Temperaments are the index to the peculiarities of the individual, as the tongue is the index to the physical condition of the system.

(To be continued.)

## TAGGART CAST INLAYS.*

By L. E. Custer, A. M., D. D. S., Dayton, Ohio.

Although Dr. W. H. Taggart brought out the use of wax and paraffine as a model for an object to be cast at a later date than that proposed by Dr. Ollendorf, of Breslau, yet as is so often the case, we find that these two men were working independently of one another. Dr. Ollendorf's process applied to prosthetic dentistry, while Dr. Taggart's applied to operative dentistry. They also differed in the manner of casting, and herein lies the secret when applied to small pieces. While both use a material for a model which can be completely vaporized by heat, yet the principle involved at the moment of casting is quite different. Dr. Ollendorf employed the specific gravity of about a three-inch head of metal to force the metal into all the recesses of the mould, but Dr. Taggart knew at the outset that such a principle would not be practical when applied to small objects. Therefore, having satisfied himself as to the practicability of the disappearing model, as he calls it, he employed compressed air to force the melted metal into the mould, and although even this had been used 20 years ago for the casting of aluminum plates, yet it was new when used in this man-

*Read before the Ohio State Dental Society, December, 1907.

ner. The use of a vaporizable model and the casting of melted metal under pressure, whether produced by air, nitrous oxide, steam, gunpowder or centrifugal force, should be known as the Taggart process. The principle involved in all these, except where centrifugal force is used, is practically the same. There appears to be a disposition to belittle this achievement because of the simplicity of the process, but herein lies its great merit. Why did not you assemble these old principles? Why did not I?

### PREPARATION OF CAVITY FOR CAST INLAY.

The preparation of the cavity for a Taggart inlay, while involving the principle that applies to all inlays, namely, the avoidance of undercut, is even much easier than where the matrix is used. The difficulty of adapting a matrix in deep grooves makes it necessary to prepare the cavity not only without undercut, but with few and comparatively shallow grooves; in other words, when a matrix is used the cavity must necessarily be somewhat symmetrical in shape and smooth in outline and without deep grooves or arms, which would naturally run out into the fissures. It is often necessary to cut out not only the fissures, but the intervening sound tissue between them, in order that the matrix may be adapted without tearing. To prepare a cavity for a Taggart inlay, however, but one broad rule need be borne in mind, and that is that the filling is to be removed in one piece, and even here we see another commendable feature in this inlay; if you have erred in your judgment as to whether the cavity is without undercut or not, this can be detected when removing the wax filling, and these projections which fill the little undercuts can be rubbed down by a gentle back-and-forth movement. The filling will be none the worse for this, because the margins, which are the essential part, are out of the cavity the moment the filling is started from its seat. And let me here call attention to a most important virtue of the Taggart inlay. As above stated, the cavity need not have a regular outline as where a matrix is used, which means three things: a saving of tooth structure, a saving of labor and a stronger retention. It is only necessary to cut out the fissures themselves, as shown in this specimen, and quite unnecessary to cut out the sound tissues between the fissures. Such a filling will be much more securely anchored than one of smooth

outline. Every projecting arm adds to the security of the filling.

### HOW TO GET THE WAX MODEL.

The cavity having been prepared as above indicated, it is filled with pure beeswax and paraffine, about equal parts. The beeswax gives toughness and the paraffine, if high grade, raises the melting point. These should be melted and passed through filter paper to insure purity. A little coloring matter such as pyoktannin, if added to it, will make a sharper contrast with the tooth, and define the margins. It is most convenient to use this wax in stick form. Warm the end, which should be somewhat pointed, and press firmly into the cavity. If only the very tip is softened by heat the stiff body back of it will force it into every line of the cavity. Trim off, articulate and give the wax filling just such a shape as you wish the gold to be. A little care spent at this stage will be well repaid in the end. To remove, I prefer a short wire. This wire is heated at one end and sunk into the wax filling at the most convenient point. The assistant immediately sprays cold water upon the wax to harden, and using the wire as a handle, the wax is removed. This wire later on serves to form a gateway through which the metal is cast. Now, the wire being melted into the filling enables the operator to not only remove the filling very easily, but its rigidity enables him to detect just where there is any drag, and this can be rubbed down until the filling comes out easily. If it has been difficult to remove because of an untrimmed cervical margin, this should be trimmed down and the filling returned for a second adaptation, which is usually sufficient.

### INVESTMENT FOR CASTING.

The wax filling is now to be invested for casting. For this purpose the investment must be highly refractory and without shrinkage. I have found finely-ground calcined fire-clay three parts and plaster one part to make a good investment. The fire-clay may be replaced with silex with equally good results. Much depends upon the fineness of the investment and the care with which it is spread over the wax. These castings are so perfect that any air bubbles or uncovered surfaces will show

up as so many little projections upon the fillings, which, unless removed, will interfere with its perfect seating. I prefer painting the investment on with a camel's hair brush, making sure that the entire surface is covered. After the first coating is set, a fresh mix, which may be of coarser ground investment of the same formula is poured into the flask, and within this the filling and its covering is carefully pressed to the bottom of the flask. When this has set the wire is heated a little at one end and withdrawn from the flask.

### CASTING THE INLAY.

The case is now to be thoroughly dried out for casting. The flask should be placed in an inverted position over a Bunsen flame, not too hot. If the wax filling is large much of it will melt and run out through the hole left by the removal of the wire stem; if small, it will simply be vaporized, leaving a cavity in the investment which is an exact duplicate of that in the tooth. The heat is continued till complete dryness is secured. Castings can be made in a moist mould under certain conditions, but not with that certainty that prevails with a dry and heated mould. The gold is so hot when cast that if the investment has not been well baked out, steam or gas will form from moisture or slight decomposition of the investment, which will force the gold back out of the mould. I would therefore recommend that the flask be well heated just before casting, and always to the same degree, if possible.

Perfect results in this work depend upon three things, of which uniformity of heat of the flask, just mentioned, is one; the other two conditions are uniformity of the casting heat of the gold and uniformity of the air pressure. Theoretically the gold should be heated so hot that it will remain entirely fluid till the mould is completely filled and then immediately solidifies. If heated too hot decomposition of the investment may liberate sufficient gas to force the gold back out of the mould. If the flask is not heated above a drying-out heat, then the gold should be brought almost to its boiling point. If, on the other hand, the flask is heated to a dull red, then the gold may be cast at a little above its melting point.

The pressure necessary to cast may be anywhere from 15 to 50 pounds. At 15 pounds, under favorable conditions, smooth and perfect castings may be made. It will be seen,

however, that with the same heat of the gold as the pressure rises the castings will show a rougher surface, due to the gold being forced into the pores of the investment. In one respect, so long as the filling can be completely seated, the rough surface is an advantage. But where the walls are parallel, difficulty will be experienced in getting the filling perfectly to place unless these are dressed off. Anywhere from 20 to 40 pounds will produce good results. Dr. Price has shown that above that the gold is forced into the body of the investment in the form of fine threads.

While the gold can be heated sufficiently beyond its melting point to retain its fluidity till the mould is filled with an ordinary blowpipe flame, yet for the best casting it is better to use a higher heat such as the oxyhydrogen flame or the arc light. The oxyhydrogen flame such as is produced by the Knapp blowpipe is used by Dr. Taggart. This will bring a small bit of gold to its boiling point in a very short time, and the arc light is even a more powerful agent. This will boil gold in a few seconds, and at the same time does not perceptibly heat the glass dome under which the fusing is done. The arc light possesses another advantage, as brought out by Dr. Lorenz of Atlanta, namely, greater ductility and softness of the gold than when fused by a flame. If, while the gold is melting, it is seen to bubble up, it shows that gas is forming below and the pressure should not be turned on till the bubbling ceases. Failures in casting are largely due to admitting the air just at the moment that a bubble of gas is escaping from under the gold. If this is closely watched, although there may be gas or steam present, a casting can be made if the air is admitted just after the gold subsides.

A good casting will show sharply defined margins. It is now to be pickled in hydrofluoric acid as you would etch a porcelain filling. This dissolves the traces of investment, which cannot be removed by brushing. If upon trying the filling in, it does not go entirely to its seat, you should examine with a microscope, and as a rule small glistening surfaces, which are usually little knots, due to air bubbles in the investment, show where the trouble is. Upon the removal of these the filling will go to its seat.

In all approximal fillings a print of the neighboring tooth is seen on the filling at the point of contact. After a little dressing up of this surface, I flow a very small piece of 22-karat gold,

at the point of contact. This not only rounds out that part of the filling, but gives a harder wearing surface at that point, and the inter-proximal space is better preserved.

Sometimes a casting has been made which is perfect, except that some of its margins are not quite as sharp as they should be. The extreme cohesiveness of cast pure gold fillings admits of the correcting of this defect. If an old carborundum stone well filled with gold is revolved from the center toward the defective margin, the gold being kept dry, the gold can be pushed out upon the surface just as you would shape up a wax filling with a burnisher. The gold will pile up in front of the stone without being abraded from the filling. In this manner also the accessible margins of all these fillings can be flowed to the most perfect contact with the enamel.

It is now nine months since I began the use of Taggart inlays. In that time I have covered the present field of its applications in operative dentistry. I have also made use of it in prosthetic dentistry, and while this paper is limited to cast inlays, I will say that the field for this in prosthetic dentistry is simply astounding, and I can see a complete revolution in nearly all the methods of practice in which metals are used. Returning to its operative merits, first of all the Taggart inlay lessens pain, because less cutting of dentin is necessary than with other methods of prominent filling. Nearly all of the preparation can be made with a chisel or fissure bur. And it saves pain, not only in the preparation of the cavity, but in the insertion of the filling. The day of prolonged malleting, and I might almost say, the use of the rubber dam, is past. Second, it saves a great deal of labor to the dentist, for the investing and casting is a laboratory procedure which can be relegated to the assistant with the complete assurance that it will be properly done. Third, the Taggart inlay improves the color of all teeth in which it is used, no more perhaps than other inlays at first; but the perfect fit of these fillings at the margins seals the cement from disintegration and discoloration, so often seen about porcelain fillings. And fourth, the introduction of the Taggart inlay puts the gold crown off one whole step, and if it had no other merit than this it would deserve a place in the favor of conservative dentists equal to any achievement in years.

## DISCUSSION.

**Dr. Henry Barnes, Cleveland:** The application of compressed air to the production of a cast inlay was first suggested by Dr. Taggart, and he should have the credit of this application. The disappearing model is not a new principle, but simply the application of an old principle to a new use under a new name.

Dr. Carroll, in his casting of aluminum dentures, had essentially all the principles involved, **viz., disappearing model, vent for** escape of air and compressed air upon a molten mass of metal to induce its flow. The centrifugal principle seems to perform the same work without vent, and is, therefore, to this extent superior to the Taggart method, and, moreover, much of the difficulty involved in investment is eliminated. I cannot agree with the essayist in his statement that the preparation of the cavity is easier for a cast inlay than for a matrix inlay.

The inlay, be it cast or matrix, when completed, is a solid body, and the one will be as easily inserted as the other. I cannot conceive of a cavity from which a wax model may be withdrawn without distortion from which a matrix may not with equal facility be removed. If superiority resides within the wax, then all that is necessary is to fill the matrix with wax and you have a stronger substance with which to work. Tearing of the matrix at one or more points does not necessarily destroy the whole, for by the sweating process the gold will not flow upon the reverse side.

I have not found it an easy matter to prepare a wax model and I can prepare the platinum matrix in much less time. The cavity, be it for cast or matrix inlay, must have sufficient draught to permit the easy removal of wax model, or matrix from the cavity, and yet it must have sufficient retentive form to prevent the inlay being removed by occlusal force.

The essayist has told us of some of the difficulties to be contended with, and from this and the experience as related by others, and my own limited experience in this direction, my conclusion is that there are more failures in proportion to successful cast inlays than will come to one with equal skill in making of matrix inlays, using the sweating process. Added to this, the matrix and pure gold sweated therein is a clean operation throughout. There is no intense light upon which the eye must look. Oculists inform me that the eyes of dentists are the most troublesome of any with which they have to deal, and if this be true, we should pause and consider very carefully before subjecting the eye to any added strain.

I wish to emphasize at the present time, as in the past, the use of pure gold, whether for cast or matrix inlay, and for the reasons as given by Dr. Custer. You cannot burnish an alloyed inlay as you can pure gold. The flowing of 22k. gold over the point of contact or on occlusal surface, provided it does not come to the margin, is good practice.

While I firmly believe in the matrix inlay, I also believe that

the cast method has a place such as in making crowns, bridges and plates and for very large inlays on inlay-on lays.

Today this is new and is taking the profession by storm, as did copper amalgam, but, like all new things, it will have place according to its merit as tested by time.

## PRACTICAL POINTS IN DENTISTRY.*

By S. D. Ruggles, D. D. S., Portsmouth, Ohio.

After giving the college full credit for its share in the preparation of men for their life work, there still remains one obstacle which we must all encounter, viz., the consciousness of being new and untried. This is perhaps the most trying ordeal the young practitioner has to deal with, and to him especially is this paper written. Following a schedule mapped out by a faculty is an easy task compared to making and executing one of your own, which involves business and professional principles entirely foreign to your previous experience. Fortunate indeed is he who casts his lot with an old practitioner, for many a pitfall is avoided when a little good counsel is available. The man who is ultimately successful by virtue of his painstaking and thorough methods often suffers more at first from lack of confidence than the less skillful, for he realizes that experience will be his best teacher. Under such circumstances the value of association is obvious.

One safe way to avoid mistakes is not to attempt the impossible. College experiments may often prove your undoing; choose rather to make a good impression by executing a simple operation well. The making of a reputation requires time, even in this twentieth century.

I once heard a very prominent merchant say: "Clean linen and well-brushed clothes are a man's best assets for a good impression." This century finds the public well versed in hygiene, and it behooves one to never lose sight of this fact. Soiled linen and dust-covered furniture are not fit testimonials, even for the man of known ability. Above all else, be cleanly and neat, for the majority of patients are ladies, and these things are all noticed. Have your operating room and chair appear for each patient just as though he was the first to occupy it

*Read before the Ohio State Dental Society, December, 1907.

that day. All instruments should have a place, and let that place be under cover. A word about sterilization sometime during the sitting will not be amiss. Better still, should you not have an office girl, gather up the instruments while the patient is rinsing the mouth preparatory to leaving the chair. It will be noticed.

Did it ever occur to you that the dentist's manner and speech are almost as important factors in practice as the ability to read character? The family physician often benefits his patient more with a cheerful greeting than with his prescription, and what you say to your patient has its effect. Not long ago I was surprised by the mother of a first-year high-school boy when she told me of a conversation I had with her son many months before. Confine your remarks to things of interest and within the comprehension of your listener. Some patients care for very few remarks, and a close observer will notice this. The custom of a warning when pain is to be inflicted is usually very welcome, but some are willing to omit even this. Let your voice be low and words carefully chosen, and above all else, refrain from references to your own accomplishments. It is right and proper to talk shop in your own office, but never outside of it.

Proceed with the work systematically, recording each item in a book or on a card for this purpose. For young patients who are not accompanied by parents, it is good practice to have the mother come to the office and talk matters over in detail. Explain the difficulties of the case and state what, in your opinion will be the best thing to do. Emphasize the fact that fillings are but patchwork, and their permanence depends largely upon the care they receive subsequently. It is often advisable to give some idea of the probable cost. This is wise, for it may prevent a misunderstanding, one of the very important things to avoid. These estimates are written in a space provided on the examination blank. Many points are to be considered in this particular phase of the work, the health, the financial condition, intelligence and appreciative ability of the patient.

When the physical condition is such that the more permanent operations do not seem advisable, do not commit yourself until an investigation is made. The family physician is always glad to advise, and under such circumstances no fault is apt to

be found with your results. It is to be regretted that we have no means of knowing a patient's financial standing. Certain of the more expensive operations are advisable when the cost does not enter into the consideration. In small towns the financial condition of the residents is usually known, and the city practitioner need not be entirely ignorant if he is sufficiently interested. Appointments can frequently be arranged, allowing the necessary time for inquiry, or should it be an emergency call, give such relief as is needed, and then place your next appointment far enough ahead to serve your purpose. It requires very little experience to judge a patient's intelligence. The request for a tomato can on an incisor will soon put you right.

Now and then patients present who might be termed incompatibles, and for these your best efforts will result in failure. The experienced anesthesist knows very well that the success of his anesthetic depends largely upon the frame of mind of his patient. For those who are not in sympathy with your endeavors, who question your sincerity or ability, the sooner they are invited to seek other services the better.

The rapid progress made in dentistry in the past decade has so impressed the laity that sometimes the impossible is expected. For intance, some root canals can not be filled with absolute certainty, and why should we be ashamed to acknowledge it? Cases frequently present that are beyond human power to restore, and why not use common sense and say so? People with reasonable intelligence can be made to understand these things if you will but tell them beforehand, and it is your duty to do it. Physicians usually explain the chances in favor of or against recovery.

The financial side of dentistry is a subject of itself. This I treated in a recent issue of The Summary. Suffice it to say, "The laborer is worthy of his hire," and bills should be rendered the first of the month.

This is a busy age. Time is worth more than money if such a thing is possible; therefore the necessity for promptness both on the part of the patient and dentist. Have your office hours, and see to it that they are observed. It has been my custom for several years with certain patients who are deeply engrossed with business cares to notify them by telephone of the time agreed upon for their next appointment. Sending reminders by mail was a failure, for most of them were pigeon-

holed. This liberty is taken only with those who are in sympathy with the idea and are old patients. An early-morning appointment often appeals to a busy man, and this you might easily grant, for I know of no better time to work than early in the morning, when you feel well and have not used up all your energy. Under no circumstances consent to working on Sunday. The patient who is too busy to have his work attended to during the week is either a thoughtless and poor manager or a wilful desecrater of the Sabbath. Half holidays during certain seasons and an annual vacation eliminate this factor entirely if you insist upon it.

In concluding, let me emphasize the necessity for reading good dental journals and publications by our best authors. Make it your business to be a regular attendant upon your dental societies. Patients like to patronize a well-posted, up-to-date man, and you not only rob yourself, but him as well, if you fail in this particular.

## DISCUSSION.

**Dr. Nathan B. Custer, Dayton, O.:** It is to be hoped that in the not distant future the colleges will devise some system or means for training the student in the actual receiving and dismissing of patients; for the student, after leaving college, keenly feels this lack of experience when he is thrown upon his own resources and responsibility when entering his professional life in an office of his own. He must be able to read character, temperament and physical condition of the patient in order to determine the operation he is about to perform; actual experience alone can enable him to do this successfully.

In so far as the student is concerned, the work he does in college is largely experiment. He labors under the disadvantage of seldom seeing his work later, and thereby learning of the permanency of the work, or whether the method he followed and the material and means he used were those best suited to that particular case. Some dentists consider operations successful, even though they last but six months, but in private practice patients do not consider this sort of work a success. The intelligent patient will quickly form an opinion of the dentist from the manner in which the operator begins and proceeds with his operation; and, from the condition of the office as regards neatness, cleanliness, and general appearance of order and system, etc., determines whether the patient cares to return or make an appointment for the future.

There is no real need for loss through bad accounts in the small town, for the credit standing and financial responsibility of all

are generally known; and, in large cities there is less reason for loss, as such information is furnished by local credit rating agencies which furnish upon short notice accurate, concise and reliable reports upon any one inquired of.

I am heartily in sympathy with Dr. Ruggles in his dismissing the patient who is suspicious, and not in sympathy with the operator; for such patient is the one that belongs to "the fellow on the other corner."

I believe that every one likes his day of rest; he needs it and is entitled to it. Seldom do we find one who wilfully pushes his ox into a pit on the Sabbath, but should he find it there he will pull it out. I certainly do not approve of the advertising of Sunday hours, and thus encouraging the attendance of patients who could, with equal convenience to themselves, have their work performed on some week day. But there are traveling men who are away from Monday morning until Saturday night; they want their work done by their home dentist, and he can do it on Sunday only. In large concerns it frequently happens that a man has close and active supervision of many workers, and who, because of being required to give them close, constant and personal attention, cannot take time during the week to attend to his private affairs. There is also the case of the workers to whom every day's work represents money which he cannot afford to spare, and who, if permitted time off, suffers from loss of pay—they must come on Sunday, and it is but Christian benevolence to attend to them. There are also many whose employers refuse to grant them time off during working hours under penalty of losing their jobs, and the losing of those jobs means loss of clothing, food, and other necessities—you must attend to them when they can come, whether it be Sunday or no. These are but a few instances; practice in large cities multiply them almost beyond count.

# THE CONTRIBUTIONS OF PIONEER DENTISTS TO SCIENCE, ART, LITERATURE AND MUSIC.

By Burton Lee Thorpe, M. D., D. D. S., St. Louis, Missouri.

(Continued from page 269 April Dental Summary.)

S. P. Hullihen

Simon P. Hullihen, pioneer and expert in oral surgery, and philanthropist, was a son of very humble and poor parents; born in 1810 in Northumberland county, Pennsylvania. 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 his 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 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 skillfully carved that appropriate Scriptural scene of the good Samaritan binding the wounds 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. D. White

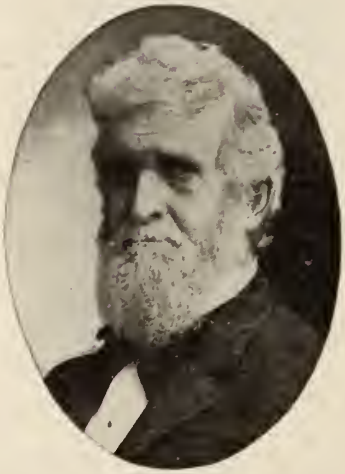
**J. DeHaven White,** for many years editor of The Dental News Letter and The Dental Cosmos, was a man of pronounced literary tastes, contributing much to dental literature, and also was a poet of no mean ability. He was the leading spirit in the organization of the Pennsylvania College of Dental Surgery, 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 and Cairo (1870), Philadelphia, and was an ardent lover of music, and sang well, and an expert rifle shot.

Robert Arthur

**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, Md.; 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.

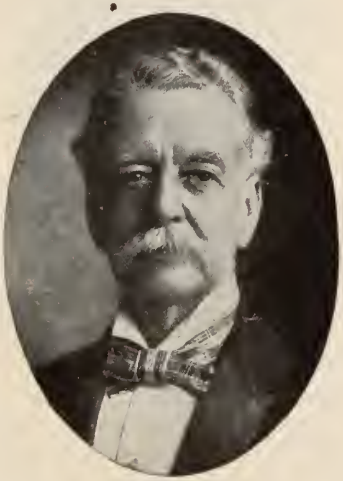
Sanford Barnum

**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 in 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."



W. W. Allport

**Walter Webb Allport** was a tailor's apprentice and a close student. He studied medicine and later dentistry with Dr. Amos Westcott, and became 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.



H. J. B. McKellops

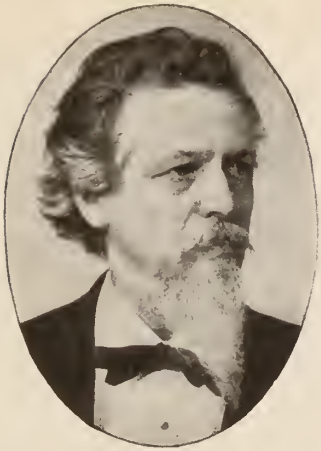
**Henry James Byron McKellops,** whom all who knew respected for his superiority as an operator, and he had few, if any equals, when it came to the manipulation of heavy foils, especially gold and platinum foil, with which he wrought wonders. He gathered a most complete dental library, the best selected 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 of 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, and a great ornament to American dentistry.

Marshall H. Webb

**Marshall Hickman Webb**—"This hand was made to handle naught but gold." The son of a poor carpenter and cabinetmaker, whose ingenuity he inherited. Young Webb made ten violins, carving the bodies, making his own strings and stringing the bows, before he was 16 years old. The manufacture of water-wheels 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.

He 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 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

**W. G. A. Bonwill**, another inventive genius. One of the greatest operators, both in operatives and prosthetics, 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.

J. J. R. Patrick

**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 diamond-setter, 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 One Hundred and Thirtieth 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 department. His work in anthropology and comparative anatomy will be his enduring monument. By his painstaking examination of thousands of prehistoric skulls, which he dug from the mounds and hills surrounding Belleville, he dispelled the myth that dental caries was of modern origin. He showed that the dentures of ancient races were afflicted 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 is published in the "Transactions of the American Dental Association" for 1895. His work in the departments of archaeology 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 archaeological collections, the most important known as the "Patrick Collection," now in the possession of the Missouri Historical Society at St. Louis.

He was a prominent member of the American Ethnological 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.

(To be continued.)

## A DISCUSSION OF CLASS TWO.*

By F. E. Williams, D. D. S., Grand Rapids, Mich.

In choosing Class II as a topic for discussion, I have approached a subject broad enough in every sense of the word, to afford us unlimited discussion. A subject with its many ramifications; its many causes, direct and indirect, but aggressive in the sense that they are continuously active, in the disarrangement and distortion they cause in the face, features, teeth and general health, through faulty mastication and imperfect breathing and through its bad effects. It deprives the system of the nutrition it would have received and from the affected organs acts reflexly upon the entire nervous system; consequently I approach class two with due appreciation and with the respect it should receive in regard to its complex methods of correction. And in retention, we have not only to prepare for the resistance necessary to keep the teeth from assuming a position in the arch somewhat similar to that in which they formerly were, but in mouth breathing we have extra pressure to overcome, which is brought to bear upon the retainers, from the habit acquired of holding the mouth open and so depriving us of the help of occlusion, which is the normal method of tooth retention.

This class is characterized by facial features and expressions familiar to all. The mouth being held open, the anterior teeth protruding, bunched or retruding; the lips held apart and the weak and retruding chin. One may note these cases as far as the profile may be seen, or the features of the face distinguished.

This class is divided into two divisions and two subdivisions. The subdivisions are like the divisions except, on one side of the mouth, the posterior teeth, (bicuspids and mo-

*Read before the Grand Rapids Dental Society, Dec., 1907.

lars) articulate normally, or so near they are classified as such, but this class of mal-occlusion, one side being normal and the other side mesial to normal, brings the chin on either side of the median line of the face, nearly the width of a lower incisor tooth and on the opposite side, from the mal-occluding posterior teeth. It acts as a mar to the facial expression, giving the chin the appearance of and in fact, as stated, not being in the center, as one may see when viewing the face from in front.

These are the typical mouth-breathing cases, and causing the most distortion to the face, requiring the efforts of the two professions to effect a cure; the rhinologist to take away the cause of the mouth breathing and the orthodonist to correct the effects of breathing through the mouth.

The common cause of mouth breathing is recognized as adenoids. Normal adenoid or as it is called lymphoid tissue, is found in abundance in the nasal and pharyngeal mucosa, but in certain regions it shows a tendency to accumulate in masses and form what is called a tonsil. Thus there are the lingual, faucial, and the pharyngeal tonsil (Luschka's, or the third tonsil), so called by Kyle and McBride. As a rule the accumulation of adenoid tissue in the pharyngeal vault, extends from the upper portion of the posterior nares, down to the tubercle of the altas and from one Eustachian tube to the other, and it is from a hypertrophied growth of this tissue, called adenoid vegetations, that the stoppage in the nasal cavity is caused.

This is a product and a growth of youth. It is supposed to be, and generally is, confined to childhood. It is seldom seen before the second year, but Ingals makes the statement that it may be noticed as early as the first month of life. It is generally thrown off or outgrown by the twelfth of fifteenth year, but may continue until adult life. McBride reports a case of a lady forty-six, in which the hypertrophied growth was very marked.

Until the sixth or seventh year it is difficult to trace the condition, for dentists are seldom consulted as to the condition of the child's teeth before that time, or if so do not look for this condition as a cause of mouth breathing, if they take any notice of their breathing through the mouth at all, perhaps thinking it a habit or that it can not be cured, but confining

their attention entirely to the teeth and surrounding tissues.

Physicians are seldom called except there is something more serious than adenoids or mouth breathing, so it is hard to get proper data. The fact that it does exist at birth and that the child is often a mouth breather at that time, is sufficient ground for our serious consideration. True, there may be other causes for its breathing through the mouth. Any obstruction in the nose, in either the anterior or posterior naris, which is sufficient to block the passage of air, is sufficient cause. The nasal septum may be deflected to one side or the other and adenoid vegetations on either side; again one side may be affected and the other side entirely free, or both sides partially or wholly stopped by the growth. Recovery, however, is assured if the case has not become chronic.

The pharyngeal tonsil, as other lymph glands, is liable to inflammation and afterwards may remain permanently enlarged. The enlargement of the tonsil and the chronic condition, predisposes it to tubercular and other infections. The faucial tonsils are ofttimes removed and the pharyngeal tonsil left untouched, affording the patient but little relief, and overlooking the principal factor causing the trouble, and diseases such as whooping cough, measles and diphtheria leave adenoids as a supervening disease.

Ingals makes the statement that more pulmonary tuberculosis is due to the entrance of bacilli through the pharyngeal or faucial tonsils than to their invasion of the body by inhalation into the lungs and that the tubercular bacillus, penetrating the lymph glands in childhood, lies dormant till the usual time for the appearance of phthisis, a wasting away.

Adenoid vegetations may continue until they reach the Eustachian tubes, causing deafness, but which is relieved after treatment, if caused by adenoids. Also breathing through the mouth, caused by nasal obstructions, may develop the constricted or adenoid chest, spoken of by Ingals, caused by the strained breathing through the mouth at night, which is worse than in the day time, because a mouth-breather generally lies on the back when sleeping and in that position the tongue drops back on the larynx and causes a stoppage in the passage of air to the lungs.

With the obstruction to the passage of air removed, the breathing will be more normal again and a corresponding

change for the better will be noticed in the countenance, depending upon the extent of the return toward normal condition. At that time habit is a great factor in the change noticed, for during the years of the apparent necessity of breathing through the mouth, the habit of breathing so is formed and takes the place of the consciousness of breathing, also the child becomes accustomed to the dryness of the tongue and all the tissues of the mouth.

In breathing the chin is dropped downward and backward and the lips are held apart. The lower lip is drawn under the incisal edge of the upper anterior teeth at first and later entirely back of them. The upper lip is drawn upward and does not reach its full development on account of its required position. The lower lip is thickened in its efforts to reach the upper, in closing the lips in speech and in mastication, for the lips must remain closed during the procedure.

The muscles of mastication are held at a tension, while the teeth and lips are apart, causing pressure which is noticed more in the neighborhood of the bicuspid teeth, causing the lateral halves of the jaw to become narrowed and forcing the palate up, thus causing the high narrow plate. This pressure continuing forces the anterior teeth forward, for the posterior teeth being stronger, hold their position unless the condition has continued from early childhood; anyway, only moving a fraction of what the anterior teeth do. At times when there is marked lack of development of the anterior portion of the process and the teeth are greatly protruding, the upper lip will be forced upward and offering less resistance to the upper teeth they will stand out free from those on either side, allowing the lengthening of the lower incisors, which may continue until they touch the uppers at the gingival line, or if the protrusion is greater, they may occlude against the hard palate, forcing their way entirely through the soft tissues.

This may all be caused by breathing through the mouth, which again is caused or made necessary by the stoppage of the nasal passage by adenoid growths, accidents or malformation. Finding our trouble then, we should begin our treatment by the complete removal of the adenoids. If any of the growth is left it will become active again, and the trouble continue as before. If it is from any other cause the nares

must be opened again, to admit of free air passage. The teeth of course may be moved into correct occlusion without the removal of the adenoids, but not as easily for we have the mouth breathing still, and it is of necessity antagonistic to tooth movement; or if the cause and results are removed and the patient continues to breathe through the mouth, the teeth will not remain in correct occlusion, when the retainers are removed. Of course they will not move to their former position, for the stimulated growth of the alveolar process will prevent and as the patient nears adult age the tissues assume a greater solidity.

If the adenoids are developed later in childhood the palate will not be forced as high up, consequently there will not be as great a constriction in the molar region, but the height of the arch showing more in the region of the bicuspid teeth and cuspids and the anterior teeth are more liable to be bunched and overlapped, especially the lowers. Also the frequent moistening of the mouth, caused by breathing through the mouth, helps to enhance the bunching of the lowers and the protrusion of the upper teeth, for in the act of moistening the mouth, the lower lip is drawn between the upper and lower anterior teeth.

It is readily seen then that if the rhinologist is consulted early at or near the beginning stage, a world of trouble is prevented, not even mentioning the cost of treatment.

True, the parents are not educated to that line of action, but whose fault is it? Ours. And if we are taking the proper interest in preparing ourselves that we are enabled to give the advice which should be and is expected of us and rightly too, we will bring about such education. This will greatly lessen our difficulties and enable the patients to receive treatment in the early stages of the disease and in their being relieved of the trouble, will allow them to grow up under normal condition and attain that full development of the structure which is intended.

Again when the case is corrected later in life and though the tissues are stimulated to a more active development, there will not be that full rounded growth that would have been, had there been correction at the beginning, as there are parts of the structure which can not be changed, having already attained the degree of growth under the conditions that

it is possible to; as for instance the cartilage of the nose, which may be deflected to one side, from adenoid vegetations, accident or non-development and if calcified, will not change with the conditions becoming normal again.

In this class of cases we are told by the parents that the child is dull, listless and slow to learn. The teacher where these children attend school will add that they do not get along as well, when compared with other scholars. Their actions and speech are hesitative and they are never quite sure of themselves. It all goes to show that the child is not right, but the greatest hardship they have to bear is their being called degenerates. That it is heredity and may be traced back to the grandparents or even further; also that more than one child in the family is so affected, having teeth and features similar. The people are not entirely to blame in their misunderstanding of the case. They are not students of the cause and are dependent upon us for the reasons why.

Both the physicians and dentists are to blame in allowing wrong impressions to get abroad and it will take some time to bring about the change in theory that must take place.

Now the child is not a degenerate; at least not from that cause. It is true they are not as bright as they should be (as stated) and would be if they were given the necessary treatment. The face is not expressive of understanding; the eyes are dull and the mouth which is weak, forms the completeness of the picture. The anterior teeth protruding, lips apart, the chin is drooped downward and backward and the lines of the face are deeply drawn. The nervous system is unstaple from the tax it is continually subject to. Also the action of eating and breathing through the mouth at the same time is irritating and exhausting, without mentioning the impossibility of mastication. One may easily get an idea of the efforts required by holding the nose and talking, during the time it is necessary to breathe several times, though that is not nearly as difficult as it is to eat and breathe through the mouth.

Those subject to the influence of a local fever prevalent during the summer months, (as far as they breathe through the mouth), (I refer to the common term "hay fever") are a fine example of what the mouth-breather is subject to all the time. Of course there are those who have so far overcome

adenoids, or outgrown them, that they are enabled to breathe through the nose at will and do so when they are conscious of breathing (which is only occasionally during the day time) as it requires much effort, and as the conditions are not favorable, they are doomed to failure and will resume breathing through the mouth, especially during the night, when we lose consciousness and automatic actions and impulses prevail and all other parts assume the position of rest.

It all goes to prove that there is a cause for breathing through the mouth, which may afterwards develop the habit, and if continued long enough, whether the cause is removed or not, the habit will prevail. The tissues having assumed such a position that it is more natural than breathing through the nose and a great deal easier; also, that those so affected are not at their best physically or mentally and that it acts as a handicap to them to that extent.

In the second division of class two, we do not find the teeth in the regularly protruding position, as in division one, for we meet with different conditions. The anterior teeth are always bunched, overlapped and retruding.

The mouth breathing in the former class is generally absent here, for with the absence of the degree of protrusion found in the former case, the lips are enabled to come together more natural. There may still be the stoppage spoken of in the nose, but seldom with adenoids. The nose is well developed and with the breathing correct, the face has the normal expression, the eyes bright and intelligent, as are the general features of the face.

The lips form strong bands, as it were, around the labial surfaces of the teeth and exert a direct and strong pressure lingually, but this pressure is not sufficient to overcome that caused by the muscles of mastication, which would tend to force the incisor teeth into a protruding position; but the lips in resisting the labial pressure inclines them into a turned and twisted position. The far greater cause of bunching of the teeth we find in the second division and subdivision of class two, is extraction of the deciduous teeth too soon and allowing the space to close up where the tooth was lost, and in the closing up of the teeth, be it ever so slight, there is not sufficient room for the erupting teeth to take their position in the arch in the correct occlusion and they are thus

forced outside or inside of the line of occlusion or into a turned and twisted position. Again if the deciduous teeth are extracted too soon, the permanent teeth are induced to erupt sooner than they should and before the growth of the process has made room for the erupting teeth.

It is better to allow the deciduous teeth to remain in the arch too long, if we are to make a choice of that or extracting too soon; again, until the erupting tooth shows signs of being deflected labially or lingually, it is better to allow the deciduous tooth to remain in place and the process will in the meantime have grown to the fullest extent, and afterwards the tooth may be extracted and the erupting tooth readily moved into place. There are cases where the permanent tooth would not erupt or show signs of erupting if the deciduous tooth was left in place, but those are one of the exceptions we have to make and in these cases the deciduous tooth may be extracted after a reasonable length of time, if the skiagraph shows a fully developed tooth ready to erupt. In the former case there will not be room for the erupting tooth and it will be likewise forced out of position and generally turned and twisted also. Now in remodifying it, it is necessary to expand the arch in order to get the required space which requires moving a number of teeth on both the upper and lower arches, for we are after correct occlusion and that embraces both jaws.

The cases I have cited are both evil consequences of two extremes, for if we are able to see our patients from time to time, we can watch the eruption and if nature does not rid itself of the obstructing tooth in time, we are justified in extraction, when the tooth has fulfilled all that is expected of it, and not before. That is, when it has lived its required life and the permanent tooth is ready and erupting.

The proper time for a tooth to erupt is easily arrived at, if the mouth is examined. We have only to remember the year in which the permanent tooth should erupt and if the child is large and growing fast, they will naturally erupt their teeth sooner; the jaws will have grown faster; development will take place earlier, and preparation will take place earlier for the erupting of the permanent teeth. Then we of course deduct from the time when eruption should take place. On the other hand, if the child is slow of growth, development is less rapid, the tissue growth being slower than normal.

The teeth are not developed as fast and eruption takes place later. It is then necessary to make allowance for the retarded growth and add to the time when the deciduous teeth should be lost and the permanent teeth erupt. In this way we are able to conclude about the time when the first teeth should be lost and the permanent ones erupted and instruct our patients accordingly.

Because the deciduous teeth are badly decayed is no reason they should be extracted, for the roots will, if allowed to remain, assist greatly in retaining the space already existing between the teeth, and tend to retard the eruption of the permanent teeth, thus allowing the process more time for growth and the tooth time for development, which is very necessary if it is not time for their eruption. Of course the gums should not be allowed to grow over the roots remaining and the roots should be treated and filled. If decay has not reached the nerves, or the parents will not have the teeth filled, decay may be easily stopped and future decay in that tooth prevented, even though the tooth is somewhat discolored, for our aim should be to protect the permanent teeth. Again, if the deciduous teeth are allowed to decay, they are liable to affect the permanent teeth, especially in the case of abscesses, in which case the permanent teeth may be decayed before they are erupted. While on the other hand, if decay is kept out of the mouth, by filling the teeth that are affected, the germs of decay will be mostly kept out of the mouth, consequently little or no decay of the permanent teeth may be expected.

The permanent teeth are larger than the deciduous and room is acquired for them by the normal growth of the maxillary bones and by the wedging process of the erupting teeth. This is noticed in the anterior teeth only and from about the sixth year of age. It is, as has been stated, lack of room that causes the turned and twisted condition of the anterior teeth. The temporary molars are as large as the bicuspids which take their place, so we are seldom troubled in that respect, but they may be somewhat turned by crowding and by a mal-position of the tooth follicle. Again, with the molars is where we are troubled more by extraction, for they are the most liable of any of the teeth to decay and it seems to be

the theory that as long as they are not a permanent tooth they might as well be taken out.

It can not be too forcibly impressed upon your minds, or too often repeated, that great care should be taken with the deciduous teeth and when it is necessary to extract, the space should be retained by artificial means till the eruption of the permanent teeth; and in closing I shall be satisfied if I have helped to impress more forcibly upon your minds the fact that we must begin earlier in the treatment of these cases and thus lessen the hold of disease upon the entire system; then we shall have rendered the greatest benefit to our patients.

## FRACTURE OF THE SUPERIOR AND INFERIOR MAXILLAE.*

By Dr. A. L. Revell, Lead, S. D.

In choosing a subject to read and discuss before this meeting the thought first occurred to me that one pertaining to actual experience on particular lines wherein I gained the most valuable personal knowledge from hard thought and labor would be the best subject to present.

Fractures of the superior and inferior maxillae have certainly done this for me. As our colleges offer very few chances for the student to actually take under his own supervision cases of this class, we are much at loss when suddenly in our private practice a patient is presented with either a superior or inferior fracture.

First, let us consider the definition of fracture. The term, derived from the Latin "fractura", meaning a break in bone, either by action of the muscles of the body or external force. Quite common are fractures of the maxillae, more so of the alveolar process and palatine bones, after these parts too numerous to mention. In classification, fractures should be divided as simple or complicated. Simple, where the break is single, with no continuity to the external tissues; complicated, wherein the fracture includes all other external injuries to surrounding tissues, nerves, vessels and teeth.

It has been my good fortune to become directly asso-

*Read before the South Dakota State Dental Society, 1907.

sociated with the care and treatment of at least four cases of inferior fracture and one of superior, during the past two and one-half years. These seemed to present themselves at the most inopportune time when other work of importance had to be dropped and the greatest attention and care devoted to the injured patient. Of these five cases the superior fracture was the less difficult to overcome, on account of slight injuries to surrounding parts, together with the absolute immobility of the alveolar process and palatine bones, after these parts were adjusted and placed in position.

The patient being a young man of twenty-nine years, strong and robust, had become entangled in a runaway in such a manner as to deflect to the lingual side of the mouth the entire right side of the alveolar process and palate bones, the fracture of the palate seeming to run in a line from the right cuspid back to the median line of junction between the hard and soft palate. In this case it was necessary to devise a vulcanite splint, retained by patient from attachment to a cap over the head, and elastic bands at the extremity of a steel wire vulcanized into the plate extending out and around the corners of the mouth to a point just in front of the pinna of the ear. First, impressions of the upper teeth and palate were taken. This being done with soft modine after the alveolar process and palatine bones were carefully and correctly adjusted, then a model run in plaster, a trial plate of wax formed to cover all the hard palate, lingual, occlusal and buccal surfaces of the teeth was made. This was placed in the mouth and the lower jaw pressed upward into a soft bite-wax attached around the line of occlusion. The steel wire, No. 2 Joubert gauge, was next adjusted from a point opposite the buccal surfaces of the second molars forward to the mesial surfaces of the first bicuspids, then directed forward and around the corners of the mouth to the point before mentioned, below and in front of the pinna. This being carefully removed and waxed up was invested, packed and vulcanized in an extra large S. S. White vulcanite flask. After vulcanizing it for one and one-fourth hours, trimmed and polished at a point along the margins at about two millimeters above the line of occlusion bucally, it was placed in the mouth. Strong elastic bands were sewed to a heavy felt cap, reinforced by leather, and attached to the steel wire at intervals from the corner of the mouth back

to the ear. This allowed the patient to breathe as well as to take and masticate soft food. The nasal passages became filled up after a few days, inflammation following the accident, and this necessarily required irrigation to assist the already established mouth breathing.

The patient was kept in a private hospital and as free from the annoyance of visitors as possible. Right here let me state that this is the only place to keep and treat such cases. The home is no place for such, as too much curiosity is excited throughout the neighborhood as to the welfare of the patient, and visitors are prone to call and invariably annoy him or her with questions and merriment in such a way as to delay proper unition and good results. Make it absolutely private and let the talking be done after you get your remuneration and the case is discharged.

During this stage of confinement stimulate by feeding broth, soft and nutritious foods, fruits, occasional drinks of lime water, mild wines and tonics.

Rinse and flush all parts of the oral cavity and appliances with a dilute antiseptic mouth wash. Other appliances have been suggested by good practitioners where bandages have been applied and plastic arrangements introduced, but from a simple and practical standpoint, to attain good and satisfactory results, the above mentioned will do and answer all requirements.

## INFERIOR MAXILLA.

But next taking up the inferior maxilla, and its fractures, we have an entirely different and more complicated set of difficulties. Here immobility and absolute adaptation of the fractured parts play a most important part. Usually fragments of broken bone and alveolus predominate. Fluids of the mouth interrupt, the glands of the neck and mouth become inflamed, and everything that tends to impede good results prevails, with the patient's talking ability thrown in to cap the climax. To me mechanical devices, attachments and appliances do not seem to do the work so well. Sure it often becomes necessary to take an impression which is difficult at the best. This impression gives some idea as to the proper occlusion if the patient has teeth. But suppose he or she has none—there's the rub. What are you going to attach to? Take the

one who has teeth, even with him it is complicated. The treatment that I suggest may seem rather heroic, but from good hard-earned experience I suggest the administration of an anesthetic, preferably chloroform or ether. Say the case is of a fracture at the point of the cuspid which is the most common of all. Make an incision of the knife blade along the inner line of the platysma myoides muscle, lay back the muscle, the depressor labii inferioris, and by the use of the dental engine and a sharp root reamer, or a long-shanked implantation drill penetrate and open just a small foramen to the fossa of the submaxillary gland, but not penetrating this fossa. Make these foramen, with the reamer or drill, directly opposite each other on opposite sides of the fracture, no less than two on each side. Care in removing and laying back the above named muscles should be taken in order not to destroy the periosteum, the most essential tissue to re-uniting and attachment of the muscles to their proper position. Then with a sharp enamel bur freshen the edges of the fracture, place them in position, insert either cat-gut ligatures, large and strong, or silver wire, preferably the former, as the cat-gut is later taken up by absorption and requires no second operation. Lace the ends of the fracture together, lay back the muscles to their proper positions, sew up the facial tissues with sterilized horse hair ligatures, and last and most essential of all, to prevent mobility, apply the four-tailed bandage so well known in surgery. This keeps the inferior maxilla up in position, retains the proper occlusion and assists the rapid union of bone tissue.

Never did I think that this surgical part of the operation was so important until a male patient, presented by an attending physician, and upon examination and history the fact revealed itself that the man had a compound fracture of the inferior maxilla, and had sustained the same for seven weeks without union or relief. He was immediately sent to a hospital and prepared for an operation. This consisted of making a short incision along the inner margin of the bone from the symphasis to the point of the anterior attachment of the platysma myoides muscle. Laying back this, also the depressor labii inferioris and levator menti, drilling two foramen on each side of the fracture with a root reamer, removing broken fragments of bone and aveolus, freshening the edges with an enamel drill and lacing together with heavy cat-gut, replacing the muscles

and tissues as by means before stated. Then the entire inferior maxilla was bandaged tightly to the superior by a four-tailed bandage to aid and assist another fracture of the angle on the right side. This bandage was kept in place for twenty-eight days and the patient fed through a glass tube bent so as to permit fluids to pass along the buccal and around the distal surfaces of the last molars. He had become very emaciated and run down from prolonged attempts at previous restoration and necessarily required much stimulus as to the growth of new tissue. Cases of this kind it is next to impossible to get impressions of on account of the inflamed conditions and the inability to open the mouth, and even if you wished to cement bands and make attachments the saliva fluids were too profuse to allow it.

Patients will talk, will try to eat, and do these things especially when not in your presence, and to overcome all these obstacles, you must resort, as I say, to heroic methods. The deformity of the lower maxilla in later life, such as improper occlusion or deflection to one side, is more noticeable than a well directed scar carried out along the lines of the face, and often almost unnoticeable.

Many of these ideas look good on paper or in our best surgical works, but the results from wires, bands and some similar contrivances do not always materialize satisfactorily, and as long as results are what we are after we must remove the cause in some more drastic way.

## BETTER SOCIETY ORGANIZATION IN THE STATE OF SOUTH DAKOTA.*

By Dr. G. W. Collins, Vermilion, S. D.

When this subject was assigned to me I was under the impression that it had reference to better organization of our South Dakota State Dental Society but was later informed that this was a misunderstanding on my part and that I was expected to write on local or district organization. However before passing to the latter subject I would like to say a few words regarding our own State society.

*Read before the South Dakota State Dental Society, 1907.

It is a source of regret to those who regularly attend our State Dental Society that our membership is so small and the attendance so limited. In my judgment this is largely due to the fact that many of our dentists do not know what the society is doing, consequently they can not appreciate the benefits accruing to those who do attend. However, they should not be censured for not hungering after that which they never tasted. Let us stir ourselves and see if something can not be done to remedy these defects. It is my opinion that our efforts should lie in two directions. First, we should make our meetings intensely interesting, not only by securing the services of some of the most talented men in the country, but also by giving the social side more attention. Second, we must each manage to draw our fellow practitioners, one by one, into the society by showing them the advantages to be obtained by joining and attending the same.

In recent years many have consented to take part and allowed their names to be placed upon the program, but when the time came some did not respond and, in most of such cases, not even an apology or valid excuse was given. This should not be and any person permitting his name to be used in connection with the program should either be present in person or see that his place is filled by another. Failure to do this should be followed by a written explanation to the society. Many times those who are best qualified to go on the program positively refuse to do so when asked. If our best men will not come to the front at these times, how can it be expected of the majority of us, who are less qualified, to take the places they should fill? Each one of us should take some part in these meetings if nothing more than to criticise what is being done, for ofttimes criticism brings out new ideas and nearly always stimulates us to better effort. It certainly causes us to be more thoughtful and undoubtedly makes the next effort far surpass previous endeavors. It should be remembered, however, that criticism should be tempered by a kindly spirit and given with the view of helping the society in general and the individual in particular.

It seems high time for us to wake up to the situation and better fit ourselves to take our place with the sister states in the advancement of our profession.

But to come to the subject under discussion; it is only

within the past year or so that there has been an attempt of any kind toward local society organization in our state. As to the betterment of such organizations, I fear I can suggest little that will be new or helpful. We all realize the necessity of local organization but most of our towns are too small to successfully support such a society. By combining the efforts of neighboring villages an organization can be effected which will be of mutual benefit to all.

Urge every dentist in the neighborhood to join, no matter what his ideas may be. Ofttimes advertisers, inferior workmen, and sometimes those who have grown despondent through failure, are greatly benefited and made to realize that it is after all a good thing to meet and fellowship with their brothers in the profession. If they lose interest and fail to attend the meetings, insist upon their taking some active part in the affairs of the society as this will usually prove successful and will, in most instances, bring them into good fellowship once more. This is real missionary work. We are all too prone to remain at home and grind out the dollars when we should be meeting with our fellow practitioners and thus becoming broader in sympathy, more advanced in our profession and more helpful to humanity. Who is there among us who has not taken home some new idea or been helped by attending one of these meetings? We should all realize that the dental society has been the means of bringing the profession to its present advanced state. It is in this society that all matters pertaining to local disagreement should be talked over and, if possible, adjusted. In talking with our dentists from different parts of the state I find that ill feeling and strife is usually caused by an uneven schedule of prices, shopping and underbidding. This should not be, and to eliminate the same I would suggest that there be arranged a minimum schedule of prices. Of course we realize that all men are not equal in skill and therefore some are entitled to larger remuneration than others, but the minimum schedule would protect all alike and do away with petty strife. To avoid shopping, make a charge for examination. Physicians do this, why not the dentists? Our time is certainly as valuable as that of men in other professions. The ordinary dentist spends entirely too much of his time in advising and planning for the good of his patients without proper compensation and ofttimes without any whatever. Give the patient

to understand that we are not dealing in merchandise but that we are giving professional service, that we are not charging for materials but for skill, labor and knowledge of how to repair and replace impaired and lost organisms. We must eliminate these things if we would keep ourselves on a dignified and professional basis.

Then there are those who are so unkind as to say things that are detrimental to the work and character of their competitors. Within the last week I have heard of dentists living in the same town saying things to patients which were very uncomplimentary of their competitors. These men belong to the same society but surely they do not realize how they are degrading the profession by such conduct. If we can not say anything good of another it is better to remain silent.

By local organization we all become better acquainted and many times learn of some of our failures, by which knowledge we all profit.

Our failure to have the amendments to our dental law passed at the last session of our state legislature is evidence of the lack of concerted action on the part of the dentists throughout the state. Many of them in the north and west sections of the state declare they knew nothing whatever of the proposed amendments to the dental law. Nevertheless the secretary of the State Dental Society personally sent our letters to every practitioner in the state. This proves the inefficiency of the circular letter to acquaint the dentists with matters which should be put before them personally.

A lively local organization throughout the state would make it possible to successfully pass any legitimate act that might be desired, as correspondence could be carried on between the officers of the state and local societies. The latter would then be able to bring the matter before their respective bodies in person or, if necessary, a special meeting of the local organizations could be called to which their legislators should be invited and given to understand that their support will be expected in behalf of any legitimate measures the State Society might bring before them. What we need is concerted action and this can be secured if the local societies are alive to the situation and come to the state society meetings prepared to stand by the action of that body. Then we can go forward

with such a host of loyal supporters that no legislature would dare refuse anything reasonable that might be asked of it.

From time to time there are men in different localities of the state practicing without a license and the State Board of Dental Examiners have been looked to for the prosecution of these cases. As I understand it, the board of dental examiners is not intended to be a prosecuting but merely an examining board. It should, of course, do all in its power to assist in the prosecution of illegal practitioners, but the local organizations of which I have been speaking ought to take these matters in hand, furnish evidence, and look after the details of the proceedings. In this way it will be very difficult for a person not holding a license to impose upon the public in any locality in the state for any length of time.

In conclusion I would suggest that this body elect a committee of not less than five, to be selected from different parts of the state, to take up at once the matter of local organization and divide the state into districts, excluding such towns as have enough dentists residing therein to form such societies of their own.

Should it be impossible for this committee to find an individual who could be prevailed upon to personally take the matter in charge in his district, it should be understood that one or more members of this committee take it upon themselves to attend to the matter personally and call a meeting of all the dentists in said districts, at which time a thorough organization should be effected by electing officers and making arrangements for a program for a first meeting.

## THE NOSE AND THROAT SPECIALIST AND THE DENTIST.*

By J. G. Parsons, M. D., Brookins, S. D.

Just how long the practice of the healing art has been divided into specialties it is impossible to say. The Egyptologists tell us that before the pyramids were built the civilization of the Nile valley had produced dentists, and some of the papyri speak of physicians skilled in healing the nostrils. The

*Paper read before the South Dakota State Dental Society, 1907.

oldest records of the Babylonians speak of oculists, so we may safely conclude that the present age of specialism had its beginnings ages ago.

Unfortunately, the course of the centuries which have brought us down to modern civilization did not see the progress along these special lines which was found in the general practice of healing.

It is not so many years back that the tonsorial artist did the work of the surgeon and the dentist. He still is something of a dermatologist and masseur.

With the restoration of surgery to the medical profession, there came a period of generalization in which the practitioner was an "all round specialist." The extent of medical knowledge was so limited that it was not impossible for one to master it all.

However, with the development of science which has characterized the past century, medicine has expanded to such an extent that no one having even a rudimentary knowledge of it would for a moment think of the possibility of one man's knowing it all. This has necessarily led to the development of the specialties once more; this time on a sure foundation of scientific physiology and pathology.

You, gentlemen, of the dental profession, have the distinguished honor of being the first of these specialists to take up a single line of work and to devote your entire time and study to its advancement.

In fact this specialization was so intense at one time that it seemed as if the dental profession would sever all connections with the medical.

This time has happily gone by, and today we find your colleges requiring a substantial foundation in the fundamentals, and a general knowledge of the principles of disease and its treatment outside of your own scope of work. Perhaps it may not be too much to expect that eventually the dentist will be a physician with a specialty, even as the oculist, the laryngologist and the neurologist.

It is certain that as a profession, physicians know comparatively little about dentistry. Few of our medical colleges pay any attention to this specialty as a part of the equipment of the general practitioner. It is to be hoped that in the near future the medical student will be taught some of the general

principles of dentistry, enough to enable him to deal intelligently with his general work when the teeth need to be taken into consideration.

There is need of a better understanding between the two professions, for I believe we may learn much from each other that will be of great value to us in our work of promoting health and alleviating suffering. The point of greatest proximity seems to be between the nose and throat specialist and the dentist. To these two specialties, it seems to me, it is of great importance that each should know well the ground which lies between. The principal advantages coming from this knowledge are:

First—The knowledge of the limitation of one's work. How far to go in one direction without encroaching upon a line of work that the other specialist can do better. To illustrate: A neuralgia may come under the observation of the nose and throat specialist. The treatment calls for an accurate diagnosis. The possibility of a carious tooth needs careful consideration, which only the dentist can give. Likewise an infection of the antrum needs careful investigation as to whether it be of dental or nasal origin.

Second—The opportunity incident to the work of some specialty is very favorable for discovering a diseased condition requiring the attention of the other. This condition may not have attracted the attention of the patient, and the information may be of great value in preventing disease. To illustrate again: The throat specialist may discover defective teeth, and thus be able to give the dentist an opportunity to do the needed work to prevent a great deal of trouble.

In a like manner, it is very easy for the dentist to observe a diseased tonsil, adenoids or a fetid breath coming from a diseased nose.

It is with the thought in mind of calling your attention to nose and throat work which the dentist may see that I, as a representative of a much smaller specialty than yours, present this paper, hoping that it may suggest some points of interest and value to your profession, and that the doctors may see more of the dentists in their society meetings and learn something from them.

Perhaps no single condition is of such great importance to both dentist and larnygologist as disease of the lymphoid

structures of the naso pharynx. Here we have to deal with a mass of tissue arranged in the form of a ring about the openings of the pharynx. In the vault of the pharynx this tissue is known as the pharyngeal tonsil. It spreads out on either side of the pharyngeal walls, surrounding the opening of the eustachian tube. Between the pillars of the fauces it is collected into two masses known as the faucial tonsils. On the root of the tongue is another collection of this tissue called the lingual tonsil.

It is probable that this tissue has a function in embryonic life and early infancy—that of a germinating center for leucocytes. However, as the child grows, all this lymphoid tissue undergoes a normal atrophy, and practically disappears. The lymphoid tissue is practically the same in structure as the lymph nodes of the cervical lymphatic system, into which it drains. We may conceive of these tonsillar structures as lymph nodes belonging to the cervical lymphatic system, which project into the cavity of the pharynx and fauces.

Being so situated, they are exposed to all the infection which enters the mouth and throat, such as germ laden dust, infected food and decomposing material found on neglected teeth.

It is quite probable that an oral cavity which is neglected, and has carious teeth, which further serve as lurking places for infection, is a decided source of infection to the lymphatic system, through the avenue of the tonsils.

Modern pathology has demonstrated that the tonsil is a frequent source of tubercular infection. It is also demonstrable that rheumatic infection takes place through the tonsil.

A tonsil once diseased, regardless of its size, is a constant menace to the health of the patient. Normally, the tonsil is hardly visible beyond the pillars of the fauces. When hypertrophied so as to project into the fauces no further evidence is needed of its being pathological.

A diseased tonsil is a diseased lymph node, so situated as to constantly invite infection. It should be treated in precisely the same manner as are diseased lymph nodes elsewhere. In fact there is more reason for the treatment, because of the greater liability of infection and the passing on of the infection to the general lymphatic circulation.

Complete extirpation of the diseased tonsil is indicated

The old-time operation of slicing it off with a guillotine is not sufficient. The modern operation, accomplished with dissector, scissors, snare and punch, is the thing. The lymphoid tissue in the vault of the pharynx as is well known to all dental surgeons has a powerful influence in creating deformity of the palatal arch. Besides this there is met a condition of stupidity and poor memory which frequently affects the afflicted child. Add to this the deformity of the chest known as pigeon breast. infection of the middle ear through the eustachian tube, with all its dangers to hearing and brain infection, together with the bad effects of mouth breathing, and we can not fail to realize that adenoids are dangerous.

The dangers of mouth breathing are especially serious. The principal function of the nose is to warm, moisten and filter the air breathed.

If from any cause nasal breathing is impossible, the mouth and throat are exposed to cold dry air, which irritate the mucous membrane and keep it in a state of congestion. At the same time the inspired air is full of dust and germs which should be caught in the nasal filter, and which find a good nidus for growth in the crypts of the irritated tonsil, or which pass further down the respiratory tract. It is easy to see how a mouth breather is doubly liable to tubercular infection.

Adenoids cause mouth breathing by closing the posterior nares. They are also responsible for a great share of infection of the middle ear and deafness.

Nasal obstruction also comes from hypertrophy of the turbinals, deformity of the nasal septum and polypi. These conditions not only produce mouth breathing, but lead to infection of the nasal mucous membranes, and of the accessory sinuses. Poor ventilation of the nose and poor drainage of nasal secretions make vitiated secretions, crust formations, etc., which are roughly classed together as catarrh.

The extension of nasal infection into the antrum, ethmoid cells, frontal and sphenoidal cells gives us serious conditions to deal with.

While infection of the antrum of dental origin is frequently met, infection of nasal origin is more frequent, and should be borne in mind by the dentist. Pressure on the nerve supply of the nasal chambers produces all sorts of reflex nervous

pains and congestions. These may be felt in the teeth, ears, eyes, face and head and even in the pelvis.

Practically all the diseased conditions of the nose which come to the specialist need more or less operative treatment. Medication can not take the place of surgery when hypertrophy and deformity are the cause of the disturbance.

Enlarged turbinals call for surgical reduction. Deformities of the septum demand the submucous removal of a portion of the cartilage and bone so as to permit of free breathing space. Spurs have to be removed. Infection of the accessory sinuses needs relief by the removal of necrotic tissue as the establishment of drainage.

Great progress has been made in the past few years in the treatment of infections of the accessory sinuses, especially the antrum of highmore. In many cases the intra-nasal operation is the most satisfactory. This is accomplished by removal of a portion of the inferior turbinate and a portion of the nasal wall of the antrum, establishing a window through which diseased tissue is removed and irrigation can be carried out.

The dentist is in a position to discover these conditions as is no other practitioner of the healing art. These cases are nearly always referred to the nose and throat specialist after having been discovered by some other practitioner. The specialty of the nose and throat is comparatively new and few patients realize its importance, while nearly all recognize the importance of having dental work done.

With this point of advantage it seems to me that the dentist has an important duty to perform toward his patients. It takes but a moment to make a few observations which will enable him to tell whether there is disease of the nose and throat. The only equipment required is a tongue depressor, a nasal speculum and a head mirror. With the tongue depressor one may ascertain whether there are diseased and hypertrophied tonsils. Ascertain if there is a history of attacks of sore throat or quinsy. Note if the patient is a mouth breather. Does the patient snore while asleep? These two symptoms indicate nasal obstruction. The characteristic facial expression of adenoids is easily recognized. Passing the finger up behind the soft palate one will be able to feel the mass of adenoid tissue.

This trouble is far more prevalent than is commonly supposed. There is no operation which does as much good in

proportion to the length of time taken and amount of work done as does the adenoid operation. It means for the child free breathing, better general health, better hearing and a fair chance for mental growth.

With the head mirror, light is thrown into the nose by the aid of a nasal speculum. It is then possible to see hypertrophies, deflections of the septum, crusts and discharges which will give some idea as to the condition present. On discovering any of these conditions let the patient know plainly that something is wrong and advise the consultation of the nose and throat specialist. Show them the importance of receiving proper treatment and the advantages which will come from being able to breathe properly. You will thus be doing a great work in enlightening your clientele and through them the general public concerning matters which seriously concern their health.

So much for a few suggestions as to what the dentist can do for his patients directly. There are other things which I believe should be done and can be done for them through the medical profession by a closer contact between the two professions.

We need educating along your lines. You are the ones to educate us. I would like to see the dentists get together with the physicians at their society meetings, and present papers occasionally, dealing with some of the general principles of dentistry which physicians should know.

I would like to see a representative dentist on the program of the state medical association each year, doing the same thing. I believe that in this way we can accomplish a great deal toward elevating both professions and increasing their usefulness to humanity.

## CAOUTCHOUC AND GUTTA-PERCHA.*

By Dr. L. T. Canfield, D. D. S., Toledo, Ohio.

I shall endeavor to give you some history and general information, chemical and physical properties, manufacturing, mixing, compounding, etc., of gutta-percha, and in so doing it will be necessary to take into consideration india-rubber or caoutchouc.

*Read before the Toledo Dental Society, March, 1908.

Of all the important trees which were made known to us by the great discoveries of the 15th and 16th centuries the rubber and gutta-percha trees are those whose extraordinary value has been recognized only in the latter half of the 19th century. Columbus was acquainted with the peculiar properties of a few rubber-producing plants and mentioned these in his reports, but there was a lapse of over three hundred years before a proper use was made of this valuable material, which is now the basis of great industries. Even then the employment of the material increased slowly, and it was put to many other and quite different purposes than those which have been found useful in later times.

The year 1839 marks the turning point in the history of caoutchouc; since then the employment of it has steadily increased and the progress of the trade has been phenomenal, new uses being constantly found for the material, until today there hardly exists a product of nature which is more universally employed than gutta-percha and caoutchouc. With the growing industrial use the trade in crude material naturally also increased, and is now one of the most important raw products in the world's market. The planting of trees and the collection of raw material has also become one of the foremost colonial problems, and will undoubtedly prove to be an excellent source of profit for tropical and semi-tropical climates.

The material was first mentioned in the literary history by Gonzalo Funandes in 1836. He describes the batos game of the Indians which is like a game of ball, although played differently, and the balls were somewhat different than those used by the "christians".

Juan de Torquemada, in 1615 mentions these elastic balls and gives the tree which produces the material the name ule tree, which is still in use by the natives of Mexico.

The Spanish conquerors used the material for painting their linen coats to protect themselves against rain. The water did not penetrate, but the sun rays had an evil effect on these garments. In the meantime a few samples of the material had been brought to Europe and graced the collections of the curio hunters of that time. The samples were very expensive, one guinea being paid for an ounce.

Two Frenchmen, the scientist, Chas. de la Condamine and

the engineer, Fusman, must be credited with having made known the new product and fixed its real origin.

These Frenchmen induced the French botanist, Fusel Aublet, in 1726, to go to Guana. Two years later he published a work in which the caoutchouc tree is described from a botanical point of view. During the time the botanists were employed in finding the origin of the plants, the chemists were studying the new resin, and at last succeeded in dissolving it, and in 1768 presented the Paris academy with a report upon the results of their researches, and recommended turpentine, pure ether and dippel oil as a means to dissolve the resins, which were not affected by water and alcohol. They suggested at the same time the usefulness of the gum for the production of medical probes and small tubes. The English chemist, Priestley, in 1770 drew the attention of English scientists to the use of caoutchouc, and recommended the material for rubbing out pencil marks.

In 1772 it was introduced by Magellan, in small cubes, for this purpose and sold in stationery shops. The word "india-rubber" thus found its origin and this use has been retained to the present day.

Along in 1780 Drossart made known a method of making tubes, bottles and other goods for surgical use. Besson (in 1791), Johnson (in 1797), Champion (in 1811) and Clark (in 1815) tried but did not succeed in making a caouchouc solution for the purpose of waterproofing garments. In 1823 Chas. Mackintosh used benzine for the dissolving of caoutchouc, and by this he created the waterproof industry, which has been named after the inventor.

In 1832 Chaffee and Haskins, of New York, founded the Roxbury India Rubber Co., with a capital of three hundred thousand, which was later increased to four hundred thousand for the purpose of turning out waterproof garments. They produced large quantities, but the products did not prove satisfactory and the firm was forced to accept the return of the goods. These difficulties were partly overcome in 1836 when Thos. Hancock found that caoutchouc energetically worked under high temperature became a very tough material and could be moulded into any shape or form desired. The industry was very precarious until the year 1839, when Goodyear succeeded in solving the question and

produced with caoutchouc and sulphur a material which did not break at a low, and did not become sticky at a high, temperature. Goodyear took his first ideas from the Roxbury company, in whose interest he started his researches. He worked with all the energy of an inventor to gain a solution to the problem. Although, at first, he did not lack financial support, and even later found ready pecuniary help to further his investigations, in the end he expended his whole fortune in the search, being reduced to such a condition that his family lacked the necessaries of life. It took him over ten years to find the right method, but at last he was able to present to the world a most valuable invention. Goodyear's method consisted in mixing the caoutchouc with pulverized sulphur and subjecting the mixture to a high temperature. The process is called "vulcanization" and the caoutchouc thus treated becomes "vulcanized rubber". The last invention of Goodyear, of great importance, was his method of making hard rubber by increasing the amount of sulphur in the caoutchouc before vulcanizing it. Thus we have our dental rubber.

Caoutchouc is a vegetable hydro-carbon from the sap secreted by the protoplasm of the so called inter-cellular veins of a large number of trees growing in tropical countries. The principal veins of this cellular texture rest in the interior rings of the bark. They send numerous branch veins through the bark toward the exterior. When a cut is made in a rubber tree, a sap, like goats' milk, runs out, which is called "latex". If the sap is properly treated the globules separate and become a firm substance which at first is more or less white. If the latex is left unattended the globules soon separate themselves from the watery fluid and are like cream on milk. It has the density of cream and smells a little bit like amber. The amount of pure caoutchouc contained is fluctuating; The best latex, from Para in Brazil contains:

| | |
|---|---|
| Pure caoutchouc | 32 per cent. |
| Albumen and mineral contents | 12 per cent. |
| Water | 50 per cent. |

Owing to its elastic nature india-rubber lends itself with great facility to admixture with a variety of substances, both organic and inorganic, and the preparation of rubber compounded with mineral matters forms a large part of the

factory routine, and, indeed, in many works none but such compounded goods are turned out. In many cases the main reason for such compounding is the desire to reduce the price. When the difference in price between the rubber and the mineral is so great it is not surprising that close competition has led to the increasing of minerals, meaning a reduction in cost which will easily enable one manufacturer to gain business at the expense of rivals. It has been suggested that the answer to the query, "What is rubber?" may be expressed as follows: "Rubber is an elastic material used for binding together chalk and other materials." Injustice has been done to manufacturers of the front rank by reason of their goods having been compared to others of apparently equal quality sold at a considerably lower price. The accusation as to making exhorbitant profits has, in the majority of cases, been entirely unjustified, a fact which would reveal itself to the purchaser if he made careful comparison. To enumerate the various bodies which are used in compounding would fill a book. We will only give you a few of them, as many are trade secrets. Antimony, asbestos powder, French chalk, magnesium carbonate, magnesia, lime, lamp-black, letharge, plumbago, red oxide of iron, silica, sulphur, vermilion, whiting, white lead, zinc oxide, and zinc sulphide. As coloring matter, beside the antimony, lamp-black, red oxide and vermilion mentioned above, cadmium sulphide, arsenic sulphide and various lacs derived from coal tar colors have been used. Coloring matters capable of withstanding the processes of vulcanization are not readily found. As chromate of lead loses its color under the influence of sulphur and heat, cadmium sulphide is expensive, while the poisonous nature of arsenic sulphide is a decided bar to its use. With regard to the toxic properties of the coloring matter used in the trade it only becomes of real importance with dental rubber and rubber toys. Although india-rubber is soluble in many liquids, as far as manufacturing operations are concerned there are only three solvents which call for mention. These are coal-tar naphtha, petroleum spirit of benzine, and shale naphtha. The first is used to the largest extent, as it is undoubtedly the best solvent. There is a somewhat prevalent idea that india-rubber and gutta-percha are practically identical bodies, though this

is by no means the case. Not only are the substances yielded by totally different trees but they also show a wide divergence in their properties and it is only in rare cases that the one can replace the other.

John Trandescant, an English traveler, is credited with having brought the first sample of gutta-percha to England in 1656, but it was not until 1832 that the substance really attracted any attention. This was brought about by the investigations into its properties by Wm. Montgomery, a British surgeon, of Singapore, which place became afterwards headquarters of a large export industry. In a letter written in 1843 to the medical board at Calcutta he details the advantages which the new body was found to possess over india-rubber for certain surgical purposes. Not long afterwards the botanical side was investigated by Dr. Oxley, the tree being christened by Sir Wm. Hooker Isonandra Gutta. The substance attracted considerable attention in England and France, various patents being taken out in connection with proposed application. Most of these were doomed to failure as they did not take into sufficient consideration the physical properties of the substance; these properties, while rendering it eminently superior to rubber for some purposes, being at the same time a bar to its general use in cases where rubber had already established itself in an unpregnable position. Recent research has added largely to the known number of species of trees which yield gutta-percha, but the productive area has only been very slightly extended by those botanists and travelers who have made the trees a special object of search. While india-rubber has been shown to occur in a broad equatorial belt, gutta-percha is only to be found in a much more restricted area, the total production coming from what may be roughly described as the Straits Settlements and Malay Archipelago; Borneo, Sumatra, the southern end of the Malaccan Peninsula, Java, the Celebes and Sulu Islands being the principal gathering grounds. Dr. Sherman, of the forestry department, in a recent statement says that the gutta trees are abundant in certain parts of the Philippine Islands. From his further remarks there seems little doubt that the substance has long been obtained from the Philippines by Chinese merchants who kept quiet as to its point of origin when they sold it at Singapore. Full grown

trees have the trunk one to two yards in circumference, though the collectors by no means limit their work to those which have attained maturity. The gutta-percha, like the caoutchouc, occurs as a milky latex in the bark, and is always obtained by cutting the tree down and allowing the latex to drain into receptacles placed under the cuts. The latex, which is called su su in North Borneo, is coagulated by being poured into boiling water. The whole business is in the hands of native collectors and Chinese merchants and as you see in an unscientific and wasteful manner. Good and inferior qualities of latex are obtained from different trees; but the experienced collector does not mix them together haphazardly for they know how to avoid reducing the quality of first class material. Owing to the destructive method of collecting (for not only is the tree felled but large amounts of latex are invariably left in it to be wasted), it has long been clear that a famine is merely a matter of time.

Comparatively little has been done in the way of gutta-percha plantations, and the results so far achieved go to show that the cultivation is not only hedged around with difficulties, but also that, compared with rubber, much longer time must elapse before any return is obtained from invested capital.

It is expected that in the Philippines regulations will soon be made whereby collectors will have to obtain licenses and be compelled to conform to procedure calculated to prevent destruction and waste. The raw material comes to us in somewhat different forms; depending upon in what market you buy, how much it has been refined and the price. Sometimes in reddish-white lumps of varying sizes containing chips, bits of bark and water. These impurities may be removed sufficiently for common purposes by maceration in hot water. For the firmer mechanical purposes like insulating and our dental work it requires a more thorough cleansing, which is carried out in a special form of washing machine in which it is both shredded and squeezed in warm water, at the bottom of which the impurities collect. It next goes to the kneading mill, consisting of a fluted shaft revolving in an iron cylinder and afterwards to a strainer where it is forced through fine wire gauze. The gutta-percha, which at the end of these processes should be

free from mechanical impurities, water and air, can then be rolled into sheets or any form desired.

It sometimes comes to us partially refined and squeeezed into forms somewhat resembling small hams. Gutta-percha has a specific gravity just above 1, and in compressed form it will sink in water. Chemically it consists of hydro-carbon, the same formula as india-rubber, with variable quantities; it has two peculiar resins named albane and fluavile.

Payne who first investigated them gives the proportions as:

| | |
|---|---|
| Gutta | 78 per cent. |
| Albani | 16 per cent. |
| Fluavile | 6 per cent. |

The main feature about gutta-percha which distinguishes it sharply from india-rubber is its plasticity under heat. At a temperature of about 100° F. it softens; thus if a piece is put into water which is being gradually heated it gets more and more plastic until at 190° F. it can be moulded or drawn out into forms which it will retain on cooling. In this respect india-rubber behaves quite differently, and this property alone is quite enough to dispose of any idea that they are identical. As regards the action of solvents, acids and of alkalies, the two substances are much the same.

Although to some extent it has a cellular structure, gutta-percha is not porous to water as is rubber, and it is this which makes it so valuable for the purposes we apply it in dentistry, also as it is almost entirely used for the insulation of submarine cables. The great bulk of gutta-percha coming to England finds its way to the great cable works of the Thames.

The golf ball manufacturers probably being the next largest consumers, it has many and varied applications in the arts where it is utilized by chemical manufacturers. Great care is exercised by the cable manufacturers in selecting certain brands and in mixing so as to obtain a material of high insulating power. The procedure followed is the outcome of experience and comes within the category of trade secrets.

There is much gutta-percha put upon the market being compounded with mineral matter, thus making it easier to work and much cheaper; the purer the gutta-percha, the higher the temperature required to soften it.

The extremely hard gutta-percha required for dental stoppings and canal points is accomplished by first selecting the purest of gutta-percha, care in refining and reducing the amount of resin by soaking for a certain time in petroleum spirit. In regard to vulcanizing gutta-percha one author says it is quite feasible, while another says it is quite impossible. The truth is that inventive genius has produced a so called vulcanizable gutta-percha in which both rubber and gutta-percha enter into as component parts. Gutta-percha must not be brought into contact with a flame as it ignites quickly and burns with a shower of sparks, leaving a blackish residuum. Cold has but little effect upon it; at several degrees below zero no changes are noticeable. The same can be observed by contact with cold water. It can be preserved best by being kept from atmospheric air and light. When exposed to the sun's rays it becomes brittle and loses its electric resistance.

Gutta-percha, when pure, has a specific coloring between pink and grayish-white. It is tasteless and inodorous, and if it smells it is on account of decomposition. The material has a cellular structure, but when firmly stretched it becomes fibrous and is very strong in the direction of the pull. Single pieces are not adhesive under ordinary temperatures, but when heated on the surface and pressed together they adhere and the pieces can not be detached. It can be folded, pulled, tied in a knot and is easily cut by sharp-edged and pointed tools.

The Brazilian Government-Gazette, as quoted in the Daily Consular and Trade, reports the world's production and consumption in 1907 as 67,999 tons production and 62,574 tons consumption.

# EXCHANGE OF PRACTICAL IDEAS

[This department being an exchange of practical ideas, it depends upon our readers furnishing material to keep it going. Just a few practical ideas from each subscriber will make it of mutual benefit and practical worth. Are you willing to do your share? Help the good cause along by sending the editor a few practical suggestions. Send something today. Address Dr. L. P. Bethel, 1255 Neil Ave., Columbus, Ohio].

## CONTACT IN HIGH PRESSURE ANESTHESIA.

**By Dr. E. L. Patchin, Cleveland, Ohio.**

Having had my share of trouble in making contact in high pressure anesthesia, I began some months ago using a very small piece of cotton, a very little larger than the outside diameter of the needle point. I wet it with cocain and place it on to any shaped surface where the tubuli are well exposed, then put the needle of cocain charged syringe on to the cotton, giving about the same time as in tooth contact.

The larger the hole in the needle the more profound the anesthesia. The cotton does not seem to resist the flow of the solution.

I believe the readers and those who try this will find it a benefit.

## POLISHING STRIPS.

**By Dr. Gustavus North, Cedar Rapids, Iowa.**

Cut the cloth that comes between the sheets of pink rubber into strips from $\frac{1}{8}$ to $\frac{1}{4}$ inch in width. Use the glazed surface for polishing gold fillings.

Tear fine bibulous paper into strips from $\frac{1}{2}$ to $\frac{3}{4}$ inch in width, sprinkle precipitated chalk on the surface, then fold

into a narrow strip and twist the paper a little to add strength. This makes a splendid strip or cord for polishing gold fillings, especially above and below the contact point.

## GASOLINE.

**By McFerran Crow, D. D. S., Versailles, Ky.**

For cleaning and sterilizing instruments I keep a glass-stoppered jar full of gasoline. It will destroy absolutely any animal immersed in it from a microbe to an elephant. It keeps steel instruments bright and free from rust.

It is cheap, ready for instant use at all times, and gives one a sense of security in its use that it is a constant source of joy.

In operating in particularly unsavory mouths I never let an instrument touch the bracket until I have dipped and polished it with a dry towel. I would then be willing to have it used in my own mouth.

It will clean your oilstones, wash basin, machinery, linoleum, woodwork, light.your office, do your furnace and blowpipe work, vulcanize, cook your meals and carry you to and from your office in a trice.

## VASELINE AND CARBORUNDUM POWDER.

**By C. W. Myers, D. D. S., Montpelier, Ohio.**

In the March Summary Dr. Hamm suggests vaseline on stone when grinding teeth, etc. The idea is a good one, but better results may be obtained by incorporating carborundum powder with the vaseline as it will cut much more rapidly. I would suggest also that it be smeared on the sides of worn out diamond disks, copper or steel disks, for making separations for crowns.

## LABELING BOTTLES.

**By Robt. Wakefield, D. D. S., Cranford, N. J.**

A rapid method of inscribing the names of our remedies upon their glass containers is by means of a small carbor-

undum stone in the dental engine. With a little practice this may be done as rapidly as an ordinary label can be written. There is nothing to become discolored or rubbed off, and the containers present a much neater appearance.

# SUGGESTIONS

## SANITATION OF CEMENTS FOR FILLINGS, CROWNS AND BRIDGES.

M. J. Emelin, New York, N. Y.

Every dental practitioner knows how dreadful and shocking to the sense of smell is the odor of crowns or bridges just removed from a patient who has worn them for any length of time. All crevices, pits and air spaces, as between the porcelain facings and the gold, are filled with stagnant moisture, very detrimental to the healthy condition of an oral cavity and its continuous tissues.

Exposed fillings suffer less disintegration than cements confined in roots or crowns, and it is common knowledge that cements disintegrate under the influence of the oral fluids, giving rise to a filthy condition. Often a person, sensitive to cleanliness of the mouth, readily detects the foul odor by means of a toothpick or floss silk, and then consults his dentist. As claimed, the predominating factor of such decomposition is the oxyphosphate liquid; and to remedy this evil I recommend the use of solidified formaldehyde, which I have been using for about six months. From a number of simple experiments I notice that this preparation, in the above form, is not detrimental to the working qualities of any good cement, except that it slightly hastens the setting and in consequence more heat is evolved. In fact, I am inclined to believe that the edge strength of some cements is improved. I believe that under ordinary conditions the solidified formaldehyde, properly incorporated, will keep the cement indefinitely sweet. I have used it with equally good results in filling root canals, with cement and campho-phenic powder, in proportion of 1 to 4. The quantity of solidified formal-

dehyde for devitalized teeth is larger than that for teeth in vitality.

During the short experimental period I have observed no complications.

To further improve the sanitary conditions of a bridge, crown or any other denture which is to give service in the mouth, I apply paraffin invariably. The dentures should be dry and just warm enough to cause the paraffin to melt gently into all crevices and air spaces, filling them out completely. The paraffin I use is previously sterilized by melting it with a few crystals of solidified formaldehyde. Crowns of bridges I pickle cold in strong acid, wash in solution of bicarbonate of soda, and finish in the usual way. When ready for cementation, I place on a slab the solidified formaldehyde, cement powder and liquid. I combine the drug with the liquid oxyphosphate, and, after the thorough incorporation of both I add the cement powder and proceed as usual.

At this point it is well to bear in mind that the solidified formaldehyde quickens the setting of a mix. I would suggest the use of an agate, platinoid or German silver spatula. The quantity of the formaldehyde used for cementation of one crown is equal to size of a head of a round bur No. 4 S. S. White. I find that the same quantity of the drug is also useful for cement fillings. My delight with the results of this experiment is so great that I hope every practitioner will try it for clinical reports. It is a duty we owe to our patients as well as to our profession.—Dental Brief.

## STERILIZATION AND ASEPTIC PRESERVATION OF ROOT CANAL INSTRUMENTS.

**Dr. Fritean, Paris, France.**

All the instruments which are inserted in the root canals, explorers, broaches, etc., ought to be, in my opinion, very aseptic. I have never varied on this point; I have always been very particular and have neglected nothing to attain the mark which I am striving for.

The procedure which I am going to describe to you is

one on which I have at length settled because it gives me satisfaction, and because of its simple and easy application.

It consists in placing each instrument in a small test tube, hermetically sealed, and submitted to a heat of more than 150°. This is the way I acquire these conditions: I use test tubes of small diameter but sufficient to contain the instruments which I propose to sterilize. I make the tube a convenient length and heat one end over an alcohol lamp or Bunsen burner. Next I place the instruments in the tube and heat the other end by the same process, which is simple and rapid. It requires only for me to enclose these tubes in a vulcanizer until they reach the boiling point to obtain a perfect and lasting sterilization of the instruments which it contains.

I break each tube when I wish to use it and I am always certain of the aseptic condition of the instruments.—Journal Odontologique.

## THE USE OF PURE GOLD AS A MATRIX.

**J. Q. Byram, Indianapolis, Ind.**

In case thin, pure gold is used for a matrix it is necessary to invest it to prevent its distortion during the process of applying the porcelain and to prevent its warping during the fusing. The investing cup should be made of some metal that does not readily oxidize, and that does not fuse at ordinary temperatures. The cup should be filled with powdered asbestos, which has been made plastic with water or alcohol. Apply a small quantity of the paste around the matrix and force it gently into the cup. Care must be exercised in investing the matrix that its side next to the asbestos may be supported at all points by the paste. This may be easily accomplished by lightly tapping the cup on the table. The operator should be careful, however, to prevent the asbestos from coming in contact with the margins of the matrix. After properly investing the matrix the investment is to be dried slowly until all steam has escaped, or until all alcohol has burned away. If the matrix is filled with wax before removing it from the cavity, and this is left in the matrix until the investing is finished, none of the paste could flow through any holes in the matrix. But in case there is no

wax in it during the process of investing, and some of the paste flows through the holes into the matrix, it can be removed with a brush moistened in alcohol. Any wax left in the matrix should be burned out at this stage of the operation.—Items of Interest.

## WARM THE ALCOHOL BEFORE WIPING OUT A CAVITY.

It affords considerable and pleasing relief to patients if, when wiping out a cavity in a vital tooth with alcohol, the alcohol be warmed. This may be easily and almost instantly done by igniting the saturated swab and quickly blowing it out.—Northwestern Dental Journal.

## SHARPENING FILES.

In an electrolytic method of sharpening files, the tool is connected with the positive pole of a battery of 12 Bunsen cells, and placed in a bath of 40 parts sulfuric acid in 1000 of water. The negative electrode is a spiral of copper wire encircling the file without touching it. The process requires ten minutes, when the renovated files will be found as satisfactory as when first made.—Scientific Miscellany.

## CONTOURING ARTIFICAL DENTURES.

**J. H. Prothero, Chicago, Ill.**

The tone of the voice can be very greatly modified by the form of the denture which is fitted in the mouth. In one case recently I found that the contour of the denture back of the anterior teeth was not correct. I removed the denture, built on wax at the point indicated, removed some opposite the cuspid teeth, and by a little manipulation was able to correct the defect. The practical side of this subject consists in constructing dentures that will not, by reason of their form or contour, interfere with normal sound production.—Dental Review.

# EDITORIAL

## BETTER DENTAL SOCIETY ORGANIZATION.

It has been said that not more than ten per cent. of the members of the dental profession belong to dental societies. If there is virtue in dental societies they are certainly worthy of larger memberships, especially our state societies.

The object of a state dental society should be to best further the interests of dentistry in that state, and it would seem that this can be more thoroughly done by interesting as many of the reputable practitioners as possible.

When a man becomes a member of an ethical dental society he feels a moral obligation to be professional; it is a stimulus to him to attend its meetings and this makes a better dentist of him. It stimulates him in his work and increases his interest in dentistry and the profession; and the more dentists of this sort in any state, the better for dentistry in that state. To accomplish this do we need better dental organization in the various states?

To answer this question it seems but necessary to point to Illinois and the reorganization that was effected some four years ago.

Under the old regime there were only 274 members in good standing in their state dental society, but since reorganization and membership has increased to more than 1,500.

Their plan of organization was on lines adopted by the Illinois, Ohio and other state medical societies, and briefly stated is as follows:

All existing local societies and any additional local societies organized are made component parts of the state society. As each county or district is organized the state recognizes this society as its representative, and a dental practitioner can become a member of the state society only

by being elected a member of a district society. All members of the district organizations become members of the state society. Each member of a district society pays dues covering the membership of both the district and state societies to the district society, and the secretary of each district society forwards to the secretary of the state society the state society's share of the dues paid by each member.

By this plan the men of each district organization pass on the qualifications of applicants to both their own and the state society, and if at any time a man is dropped from membership by his district society he is at the same time dropped from the state society.

Under this plan the state medical societies have increased wonderfully in membership. Take for instance the Ohio state medical society; before organization under the above plan a few years ago this society had 656 members; it now has a membership of 3,615.

During the past year or two a number of the state dental societies have been so impressed with the new plan that they have reorganized, following the example of Illinois. For instance, Iowa, Michigan, Nebraska, Ohio, Pennsylvania, Indiana, Washington, California, and there may be others.

This shows that the good work is taking root, and eventually dental society members will be a power in the land.


## TENNESSEE STATE DENTAL ASSOCIATION.

The Tennessee State Dental Association will hold its forty-first annual meeting in Nashville, May 7-8-9. A cordial welcome is extended to all ethical practitioners.

DR. DAN KINNEY, Sec'y.

## MISSISSIPPI DENTAL ASSOCIATION.

The fifteenth annual meeting of the Mississippi Dental Association will be held in the senate chamber of the capitol at Jackson, Mississippi,on June 9th, 10th and 11th.

A special program is being arranged and a large attendance is expected. All ethical practitioners are invited. For further particulars address Dr. E. Douglas Hood, Secretary, Tupelo, Miss.

## KENTUCKY STATE DENTAL ASSOCIATION.

The Kentucky State Dental Association will hold its business sessions at Louisville, June 2nd and 3rd. The regular program will be co-operative with the Semi-Centennial Jubilee Meeting at Indianapolis, June 4th, 5th and 6th, 1908.

W. M. RANDALL, Sec'y.

## VERMONT STATE DENTAL SOCIETY.

The thirty-second annual meeting of the Vermont State Dental Society will be held at the Hotel Pavilion, Montpelier, Vt., May 20, 21, 22, 1908.

Preparations are being made for an excellent program, and members of the dental profession are cordially invited.

C. H. KENT, Pres., Barre, Vt.
THOMAS MOUND, Sec'y., Rutland, Vt.

## LAKE ERIE DENTAL SOCIETY.

The forty-fifth annual meeting af the Lake Erie Dental Association will be held on May 19, 20, 21, 1908, at Hotel Rider, Cambridge Springs, Pa.

All reputable dentists are cordially invited to be present.

V. H. McALPIN, Sec'y.

## UTAH BOARD OF EXAMINERS.

The next regular semi-annual meeting of the Utah State Board of Dental Examiners will be held in Salt Lake City, beginning at 9 a. m., Tuesday, June 16th, 1908. All must pass examination before being registered. Application, accompanied by the fee of twenty-five dollars, should be filed with the secretary not later than June 13.

A. C. WHERRY, Sec'y.

## NATIONAL DENTAL ASSOCIATION.

The twelfth annual meeting of the association will be held in Boston on July 28 to 31, inclusive, and promises to be one of the most important in the history of the society. It is 28 years since our National Society has held a meeting in New England and it is confidently predicted that the attendance and interest will surpass that of any previous session.

## NORTHERN OHIO DENTAL ASSOCIATION.

The fifty-first annual meeting of the Northern Ohio Dental Association will be held at Canton, Ohio, May 26, 27, 28, 1908.

The sessions will be held in the city's auditorium, one of the largest in the middle west, with headquarters at the Courtland Hotel. There are numerous other hotels in Canton so there will be accommodations for all. Hotel rates may be had at from $1.50 to $5.00 per day, American plan.

Canton is essentially a dental manufacturing town, having three large and busy plants. The exhibits will be first class.

The committees are sparing no time nor expense to make this an especially attractive meeting. The program will be up to the standard of previous years. Men of international reputation have been secured to read papers and give clinics.

Remember the time and place, May 26, 27, 28, '08, Canton, O.

The Executive Committee,

W. H. WHITSLAR,

J. H. WIBLE,

F. M. CASTO, Chairman.

## NEBRASKA STATE DENTAL SOCIETY.

The thirty-second annual meeting of the Nebraska State Dental Society will be held in Omaha May 19, 20, 21, 1908, at the Creighton Dental College. All reputable members of the profession are cordially invited to attend.

E. H. BRUENING, Sec'y.
Omaha, Neb.

## SEMI-CENTENNIAL JUBILEE MEETING OF THE INDIANA STATE DENTAL ASSOCIATION.

The Indiana State Dental Association will celebrate its fiftieth anniversary, June 4, 5, 6, at Indianapolis, with one of the largest meetings ever held.

The state associations of Michigan, Ohio, Kentucky and Illinois, have accepted invitations to meet with us.

There will be five essayists: Drs. G. V. Black, Illinois; T. W. Brophy, Illinois; Charles Zederbaum, Michigan; M. H. Fletcher, Ohio; H. B. Holmes, Kentucky.

There will be fifty clinicians from these four states, and practically all other state associations will be represented by clinicians.

All ethical dentists are invited, as this will be the big meeting of the year.

## MICHIGAN STATE DENTAL SOCIETY.

The Michigan State Dental Society will hold its annual meeting on Wednesday, Thursday, Friday and Saturday, June 10 to 13, inclusive, on board the steamer City of Mackinaw, on a trip through the Detroit river, Lake St. Clair, the Flats, and on to Mackinaw and the "Soo". The total expense of the trip, including passage, meals, and berth will be nineteen dollars for the round trip, and all our ethical dentists and friends are cordially invited to join us.

The principal features of the meeting will be table clinics, good papers, a complete dental exhibit and a good time.

Four days to find out what your fellow practitioners are doing, an ideal meeting under ideal conditions.

Those desiring to have accommodations reserved for them should apply at once to Dr. O. W. White, 406 Fine Arts Building, Detroit, stating the number of persons in the party, and whether it is a family party or all men.

A deposit of five dollars is required for each reservation.

O. W. White, Local Arrangement Committee.

## SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the South Dakota State Board of Dental Examiners will begin Monday, July 20, 1908, beginning promptly at 9 o'clock a. m. and continuing three days, at Lead, South Dakota. All persons desiring to take this examination must make application to the secretary, and send fee of $10 at least one week prior to the above date. No candidates will be received for examination who do not make application as above specified. Applicants are required to bring dental engine, filling materials, articulators, teeth, and all other appliances and materials necessary to do crown and bridge work.

G. W. COLLINS, Sec'y.,
Vermillion, S. D.

# AFTERMATH

**Dr. H. L. Ambler,** Cleveland, Ohio, has been spending several months in Egypt and other countries abroad.

**Married.**—Dr. Walter H. Kepner and Miss Helen Holden, March 26, Chicago, Ill. Dr. Herman Levin, Hartford, Conn., and Miss Rebecca Kosinsky, New Haven, March 29.

**Massachusetts State Dental Examinations.**—Of the 70 applicants, 17 passed. Several of those who took the examination have tried before, some of them five or six times.

**A Dentist Mayor.**—Dr. C. E. Byington has been elected mayor of Harrisburg, Ill., being the first democrat to occupy this position, the republicans being in the majority by about 400.

**Fire** damaged Dr. F. Cole's dental office at Wauseon, Ohio, March 27. Dr. Sumner W. Pratt, Rochester, N. H., loss $1,000, March 11. Dr. C. W. Calvert, Atwood, Ill., loss $2,500, March 26.

**Dentist Crushed to Death in Elevator.**—Dr. Charles A. Baird, a well known dentist of Youngstown, O., was caught in the elevator in the Wick Bank building, March 24, and crushed to death. He attempted to alight when the car started.

**Odontological Society of Western Pennsylvania** elected the following officers: President, Dr. A. G. Rineh rdt, of Pittsburg; vice-president, Dr. J. D. Whiteman, of Mercer, Pa.; secretary, B. M. Loar, Mount Pleasant; treasurer, J. A. Libbey, Pittsburg.

**A Protection from Incompetent Dentists.**—The House has passed a bill of interest to the dentists of the state of Kentucky. It compels all persons who practice dentistry to practice under their own names, and not under some misleading firm name. It is intended to protect the public from incompetent wandering dentists.

**The First Inlays.**—A number of dentists are claiming priority in the making of inlays, but we know of no one making the method known previous to 1887, when Dr. O. H. Simpson, of Dodge City, Kansas, gave an inlay clinic at Topeka, Kansas, before the Kansas

State Dental Society. If anyone made them in practice before this time we would like to know it.

**Deaths.**—Dr. Frank French, Rochester, N. Y., March 5. Dr. W. H. Anderson, New York, March 11, aged 55 years, of apoplexy. Dr. Whit Hammett, Washington, D. C., March 27, aged 65 years, of stomach trouble. Dr. Byron Douglas, Appleton, Wis., March 28, aged 83 years. Dr. William T. Harban, Washington, D. C., March 28, aged 60 years, of paralysis.

**Ohio State Board of Dental Examiners.**—Members of the new board of dental examiners for Ohio were appointed April 7, by Governor Harris, as follows: Dr. H. C. Brown, Columbus, one year; Dr. F. R. Chapman, Columbus, two years; Dr. F. H. Lyder, Akron, three years; Dr. L. L. Yonkers, Bowling Green, four years; Dr. W. D. Tremper, Portsmouth, five years.

**American Dentist Drowns.**—Dr. Henry Lotshar, an American dentist of Lagos, Mexico, was drowned in the Lagos river near that place. A launch occupied by Lotshar and several friends was wrecked in midstream and all the occupants were thrown into the water. The American was unable to swim, and assistance did not reach him in time. All the others were saved.

**Maryland Dental Examiners.**—Governor Crothers has decided to reappoint Dr. Harry A. Wilson, of Baltimore, and also to name Dr. T. B. Moore, of Cecil county, on the State Board of Dental Examiners. Dr. Moore will succeed Dr. William T. Kelly, of Easton. The other members of the board are Drs. F. F. Drew and W. W. Dunbracco, of Baltimore, and M. Gist Sykes, of Ellicott City, and P. Ernest Sasscer, of LaPlata.

**Dentists Not Exempt from Jury Duty.**—The bill exempting dentists from jury duty, introduced in the House by Mr. Ginelley, Trenton, N. J., was lost in the Senate today by a vote of 3 to 9. Senator Wakelee, of Bergen, said that if the exemption list kept on increasing there would soon be no one to serve on juries. He did not see, he declared, why dentists should be favored any more than any one else.

**Seventh District Dental Society, (N. Y.)** elected the following officers: President, E. G. Link, Rochester; vice-president, I. C. Edington, Rochester; recording secretary, C. W. LaSalle, Rochester; corresponding secretary, E. R. Griswold, Dansville; treasurer, LeRoy Requa, Rochester. The following delegates were elected to attend the annual meeting of the state society, to be held the first Tuesday in May at Albany: W. A. Provall, Mt. Morris, and W. W. Belcher, C. L. Brininstool and Byron Palmer, of this city. Dr. Requa was also reappointed to the board of censors.

**Robberies.**—Dr. M. M. Woodward, Derry, Pa., $25 worth of gold scrap, foil and plate. Dr. R. J. Hollenbeck, Rockford, Ill., burs valued at $500, manufactured by himself. Dr. M. L. Hanaford, Rockford, Ill., gold and platinum valued at $25, March 2. Dr. Wettengall also lost some gold. Dr. R. V. Dillingham, Lansing, Mich., gold, silver and platinum worth $40, March 9. Dr. Harper and Dr. Brister, Gulfport, La., about $80 worth of gold foil, crowns and platinum, March 9. Dr. Gilmer, Denison, Texas, $80 in gold fillings, March 12. Dr. Charles Cuthberger, Washington, D. C., gold plate and fillings valued at $120, March 19. Drs. D. W. and J. F. Rulison, Reno, Nevada, gold plate, teeth and silver worth $200, March 22. Dr. Frank G. Stevens, Lancaster, Pa., platinum and unset false teeth worth $200, March 30. Drs. C. D. Holmes and J. P. Arnold, Galveston, Texas, gold and other valuables worth $125, March 29.

**Dr. J. L. Whinery Dead.**—Dr. J. L. Whinery, a prominent dentist, of Marshalltown, Iowa, died, March 8, following months of suffering.

Dr. Whinery had an impacted third molar removed in a clinic at the National Dental Association last July. Almost immediately after he began to suffer ill effects, indicating some cerebral trouble. He became worse after he got home, and in October he was taken to Rochester, Minn., to undergo an operation at the Mayo hospital. A blood clot was removed from his brain, and later accumulated clots were removed in an effort to ease the patient, but without effect.

Dr. Whinery was one of the oldest practitioners of that city, having been there since 1888. He was a graduate of the Philadelphia Dental College. His widow and two children, Frank B. Whinery, a junior dent at the state university, and Miss Charlotte Whinery, survive him.

**Novel Features of the Nebraska State Dental Society Meeting.**—A novel feature of our meeting last year was the gathering from newspapers of the state by the Ethics Committee, of all the advertisements of dentists, both ethical and unethical, mounting them on large pieces of cardboard and posting them on the walls of our clinic rooms. Members of the society who were not aware that they were advertising in an unethical way were ready to turn from the error of their ways and "get right" with the committee. Three of the applicants for membership were found by these advertisements to be "bad ones" and their applications were held up for a year to give them an opportunity to reform. This exhibit proved to be a very good object lesson and will be a feature of our meetings in the future. Another good plan that works to the benefit of the members of the society is the barring from the clinics of all dentists in the state who are not members of the society. We feel that if a man is not willing to pay the small fee of $2.00 each year for the privilege of membership that those of us who do should not be crowded out by him. We are constantly urging the young members to "get busy", in society work, to give clinics, have something to

say in discussions, etc., showing them that to reap benefit from a meeting one must put something into it, and that the young men are the active ones in society work today.—E. H. Bruening, in Western Dental Journal.

**Dr. M. W. Foster Honored.**—After a half century of work as a dentist, Dr. Matthew Whillden Foster, dean of the Baltimore College of Dental Surgery and president of the National Association of Dental Faculties, was honored March 28, at a banquet at the Hotel Rennert, Baltimore, by his professional friends, of whom about 50 were present. A feature was the presentation of a massive and artistic silver loving cup to Dr. Foster as a token of esteem by the students of the college.

Dr. Foster was born in Philadelphia in 1837. He received a liberal education, studied dentistry and came to Baltimore in 1861. He took a prominent part in organizing the Maryland Dental College, and was made professor of prosthetic dentistry. Later the institution was merged with the Baltimore Dental College. He was then elected professor of pathology and therapeutics, which office he still retains. He was made dean upon the death of Dr. Winder. Dr. Foster is a graduate of medicine of Washington University and the College of Physicians and Surgeons. He served as president of the American Dental Association in 1890, and has been president of the Maryland and District of Columbia Dental Association and delegate to the International Dental Congress at Paris, and again at Stockholm. He is an honorary member of the New York and New Jersey Dental Associations. Last July he was elected president of the National Association of Dental Faculties.

**Recent Patents of Interest to Dentists:—**

880277—Tooth brush, O. H. Chandler, Clinton, S. C.

880328—Combined impression tray and cheek distender, R. E. Sadler, Cleveland, Ohio.

880432—Tooth brush cabinet, G. A. Weidhaas, Jr., New York, N. Y.

880740—Dental soldering device, A. H. Joy, Newton, Iowa.

880896—Anchor for contour amalgam fillings, F. W. Linnert, Warrenton, Mo.

880899—Dental articulator, W. Luxmore, Chicago, Ill.

881574—Dental crown-swaging machine, L. C. Graham, Whigham, Ga.

881469—Attachment for dental syringes, C. W. Hale, Springfield, Mass.

881691—Mandrel for dental engines, H. S. Hughes, Union City, Tenn.

881722—Dental tool, E. R. Sausser, Philadelphia, Pa.

882375—Dental articulator, A. V. Dear, Malvern, Victoria, Australia.

882002—Dental swaging device, R. G. Hopkins, DesMoines, Ia.

882155—Dental impression tray, W. T. Lyon, Portland, Oregon.

882,404—Dental forceps, W. C. Miner, Boston, Mass.

882352—Tooth brush, F. F. Shumer, Norwalk, Ohio.

882363—Dental instrument, J. T. Wright, Richmond, Va.

Copies of the above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

## LOOK OUT FOR FAKE SUBSCRIPTION AGENTS.

We warn our readers to beware of subscription agents going about making special rates for The Dental Summary in combination with other journals. Last month we were notified of a man operating in Newark, N. J., soliciting subscriptions for The Dental Summary and other magazines. His main graft seemed to be The Dental Summary and Dental Brief together for $1.00. He would extend the price of one at full amount and throw in the other. We have heard of a number of victims and warn our readers to subscribe only through the dental depots or agencies known to be reliable.

# REGULAR CONTRIBUTIONS

## PORCELAIN AND GOLD INLAYS.

By A. W. Starbuck, D. D. S., Denver, Colorado.

In presenting these articles upon porcelain and gold inlays it is the desire of the writer to furnish an outline of procedure which has proven very satisfactory in his hands, as well as his many students'. He claims no originality to any of the methods, rather it is a collection of the good ideas introduced and practiced by the eminent porcelain and gold workers of the day.

The equipment recommended for porcelain inlays may be criticised by many owing to its simplicity. But as this is intended more for the practitioner who has been shut out from the use of porcelain owing to the extensive and expensive equipment supposed to be necessary, we will eliminate special instruments as much as possible thus showing the possibilities using the ordinary equipment of general practice.

### CAVITY PREPARATION FOR PORCELAIN INLAYS.

Generally speaking, cavities for porcelain inlays should be free from undercuts in the direction in which the matrix is to be removed. There should be flat seats at right angles to all possible stress from mastication. All walls should be as nearly as possible at right angles to the surface of the tooth. And all margins should be sharp and not beveled.

The cavities here presented are a composite of the good points gleaned from a careful study of a series of models sent the writer by about thirty of the prominent porcelain men from different parts of the country.

### GINGIVAL CAVITIES.

Gingival cavities should be extended only to include all the decayed area. In doing this, endeavor to get an oval or kidney-shaped cavity as it is extremely difficult to properly insert an inlay of circular outline. This extension is best accomplished by the use of chisels and inverted cone burs. In this class of cavities there are frequently several small pits on initial seats of decay. These are best united by the use of small inverted cone burs. Then with chisels break down the overhanging enamel walls. This operation should be repeated, first using the inverted cone burs (increasing the size each time), then the chisels until the cavity is extended to sound margins and symmetrical outline. After the desired outline is reached any undercuts that may be present should be cut away and the walls made parallel by the use of square-end fissure burs, or better still, a similar-shaped plug finishing bur.

Fig. 1 Fig. 2 Fig. 3

It is in these cavities we experience so much difficulty in securing a proper color, especially after the inlay has been cemented to place. Consequently great care should be exercised in getting the proper alignment of the margins, also proper depth to the cavity. This being an extremely sensitive portion of the tooth many inlays are failures owing to a lack in depth sufficient to give enough bulk to the porcelain to exclude the influence of the cement, saying nothing of the strength of the inlay.

Many will criticise the use of the parallel walls, citing the difficulty of burnishing a matrix to a cavity of this nature. This objection you will find entirely done away with in the methods suggested later for forming the matrix for this class of cavities. The main objections to flaring walls are the lack of retention and the objectionable change of color in the inlay from cement. The nearer you can get this cement wall parallel to the line of vision the less it will change the color of the inlay.

A final inspection of the cavity should be made to make sure there are no irregularities or small nicks in the margins. This is best accomplished with the use of a lens. The marginal walls should be smooth, yet not polished, as cement will not adhere properly to a polished surface.

The writer can not recommend too strongly the plan of seating the patient in a normal position at this time and carefully viewing the walls of the cavity to make sure they are parallel to the line of vision as this is so essential to the appearance of the inlay when set. How often have we viewed an inlay with pride when the patient was tilted back in the chair, only to be disappointed even to the removal of the inlay when the patient was standing or sitting in a normal position.

### SIMPLE PROXIMAL CAVITIES.

Among the many excellent ideas brought forth and taught by Dr. Black and his disciples is one point which, if possible, is of greater value to the porcelain worker than to the gold worker and that is:

### STUDY THE OCCLUSION

as the durability of an inlay depends largely upon the manner in which stress is brought to bear upon it. This one thing should receive our first consideration. In cases where there is excessive stress porcelain is contra-indicated. However, in cases with moderate or ordinary stress porcelain will prove satisfactory, provided proper cavity preparation is considered and the inlay is carefully baked.

The patient should be requested to close the teeth, first, normally, then have him move his jaws in such a manner that every peculiarity of occlusion at that particular point

can be carefully noted. Frequently what at first seemed a favorable case has proved dangerous when considering the lateral movements of the jaws. Many such cases may be improved by slight grinding of an angle of the tooth or the tip of a cusp when this portion is slightly elongated.

In inlays where stress of mastication is a factor of consideration they should always be removed in the direction from which such stress comes. There should also be flat seats antagonizing any force brought to bear from this direction.

Generally speaking, proximal cavities should be so prepared that there will be no difficulty in removing the matrix where there is but slight separation.

Fortunately the lingual wall is generally the weaker, consequently it is a less sacrifice to cut away this wall to

Fig. 4 Fig. 5

permit the easy removal of the matrix and this is the logical procedure in the upper incisors and cuspids (the teeth we are dealing with mostly), unless we have an abnormal occlusion.

In preparing a single proximal cavity in an upper incisor, first break down the weak enamel walls, using chisels or hatchet and hoe excavators. Then with smooth, square-end fissure burs in the right angle entering from the lingual the cavity may be formed.

The cavity should be slightly larger at the lingual than it is at the labial to permit the removal of the matrix. The

axial wall should be as nearly flat as possible and parallel with the long axis of the tooth. The incisal and gingival walls should be at right angles to this. These walls are formed with the sides of the bur, while the square end forms a flat seat under the labial plate. Any imperfections following the use of the bur may be remedied by the use of the hatchet and hoe excavators. All margins should be made at right angles to the surface and should be sharp and well defined. At this time the patient should be placed in a normal position and a close inspection made of the labial margin to make

Fig. 6 Fig. 7

sure it is parallel to the line of vision, and if not it should be so altered to remedy the trouble.

It is needless to say that all remaining decay should be removed. In case this should cause undercuts or pockets they may be filled with cement.

The important points for consideration are: First, the cavity should be larger at the lingual than at the labial; second, the axial wall should be flat; third, the incisal and gingival walls should be at right angles to the axial wall; fourth, there should be a flat seat under the labial plate; fifth, all margins should be at right angles to the surface and not beveled; sixth, the labial wall should be so modified, if necessary, to make it parallel to the line of vision.

In cases where the lingual wall is strong and the cavity is near the labial surface the preparation may be so modified to permit the matrix being removed to the labial. This would be permissible only in very small cavities and those caused by an overlapping tooth and then when it did not involve the lingual wall.

The preparation of a cavity in a lower incisor, regarding the manner of removing the matrix, would depend largely upon the condition of the labial and lingual walls, but it would be preferable to remove to the labial.

(To be continued.)

## TEMPERAMENTS.

By Gustavus North, A. M., D. D. S., Cedar Rapids, Iowa.

### CHAPTER II.

Dentists should understand temperaments if they expect to be successful in practice. This is a study easy to comprehend and interesting in its outgrowth.

There are four basal and twelve dual temperaments. We find very few true types of basal temperaments, but generally a blending of two or more.

The dentist should be able to read the different types of individual temperaments as readily as the gardener can distinguish the different varieties of potatoes or the fruit grower the different varieties of apples. Classification of the basal temperaments by the complexion is a strongly marked distinction. The four basal are the nervous, bilious, sanguine and lymphatic temperaments. These will claim the attention of this chapter.

#### NERVOUS TEMPERAMENT.

Body slender, generally well-formed; characterized by the predominance of nervous element; complexion light; muscles small and yielding; nervous and excitable; hair and eyes either light or dark. Persons of light hair are more nervous than those of dark. Teeth are pearl blue or gray in color, long and decidedly narrower at the neck than at the cutting edge, with long bite and prominent cusps. The

occlusion is close and penetrating, with very little, if any, lateral motion of the jaw in masticating, more of an up and down motion.

Nervous Teeth

Where caries affect the occlusal surface of the bicuspids and molars the deep fissures should be cut out with very slight, if any, undercut and well filled. Cavities on the proximal and proximo-occlusal surfaces should be prepared according to Dr. Black's system and the fillings made with good contact points. Gold and alloy are comparatively good filling materials, inlays and permanent cements are often preferable.

The eruption of the teeth with the nervous temperament usually precede those of bilious, sanguine and lymphatic.

Irregularities of the teeth are more often found with persons of this class of temperament, although all classes have this difficulty, especially if the person in childhood was in the habit of thumb-sucking or mouth-breathing, the latter is generally caused by nasal obstruction.

In illness the symptoms are mostly complicated with those of nervous disorder, there is a want of power and endurance; the pulse is generally firm, but more rapid than other basal temperaments. General and oral diseases, pulp treatments, capping and protecting sensitive structure, pressure and general anesthesia, etc., are not as favorable as with the bilious and sanguine. Less electric influence and less pain will occur where the patient and operator are of the same temperament.

### BILIOUS TEMPERAMENT.

Person is spare, angular development characterized by a preponderance of bile; dark complexion; dark hair and eyes; lips purple; teeth of a yellowish color, long rather narrow at the neck and shapely; occlusion firm and close, but little, if any, lateral motion of the jaw in masticating. Cavities should be prepared according to Dr. Black's system, the proximal

and proximo-occlusal surfaces of the fillings should be made with good contact points. Gold and alloy are good filling materials, also inlays and permanent cements. With persons

Bilious Teeth

of this temperament the tendency is to biliary and digestive derangements. In illness the recuperative power is fair, the circulation is generally good with a strong pulse. This class of persons are generally susceptible to general and oral treatments, pulp treatments, capping and protecting sensitive structure, pressure and general anesthesia are favorable.

Persons of this class are more subject to pyorrhea alveolaris, although all classes may be affected with this disease. Many consider this a local disturbance, dependent upon some micro-organism; others consider it as arising from constitutional disturbances. It certainly depends upon both conditions as causative factors.

### SANGUINE TEMPERAMENT.

Person generally well developed; fair complexion; hair light brown; eyes blue or gray; lips red; teeth cream color, average in size, about the same width at the neck as at the cutting edge, nicely formed, with rounded cusps, occlusion moderately firm; the jaw inclines to rotate in masticating.

Sanguine Teeth

The Bonwill system of arranging artificial teeth should be observed by widening the space between the cusps of the bicuspids and molars so as to allow a free lateral motion of the jaw without the cusps interfering.

Gold and alloy are good filling materials, also inlays and permanent cements. Care should be taken in preparing and filling all proximal and proximo-occlusal surfaces, as the teeth

are closely arranged in the jaw and are about the same size at the gum margin as at the occlusal surface. Good contact points are very essential.

Diseases often take an acute form, the tendency is to lung and heart trouble, general and oral diseases, pulp treatments, capping and protecting sensitive structure, pressure and general anesthesia are generally favorable.

### LYMPHATIC TEMPERAMENT.

Person is bulky in development, looseness of tissue and structure, tendency towards feebleness; complexion pallid; hair and eyes either light or dark, hair thin and straight and of a soft matted nature; clear mind; circulation feeble, pulse weak; teeth are dark, clouded in appearance, large and broad with thick rounded cusps; the occlusion is loose and flat.

Lymphatic Teeth

The Bonwill system of grinding and widening the space between the cusps of the bicuspids and molars to allow a free lateral motion of the jaw in masticating is very important.

Gold and alloy are only medium filling materials, inlays and permanent cements generally preferable. Care must be taken in preparing cavities according to Dr. Black's system, and good contact point made on all proximal fillings.

The recuperative power is deficient with a tendency to scrofula and chronic affections; in general and oral diseases, pulp treatments, capping and protecting sensitive structure, pressure and general anesthesia are not as favorable as with other temperaments.

In reading the basal temperaments it would be difficult to distinguish the dark hair nervous from the bilious by the color of the hair for they both have dark hair, but the complexion is a strongly marked distinction; the nervous is light complexion, the bilious is dark complexion, the sanguine is dark complexion with light brown hair, the lymphatic is pallid complexion, hair may be either light or dark but thin and straight and of a matted nature.

(To be continued.)

# DIAGNOSIS AND TREATMENT OF ALVEOLAR ABSCESS.*

Arthur D. Black, B. S., M. D., D. D. S., Chicago, Ill.

In connection with the preparation of this paper I have reviewed hurriedly more than two hundred journal articles scattered through the literature from the time of the publication of our first dental journal in 1839 to the present. This review has not been sufficiently exhaustive to enable me to present in detail the history of the progress of the profession in the treatment of such cases nor give proper credit to many men who initiated the various advances. My object in making the review was to present as a part of this paper a brief report of the progress of the profession as a whole, with the mention of a few men who have contributed to that progress. I would like, if possible, to impress the slowness with which the members of the dental profession, as a whole, have progressed in the diagnosis and treatment of alveolar abscess, and present some particular points about which there does not yet seem to be a very clear understanding, judging from the many cases presenting in our oral surgery clinics, which have previously been under the care of dental practitioners.

Before referring to the journal articles I wish to mention that Fouchard, 1733, speaks of alveolar abscess as being connected with a tooth, and that it disappears with the extraction of the tooth, but he makes no mention of the pulp of the tooth, evidently not having discovered the actual cause of the condition.

In the American Journal of Dental Science, 1839-50, I find alveolar abscess mentioned only about half a dozen times, and then only to report cases in which the pus took some unusual course. In every case the treatment mentioned was the extraction of the teeth involved, there evidently being no thought of the possibility of saving them. In fact until in the sixties it was the very common practice to also extract teeth with living pulps that had been exposed by caries.

In the Dental News Letter, Vol. IV, 1852-3, page 34, is an article on "The Treatment of Exposed Dental Nerves by Hullihen's Operation," by Dr. C. O. Cone, which calls attention to the operation originated by Dr. S. P. Hullihen, of

*Read before the Ohio State Dental Society, December, 1907.

Wheeling, W. Va., which consisted of "making a hole through the gum, the outer edge of the alveolar process and the root of the tooth, into the nerve cavity, and then in opening the blood vessels of the nerve." This operation was known as "Risodontryphy" and it was claimed that, in cases in which the pulp was exposed by caries, a filling could be placed immediately and the pulp would remain alive. This was probably the origin of the treatment of subsequent years, and to a considerable extent yet, of drilling "vent holes" into teeth with dead pulps and leaving them so.

In the American Journal of Dental Science, second series, Vol. V, 1855, page 458, Dr. C. W. Ballard, in an excellent article on the "Treatment of Alveolar Abscess" says: "My usual method of operating at present is as follows: After carefully removing all decay (if any exists) from the external cavity, I cut directly into the nerve cavity, making as large an opening as is necessary for convenience, then, with suitable instruments, remove the decomposed matter from the canal together with the discolored bone, which in many instances, is found at the most depending portion of the pulp cavity. This done, the canal must be washed throughout its whole extent with pure water, using for this purpose a small but powerful syringe, having the tube so bent as to allow of its introduction in the nerve cavity. The cavity should then be dried by filling to the apex of fang, or fangs, with floss silk, taking as fine a strand for each fang as can be successfully managed with the instrument, and leaving, for convenience of removal, a portion of each strand protruding from the cavity to the length of an inch or more. This done, I slightly moisten some strands of the silk with creosote, and then removing the first strands, I immediately refill with the latter, and then close the external opening with wax.

"I usually examine these cases every twenty or forty-eight hours, renewing the floss silk with creosote, if it seems necessary, and without it when the first application seems to have been effectual. If, after discontinuing the creosote for twenty-four or forty-eight hours, no trace of the odor of decomposition can be detected, I fill the fangs at once to the apex with gold, leaving the crown to be filled at a subsequent period. I make this delay in completing the operation with the view of avoiding the danger of periosteal inflammation.

which might be the result of too much pressure at so critical a juncture."

In the News Letter, Vol. X, 1856-7, page 4, Dr. J. S. Clark, of New Orleans, is quoted as saying that he had "practiced fang filling with gold for the past eight or nine years." In the same volume, page 234, Drs. Spaulding, Taft, Watt and others, report success with gold as a root filling.

In the News Letter, Vol. XII, 1858-9, page 274, Dr. T. L. Buckingham, of Philadelphia, "expressed his belief that when an abscess has existed for a length of time, and the fang is denuded of its periosteum, that all that can be done is the removal of the tooth." He evidently investigated the condition of the tissues surrounding the end of the root, although he does not tell us how he did it.

In the Cosmos, Vol. I, 1859-60, page 31, Dr. Collins suggests ,"when suppuration is established, the propriety of passing a lancet through the gum down to the bone, and then drilling the alveolus opposite the apex of the fang, so as to facilitate the escape of pus."

In the Cosmos, Vol. III, 1861-2, page 556, there is reported a case in which Dr. Hudson of Philadelphia. had filled the root canals of the upper centrals with gold about 1830 and they were in perfect condition at the time of the report. Dr. Hudson was one of those men who was far in advance of the profession. We must remember, in reading of the work of individuals in the early days, that the opportunities and means of disseminating knowledge were very meagre, and a new idea of method could not be spread, and most men would not spread anything new if they had the opportunity.

In the Cosmos, Vol. V, 1863-4, page 11, Dr. C. P. Fitch condemns the "practice of destroying the nerve and subsequently filling the cavity of decay, leaving it to disintegrate." This statement refers to the common practice at that time of applying arsenic and then placing a filling without removing the pulp.

In the Cosmos, Vol. V, 1863-4, page 54, Dr. C. P. Fitch has an article on the treatment of alveolar abscess, in which he says, "To abort an impending abscess, the contents of the root canal should be removed, and a dressing of cotton and creosote placed, also cold applications, on the gum." He further states, "If pus has formed and there is slight fluctua-

tion, incise at once and open to the apex through the alveolus." That does not sound so bad after forty-four years.

In the Cosmos, Vol. V, 1863-4, page 565, Dr. Clowes says, "A tooth with a dead pulp always has a discharge, and, with this conviction, had not attempted to remove pulps, but the teeth, when he could not save the pulp alive."

In Cosmos, Vol. VI, 1864-5, page 1, Dr. J. D. White mentions the treatment of dead pulp by removal and placing of cotton steeped in creosote in the canals.

In Cosmos, Vol. VI, 1864-5, page 538, Dr. C. P. Fitch gives the first mention I found of the points in the diagnosis of a dead pulp, and states that he thinks such teeth can be saved by pulp removal and creosote on cotton treatment.

The articles mentioned, together with those of the succeeding ten years, indicate that the treatment of pulps was not seriously undertaken by the profession previous to 1865, and that after 1870 the attempts to save teeth with exposed living pulps, or with dead pulps, became quite common practice, the method generally employed being the removal of the contents of the canal and placing of from one to many treatments of creosote on cotton, most operators leaving in such a treatment as a root filling. Quite a number of the better operators used gold foil for root filling, as mentioned in the references above. The first mention I found of a gutta-percha root filling was in the Cosmos, Vol. XIV, 1872, page 371, in an article by Dr. Oscar Doyle, of Louisville, Ky.

A paper by Dr. Homer Judd, of St. Louis, who was the leading man of the West in his time, in the Missouri Dental Journal, Vol. I, 1869, page 321, and a series of articles in Vol. II, of the same journal, pages 92, 136, 175, 210, 260, 292, 331, 365 and 425 are by far the most explicit and carefully written of any articles in the early days; in fact, few have appeared since that equal them. Dr. Judd's clear and concise statements of the histology, pathology, points in diagnosis and treatment bear the mark of the great teacher that he was. In these articles he refers to the occasional necessity for excising the end of the root if it has been denuded, showing that he was trying every possible method of saving teeth in the most desperate cases at a time when the profession, as a whole, had hardly begun to even think of attempting to save abscessed teeth in the most favorable cases.

Another series of articles which did much to diffuse knowledge of this subject, were those by Dr. J. N. Farrar, of New York, appearing in the Cosmos, Vol. XVIII, 1876, page 582; Vol. XX, 1878, pages 366, 414, 489 and 531; the Missouri Dental Journal, Vol. XI, 1879, pages 181, 241, 301, 363, 423, 483 and 545. These articles were well illustrated, showing the destruction of tissue about root ends, and other pathological conditions. Dr. Farrar lanced acute abscesses early, and in cases of "blind abscesses" made an opening through the bone to the root end for drainage.

In most of the articles published previous to 1870, that were reviewed, almost no mention was made of the different conditions that might be present in the tissues about the end of the root in cases of chronic abscess. It appears that each operator followed some more or less set method of treating teeth that were abscessed, and, in cases in which a "cure" did not result, the teeth were extracted. There seems to have been almost no attempt to ascertain why some healed and others did not. Too many of our practitioners of today are following the same plan; they are administering treatment without betting at the actual cause of the existing condition.

Of the more recent articles we should mention those of Emil Schreier, of Vienna, on the use of potassium and sodium to neutralize and saponify the disintegrated tissue in the pulp chambers and canals, the Cosmos, Vol. XXXV, 1893, pages 22 and 863; a paper by Dr. C. N. Johnson, of Chicago, in the Cosmos, Vol. XXXVI, 1894, page 959, which gives an excellent outline of the treatment of these cases via the pulp canals; a paper by Dr. J. S. Cassidy, of Covington, Ky., in the Cosmos, Vol. XXXVI, 1894, page 1018, on the use of formalin in pulp treatment; a paper by Dr. G. V. Black, of Chicago, in the Dental Digest, Vol. XI, 1905, page 1240, entitled "A Consideration of the Conditions Pointing to Grave Results in, and the Causes of Death from, Alveolar Abscess"; an illustrated article in the Cosmos, Vol. XLVIII, 1906, page 16, by M. I. Shamberg, of Philadelphia, in which the importance of the X-Ray in diagnosis is beautifully shown; a short paper by Dr. M. H. Cryer, of Philadelphia, in Cosmos, Vol. XLIX, 1907, page 919, in which the more remote effects of alveolar abscess are considered; and several articles by Dr. J. P. Buckley, of Chicago, the most recent of which appears

in the Dental Review for 1907, Vol. XXI, page 1079, in which the use of formalin and cresol are recommended to neutralize the contents of canals before removal.

I do not mean to present these as anything like a complete list of good writings on this subject. They are simply a few which I have run across which are good, and serve to give us a fair idea of the progress made in the treatment of the conditions under consideration.

It is only within very recent years that the dental profession has begun to differentiate between the varying conditions presenting and treat them in a rational manner. There still remain certain points in the diagnosis and treatment in which the profession as a whole seems not to be doing as well as it should, and it is the purpose of this paper to emphasize these points. There are at the present time too many teeth extracted in the treatment of abscesses; there are too many cases of chronic abscess as a result of imperfect pulp canal treatments and fillings; there are too many chronic abscesses allowed to continue without full investigation as to their cause, followed by proper treatment; there are too many cases of caries of bone, necrosis and other serious complications resulting from lack of prompt action in the treatment of acute abscesses, although there has undoubtedly been much improvement in all of these conditions in the last decade.

## DIAGNOSIS.

In order to properly discuss the subject of alveolar abscess, it seems necessary that we consider all of the conditions which may arise as a result of the death of the pulp of a tooth, and I have chosen the classification presented in the American System of Dentistry by Dr. G. V. Black, viz., dead pulp, acute and chronic apical pericementitis, acute and chronic alveolar abscess. Many of the symptoms are so familiar to all that I will only mention those of most importance.

1. **Dead pulp without involvement of the tissues beyond the apical foramen.** Such a condition gives no pain nor discomfort to the patient; the only sign may be the discoloration of the tooth, and even this may be absent. A lamp held to the lingual of the tooth may reveal a shadow in the position of the pulp chamber. The tooth may be badly decayed and the

pulp chamber open; there may be caries involving the wall of the pulp chamber without exposure, or the dentin and enamel of the tooth may be intact. The condition may have existed from a few days to a number of years. The pulp tissue will usually be disintegrated and more or less liquefied; occasionally the pulp chamber and canal will be dry and almost empty, the pulp tissue having dried up. It is the duty of the dentist to be constantly on the lookout for such cases and, when found, institute treatment at once and thus prevent possible future trouble. The fact that teeth with dead pulps will often go for years without the patients having any symptom and occasionally one will, when opened, result in the formation of a violent acute abscess, is no excuse for allowing a tooth with a dead pulp to go without treatment.

2. **Acute apical pericementitis,** in which the tissues outside of the end of the root have become involved in an acute inflammation on account of the death of the pulp, but in which tissue no pus has formed. This is the intermediate stage between dead pulp and alveolar abscess. There is very slight or no increase in the pulse or temperature. The tooth is tender to pressure and there is dull pain in the region. The tooth becomes elongated and the pain more severe, throbbing. The surrounding mucous membrane becomes inflamed and tender to pressure. The symptoms gradually become the symptoms of alveolar abscess as the formation of pus begins.

3. **Chronic apical pericementitis,** in which the apical tissues are involved without severe or acute symptoms and without the presence of pus. This condition may continue almost indefinitely without acute symptoms, or it may become acute at any time. Such a condition is frequently caused by the projection of root filling material beyond the apical foramen, or by a failure to thoroughly cleanse the canal before placing the root filling. The number of these cases occurring in one's practice reflect upon the technique of the operator.

4. **Acute alveolar abscess,** in which pus has formed in the apical tissues accompanied by the symptoms of acute inflammation. The symptoms are those of acute apical pericementitis, which become more severe, plus the other symptoms accompanying pus formation. There is often rapid pulse and high temperature which may be preceded by a chill. In most cases the temperature will be from 101 to 103,

although temperatures above 105 have been recorded. The sub-maxillary gland on the same side is enlarged and tender, and the cervical lymph glands may often be palpated. The pus will usually destroy some of the central portion of the bone first, as it offers least resistance. When it reaches the periosteum it may penetrate it directly or it may burrow under it, thus lifting the periosteum away from the bone, occasionally resulting in necrosis. When the pus gets through the periosteum into the soft tissues there is usually a diminution of the pain with an increase of the swelling since the pressure is relieved with the escape of the pus from under the periosteum, and the soft tissues permit the inflammation to become diffused. During the time that the pus is beneath the periosteum palpation will often reveal only induration without fluctuation, although there may be fluctuation, especially if a considerable area of the periosteum has been lifted. After the pus has penetrated the periosteum there is usually fluctuation. In cases in which there is present an area of fluctuation without other concomitant symptoms of abscess and there is any doubt about the diagnosis, a grooved exploring needle should be passed into the tumor to determine its contents. This is a good precautionary procedure in cases where the swelling is over an artery of considerable size to avoid the possibility of opening an aneurism with the knife. The direction of the burrowing of the pus will usually be governed by the resistance of the tissues and by gravity. Occasionally it will follow along the peridental membrane between the alveolus and the root and discharge about the neck of the tooth. Generally the pus will find its way through the periosteum and gum to the labial or buccal of the alveolar process, although occasionally the opening will be through the skin on the face, chin or neck, or from the upper teeth into the nose or antrum. I cared for a case about a year ago in which the discharge from an abscess from a lower third molar penetrated the bone to the lingual, following along the lingual side of the bone below the attachment of the mylo-hyoid muscle until it reached the lower border of the bone below the position of the cuspid and then came upward fully half an inch on the outer side of the bone before it penetrated the periosteum. I remember a case that came to Dr. Gilmer's clinic two years ago with an abscess from an upper

right lateral incisor that was discharging through a sinus on the side of the nose on a level with the inner canthus of the eye.

5. **Chronic alveolar abscess,** in which pus is present in the apical tissues without acute symptoms. There is usually a sinus from which there is either a continuous or intermittent discharge. It is probable that most failures in the treatment of chronic abscesses result because an exact diagnosis is not made. The most important thing to know is the condition of the peridental structures, and particularly how much of the peridental membrane has been detached, together with the condition of the root end. If there is any question as to the direction of the sinus a soft, blunt-ended silver probe should be first used to explore it. Then a sharp, stiff steel probe, first suggested by Dr. Thomas L. Gilmer, of Chicago, should be passed along the sinus to the root. With such a probe the diagnosis is usually easy. After coming in contact with the root the probe may be passed over the surface of the denuded portion determining its outline and the extent to which the peridental membrane has been destroyed. It is also easy to feel deposits of serumal calculus on the root or areas that have been roughened by absorption. With the same probe the condition of the surrounding bone may be determined. If it is normal the probe will penetrate it slightly; if it is soft, carious, the probe will penetrate as it would unvulcanized rubber; if it is hard and rough, necrotic, the probe will not penetrate it at all, and its roughened surface will be discovered. A cavity in the bone would, of course, be noticed also. The soft silver probe is practically worthless in comparison with the sharp steel probe in the examination of the hard tissues in these and similar cases.

In cases in which there is a discharge of pus at the gingival margin a thin, flat explorer with a dull end should be passed between the soft tissues and the root to determine the extent of the detachment of the peridental membrane. All of these instruments should be sterile when used. It is impossible for me to understand why so many men hesitate to use a probe and make thorough explorations. I have seen many cases where chronic abscesses have been treated for months and years without the slightest improvement and

without a probe having ever been used to determine the exact condition. The X-ray may occasionally be used to advantage in determining the extent to which the bone has been destroyed, but more particularly to ascertain the condition of a root filling, or if anything projects through the apical foramen, in cases in which there is no sinus.

While in the majority of cases the diagnosis is not difficult we should, in the consideration of many cases, obtain as full a history as possible from the patient and from our own records, or occasionally from the records of another dentist. In many cases we may gain important information from the patient as to the time when attention was first called to the tooth, report of pain and tenderness, sensitiveness to thermal changes, particularly following filling operations, history of any previous inflammations in the same region, or of any injury suffered, previous treatment, etc. This should be followed by a careful examination of the teeth and surrounding soft parts to determine the exact conditions. This examination should consist of careful inspection and palpation, accompanied by thermal tests, tapping to determine the involvement of the peridental membrane, probing with soft blunt or sharp steel probe, use of the X-ray or exploratory puncture, as the case may require. In acute cases it should be the rule to take the temperature and pulse as they are often a better guide than the local symptoms.

I wish to call attention to the fact that sinus is a better word than fistula, as applied to the tract by which pus escapes from an abscess. *All authorities give the one definition for sinus; viz., a long, narrow canal communicating with an abscess; while most authorities give a double application of fistula; viz., the same as a sinus but preferably a canal connecting a normal cavity with the surface and therefore discharging a normal fluid such as saliva or urine and not a pathological fluid such as pus. While it is not positively incorrect to use the word fistula in connection with an abscess, sinus is certainly more exact. My attention was first called to the definitions of these words by Dr. Thomas L. Gilmer several years ago.

*See definitions of sinus in continuation of this article in next issue.—Ed.

(To be continued.)

# THE CONTRIBUTIONS OF PIONEER DENTISTS TO SCIENCE, ART, LITERATURE AND MUSIC.

By Burton Lee Thorpe, M. D., D. D. S., St. Louis, Missouri.

(Continued from page 369 May Dental Summary.)

J. M. Riggs.

**John M. Riggs,** who 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.

**Horace Wells,** a student of Dr. Riggs, a naturalist by habit and taste, and the one who first discovered that great

boon to humanity, anesthesia 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.

E. J. Dunning.

**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 a 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 of Shakespeare's sonnets, and he had them at his tongue's end.

Norman W. Kingsley.

**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 Rembrant'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. Dr. Angle has denominated him "The Father of Orthodontia".

Chas. A. Kingsbury.

**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.

W. H. Dwinelle.

**William Henry Dwinelle** 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.

**Joshua Tucker, of Boston,** was a most accomplished penman and did excellent work in pen and ink drawings.

Wm. H. Goddard.

**William Henry Goddard,** of Louisville, was an amateur actor and prominent secret society worker.

Asa Hill.

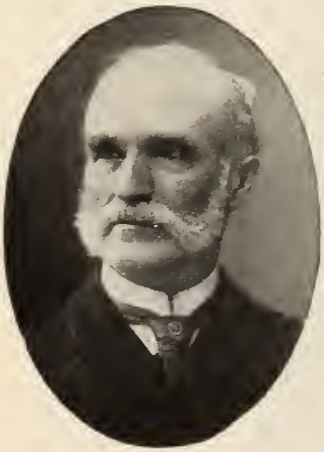
**Asa Hill,** the inventor of "Hill's Stopping," a godly man of pronounced religious views, was of a poetic turn and wrote good verse, as well as good prose. He perfected a marble-staining process, done with chemicals, that penetrated the highly-polished marble, remaining ever after.

W. H. H. Thackston.

**Wm. H. 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.

J. Foster Flagg.

**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



Henry S. Chase.

Stewart B. Palmer.

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.

**J. H. McQuillen,** a talented writer, speaker, teacher and practitioner, of Philadelphia, for a number of years editor of The Dental Cosmos, a collector of rare books and prints.

J. E. Garretson.

**James E. Garretson,** born in Wilmington, Delaware, Oct. 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 led 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 dentistry; orthodontia is 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 Unted 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," "Nineteenth 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.

(To be continued.)

## COHESIVE-TIN.*

By W. M. Randall, D. D. S., Louisville, Ky.

The virtuous qualities of tin as applied to operative dentistry have long been recognized by the experienced operators of the profession as a potent element in the successful results attained by the so-called "stopping process."

The highest standard of softness, for a metal with its degree of toughness and strength, renders its field of easy

*Presented before Falls City Dental Club, Sept. 24, 1907.

and perfect adaptability more uniform and more certain than the "noble metals" of gold and platinum. The reciprocal relation of tin and gold, in combination, will prevent the active conduction of thermal changes, and also give a preserving property unequaled by any other of the filling materials either in combination or independently.

The practical daily use of cohesive-tin in the operative field is restricted to comparatively few men in the profession. Still if its really meritorious properties and indications were more widely known throughout our land, I feel sure there would be very few dentists who would not scrupulously consider it one of the reliable factors necessary to a safe and successful practice. The term "cohesion" is very prone to be misapplied in the accurate designation of tin-foils as placed upon the market under the general head of "dental supplies". This most vital physical property of tin can only be fully appreciated in the use of "chemically pure" and "non-contaminated" metal. And we might add, can not be found except in the ingot of pure tin and in one or two of the tin-foils as found in the dental supply house. And then only when newly manufactured and especially treated for non-contamination by gases.

## INDICATIONS.

The application of its highest use is in contour work of any kind on an unexposed surface of the bicuspids or molars; although it may be used on the lingual surfaces, and the interior of gold fillings on the anterior teeth. It does not permeate the tooth structure as the amalgams and will not give a darkened effect of the enamel or in the least discolor unless in some mouths strong with sulphuretted hydrogen and then only on the immediate area of the exposed surface of tin.

The writer prefers in the preparation of cohesive-tin to cut from a fresh surface of pure bar-tin with an ordinary clean-bladed pocket-knife and by a steady and forcible scraping motion cut long thin and regular shavings from the bar, thus readily and conveniently preparing the material to suit the operator and the size of the cavity at hand. The cavity should also be exempt from all signs of moisture and properly prepared as for cohesive-gold, although the point angles

need not be so acute. The cavity preparation and cavity toilet should be ready for the immediate introduction of the just freshly-cut tin.

Presuming we have a complex disto-occlusal single-step cavity on the inferior first or second bicuspid already prepared for the reception of the filling, the operation of filling in order of procedure would be as follows:

(a) Apply a closely fitting matrix, carefully observing all lines of contour for the resultant filling and accurately force a wooden wedge in the inter-proximate space until the matrix is held taut and with perfect adaptation against the gingival margin of the cavity.

(b) With carefulness regarding contamination of tin with impure gases, such as dirt, moisture, etc., by the use of serrated gold pluggers proceed to introduce the long tin shavings in a very similar manner as for cohesive-gold ropes. However greater quantities of the tin may be condensed under the plugger than of gold, consequently is more rapid in the filling process.

(c) The tin is sufficiently condensed throughout to secure perfect adaptation to the walls of cavity and matrix, but its vital working properties may be seriously injured by too heavy and too continued condensation.

(d) The tin should not be exposed nearer the occlusal surface than the gingival third of cavity, and in cases where it would be exposed to direct view it may be veneered with cohesive-gold foil even in those conditions.

(e) There should be enough separate retention in the walls of the cavity yet unfilled to hold the cohesive-gold in the cavity independently of any cohesion it may have with the tin, although its strong adhesion, due to gummy surface of the freshly cut tin and the inherent strength of the mechanical interdigitation produced by the twisting motion of condensing the gold on surface of tin with the serrated pluggers, seems to give the result of cohesion, but it is not complete, thus it is not true cohesion, as will be proven by the fact that it will flake or peel off of the tin unless this feature of separate retention is duly considered.

(f) Owing to the softness of the entire mass of tin the matrix should not be removed until all the condensing force has been applied to the filling. Without the support of the

matrix, with a too strong condensation, the tin base may slightly "flow", but with the hard surface of the gold exposed to the stress of mastication the "flow" feature is not at all probable after all the gold has been introduced.

(g) The finishing process is made very easy and simple at that most vulnerable point just below the gum gingiva, because of the softness. With less effort to the operator and much less pain to the patient than in finishing a gold filling the excess may be removed with the use of strong linen or light emery or sandpaper strips about two millimeters wide, and the perfect adaptation due to the softer quality under the required condensing force, and that preserving property, peculiar to tin for tooth structure, makes the gingival third of the filling much less liable to the ingress of secondary decay.

Cohesive-tin is highly indicated in contour fillings on the six anterior teeth where the cavity is deep and there is probability of pulp-irritation and finally hyperemia as a result of thermal change. The mere presence materially reduces and in many instances entirely prevents the uncomfortable or irritating effects of hot or cold.

### REFLECTIONS.

Use chemically-pure bar-tin.

Cohesively the use of tin is principally in contour fillings in combination with cohesive gold.

It should not be introduced in the cavity in such a manner as to be exposed to direct view when the filling is finished.

The material should be used freshly cut from the bar and not allowed to become oxidized or in any way contaminated before using.

Always use an accurately fitting and strong matrix and let it remain in position until entire filling has been introduced.

When the tin is exposed at the gingival third of the cavity it is more easily and perfectly finished than with any cohesive gold. Adaptation in difficult positions may be had with much less effort to the operator and is more perfect than cohesive gold.

Tin coheres to tin and gold coheres to gold thus perfectly welding. Gold does not cohere to tin but the adhesion is electrically and mechanically perfect and besides excluding

any carious action on the surrounding tissue the combination adds a peculiar preserving property to the finished filling.

The redeeming virtues of this combination can not be fully appreciated until tested in more than one subject. Give it a trial and be your own judge.

## SUCCESSFUL PRACTICE BUILDING*

By Otto U. King, D. D. S., Huntington, Ind.

### TRUE SUCCESS.

"So Daniel prospered, and was preferred above the presidents and princes, because an excellent spirit was in him." So reads the life story of the most successful man in all history.

Success does not consist in material things alone; the first ideal should be that of a noble character and a constant growth toward that aim. "Have ambition to be remembered," said Charles Sumner, "not as a great lawyer, doctor, merchant, scientist, manufacturer or scholar but as a great man, every inch a king."

Too many times we get the wrong idea of what success really is. The accomplishment of something unusual, out of the ordinary, resulting in becoming known to the public, having received publicity accompanying with photograph in the leading papers and magazines seems to be the general idea of success.

For a dentist to be a success means nothing more or less than doing just the very best he knows how, in living as well and doing as well as he possibly can.

This is the true basis of success, and it is only through a proper acceptance of it that great wealth, prominent station, or worldly fame is attained.

"Some are born to occupy the more exalted stations in life while others must fill the more humble sphere of existence; both may be successful according to their sphere."

For a dentist to be a successful practice builder he must possess a large amount of good common sense mixed with a willingness to pay the price in close application, diligence and steadfastness of purpose. Ignorance is the chief cause of failure.

*Read before the Northern Indiana Dental Association, 1907.

A dentist should be equipped with an educated mind and possessed of an intelligent knowledge of his profession.

No substantial success will ever crown the effort of any dentist until he has achieved the power of concentrating his mind upon his profession. He can not serve two masters. Many are making failures in their

## LOCATION.

A dentist should be careful in selecting his location, choosing a town or city that really needs a dentist, and one that will be to his liking so as to permit him to live in cheerfulness and contentment. Sometimes Sodom may hold out more attractive inducements but in the end means a life in an invironment in which few educated and cultured professional men wish to rear and educate their families.

Having secured a location take the same care in locating your office in a neighborhood where the surroundings are such that it will attract the most refined patients. Many have made a great mistake here and thus have attracted to themselves a very undesirable class of patients. Ladies hesitate to go into an office whose entrance is unattractive. See that the stairway and hallway are well lighted, neat and clean.

## FURNISHING AN OFFICE.

The furnishing of an office, and this with many other seemingly small things that we shall mention, has much to do with a dentist's success. They should reflect the dentist himself; let your patients be impressed with your neatness and artistic taste when they enter your office for the first time. Some time ago I entered a dental office that was altogether too gloomy and uninviting; too little regard was shown for the comfort of the patient. I felt as if I were in a waiting room in some out-of-the-way railroad station. There were no attractive pictures or anything in the furnishings to make a patient forget his unpleasant toothache. I visited another dental office where the crown part of a human skull was located on the center table, being used as a card receiver, and the lower jaw hung on the hall rack. Now I can not conceive of how these ornaments will pacify or make more comfortable a nervous patient. We should have nothing unpleasant in sight but make our offices as attractive and homelike as

possible, then our nervous patients will return to us, and many others will be relieved of the horror of a dental office.

### LITERATURE.

Gentlemen! Do you not know that the literature on the reception room table in the average dental office is a disgrace to our profession? One of the leading magazines of this country spoke out very forcibly on this subject some time ago. Let us go home and throw away some of those old magazines that have been on our tables for months and possibly years, and then subscribe for a half dozen or more of the leading magazines of the day, and read them ourselves, keeping abreast with the times. You can often find the point of contact with a patient and win their confidence and good will by conversing with them on some subject discussed in a magazine. Keep your dental magazines in the background; your patients usually learn all they care to know about dentistry from you before you have completed their work.

### OUTFIT.

No dentist can expect the largest measure of success if he is handicapped with poor instruments and appliances, but in the purchasing of new things he must be able to discriminate between the fads and the serviceable appliances. There are thousands and thousands of dollars' worth of fads in appliances stored in dental laboratories over this country. The dental profession should be more conservative, remembering that "he who buys what he does not need will some day need what he can not buy." Will you not help to get our profession out of the "easy mark" class?

### PURCHASING.

Every dentist, like all up-to-date business men, should have a "want book", and in this make a memorandum of the supplies needed, then when a salesman calls purchase those listed. Bear in mind that the agent is paid to sell goods and that you must "pay for the whistle." Keep out of debt, or at least pay your bills promptly, or better, in advance and receive the 10% discount. Then the dental profession will not need to blush for this criticism of the credit of some of its

members. Debt is a bugbear to any dentist. It will lessen a man's chances more than any other thing; debt causes worry, and worry kills; whether it kills the body or not it surely kills the ambition and enthusiasm, and with these qualities you have lost your grip on success in practice building. A friend of mine a few days ago walked into the office of a large mine owner and on his desk was this motto, which, although somewhat rough, has a great deal of meaning in it. It said: "Live such a life and conduct your business in such a way that you can look any man square in the eyes and tell him to go to hell."

It is a profitable investment to purchase gold, burs, teeth, crowns, cements and other supplies in large quantities.

### SKILL THE MAGNET.

Now in advising the use of these things that help to beautify your surroundings, your office, hints on business methods, etc., let me offer a word of caution. They are not entirely essential to success, they are only helps. That which is beautiful, scientific and abiding satisfactory to your patient must come from the brain and hand of a skilled dentist. This is the most powerful magnet with which to attract business. As Emerson has said: "If a man can write a better book, preach a better sermon, or make a better mouse-trap than his neighbor, though he build his house in the woods, the world will make a beaten path to his door." This is surely true of dentistry, for the patients so attracted by the exhibition of such skill are willing to pay for it. Then if the dentist has for his motto, "Honesty is the best policy," coupled with sound business methods, he is assured of the largest measure of success.

### BUSINESS METHODS.

I would like to have a little heart to heart talk with every dentist here on this subject of business in dentistry. Do you not know that the public considers the average dentist a very poor business man? When I speak of business it should not be inferred that I believe that the commercial element should predominate over the professional, but I do know that it is very essential that we shall conduct our affairs in a financial way that shall result at the close of the year in a balance on

the right side of the ledger. We are, as has been suggested before, too careless about both collection and paying bills. I know some few are prudent enough to secure homes and a very few others accumulate a competence from their profession and other business enterprises, so that they are relieved of the worry of the rainy day or of old age.

But most dentists spend their money as fast as they make it and die poor, sometimes in absolute want. It makes one blush to think of the many truly skilled dentists that have needed the assistance of the dental profession in their declining years; men who have received the largest fees, but who through a lack of business methods have come to want. So it behooves us to stop now and then in our dental meetings and discuss this vital subject and help to lift our profession upon a higher plane in the eyes of the business world and for our own comfort and convenience.

### SYSTEM.

In the very beginning of our practice we should adopt such a system of bookkeeping and records as will not only protect ourselves from unscrupulous patients, but such that at any time we may ascertain the nature and extent of our business, as to the receipts and expenditures, profits and available income. This will also spur us up sometimes to be able to note our losses.

These are important matters which should receive attention from every dentist no matter how small or great a business he may have. The importance of system is well explained by a prominent manufacturer who when asked if his great burden of responsibility did not worry him he said: "It doesn't worry me very much."

The questioner looked about at the hundreds of bookkeepers and stenographers and checking clerks that filled room after room in every direction and asked how this could be.

"I leave the worry to the system," he answered. "It is so constructed that it bears the burden of all the detail of the business."

"What is your general definition of system?" was asked.

"System," he said, "is like a machine. It can do things no mortal can. A man by himself can't pull much of a load, but he can construct an engine that will pull a heavy loaded

train across the continent at fifty miles an hour. The strength of a giant is very small when compared with a locomotive. And the biggest business man in the world can't do very much unless he has a system. But with it he can work wonders. As the engine needs coal and water, a steady fire, and oiled bearings, so does a great system need some attention. But the system, not the engineer, bears the burden and pulls the heavy load."

(To be continued.)

## CAUSES OF FAILURE IN GOLD FILLING.*

By W. E. Kennedy, D. D. S., Indianapolis, Ind.

Former, recent and continued observation of numerous failures in the restoration of lost tooth structure with gold has led me to believe that I can select no subject of more vital importance for consideration than the above-named topic.

Everyone present must have noticed the deplorable condition of recent fillings in teeth showing rapid and hasty recurrence of decay, due to unscrupulous, unconscientious operators. With such abominable work, such deplorable faults staring us in the face, why not arise from the rut of sluggardom and resolve once and for all to be, which is so wholesome to be, men in reality, men of integrity and honor, wholly invincible to the temptations of carelessness and ignorance?

With this most unsatisfactory condition of affairs, what can be the fault? Surely we can not lay it all to noncare and a predisposition to decay. Care, of course, is a great factor in the longevity of teeth or fillings, and predisposition to decay plays an equally important part; but if the patient receives studied, skilled and painstaking services, there will be instilled into him or her the importance of the services rendered and the absolute necessity of care of the teeth for their preservation, and the patient will respond to this impulse and continue to have the mouth attended to often and kept free from the ravages of decay.

Most assuredly, these two loopholes, lack of care and pre-

*Read before the Eastern Indiana Dental Association, 1907.

disposition, will not permit us all to jump through. We are too many and the faulty fillings too numerous. We must share the burden of the blame. We are responsible, and I may say that in ninety per cent. of the cases, poor workmanship on our part is the cause of so many cases of early recurrence of decay.

Of all the materials known to scientists, gold was one of the first used for filling teeth, and it continues to be used today as the one most satisfactory agent for this purpose. Yet how few of us study and understand its wonderful and various ways of being manipulated. To be successful we should study its physical characteristics and fully understand its manipulative possibilities. Most of us, on the other hand go at it blindly, the all-absorbing question being to get the filling in, regardless of perfection, secure the ill-gained fee and the next victim. To insert a good gold filling, let us notice some few necessary steps and endeavor also to note wherein so much failure lies.

### AMPLE SEPARATION.

First of all, I deem it absolutely necessary to have ample separation, and, if at all possible, by other means than the mechanical separator. I get best results by using base-plate gutta-percha, firmly and snugly packed between the teeth. This is slower, but the patient suffers less inconvenience and you avoid soreness of the tooth in most every case. The next best thing is cotton or tape tied between the teeth by means of a ligature. To avoid soreness this method should be slow. The mechanical separator, I think absolutely nothing of, except in emergency cases, as it is always in the operator's way, both in cavity preparation and in the insertion of the filling, and is a source of unnecessary excruciating pain from first to last. Then, too, it often impinges upon the gum, and even the peridental membrane, causing subsequent pain and possibly disease.

### DECALCIFIED DENTIN.

Next the removal of absolutely all decalcified dentin, under all circumstances and at all times, is by all means most necessary. Twice blessed is the man, and doubly fortunate the patient when this detail has been accomplished, for the re-

ward is certainly theirs. To leave a portion of decalcified dentin under the filling is always fatal, for recalcification never occurs, and it is known and positively demonstrated that micro-organisms and their bi-product poisons penetrate the dental tubuli far beyond the region of decay. Therefore it is highly essential and necessary to remove all decay and sterilize the cavity before proceeding to fill the tooth.

### CAVITY MARGINS.

Equally important is it that the cavity margins be extended for prevention, for I believe that a filling will last as long with decay underlying it as one where extension has not been sufficiently carried out. All margins should be extended till there is a clearance of the approximating tooth and a firm, or strong wall obtained. Thin walls should always be removed else they will sliver and crumble under condensation of the gold or fracture under the stress of mastication. Many operators break down a strong labial wall and insert a filling from this point against a thin, frail lingual wall, where, in a few brief months, will be seen the whitish or bluish line indicating a mass of decay beneath. Such carelessness is never excusable, for the result is always disastrous. This extension also leaves the enamel rods so that little or no beveling is necessary. You are all familiar with the remainder of the cavity preparation, whether or not you are guilty of practicing it. The flat base, with slightly divergent parallel walls, forming a slightly-dovetailed or mortised-shaped cavity. If decay prevents this form of wall, cement should always be used to obtain them. This especially is often necessary at the axial wall, where the cement also serves to protect the pulp. However, I fear that many are not familiar with the fact that deep undercuts are not necessary, but rather a serious hindrance. No man, not even a woman, can properly fill a tooth with an undercut sufficient to cover a considerable portion of the diameter of the filling. It is also an impossibility to insert or condense gold properly in deep approximal cavities in the anterior teeth. Where deep cavities occur and the wall of the tooth is to be preserved, always fill in with cement, after thoroughly removing all decay, thus bringing the axial wall to an accessible position for the proper manipulation and condensation of the gold.

### RETENTION.

Retention is obtained by former-mentioned methods, namely, slightly-dovetailed or mortised-shaped cavities, possibly slightly exaggerated at the axial base. This, of course, pertains to approximal cavities. Steps in these cavities in bicuspids and molars, and anterior teeth as well, should be wider at the point farthest from the proximal walls, parallel and perpendicular, and a flat base, depth and breadth to be determined by the thickness of the tooth, but never should either weaken any portion of tooth structure unnecessarily. The pit for retention is ancient history, and altogether discarded by modern operators.

### INSERTING THE FILLING.

The final procedure I wish to mention is inserting the filling, and the methods pursued are many.

The theory of condensing gold to procure a perfectly closed cavity is to spread the mass laterally till it reaches or extends to and closely approximates the cavity wall. To obtain this result the gold should be thoroughly annealed and kept in this working condition else we cannot so easily and perfectly accomplish the desired results.

There are two methods practiced in inserting gold: the different forms of mallet and hand pressure. When gold is malleted it is driven in one direction mostly, and not spread laterally as desired. Also this treatment tempers the gold, making it unyielding, thus robbing the material of that great and necessary characteristic of being spread to the walls of the cavity. By hand pressure gold does not become tempered and is thus forced or spread in lateral directions at all points and is made to approximate the walls closely and perfectly, thus making a perfectly-sealed cavity.

I therefore claim that this latter method is the ideal means of obtaining a perfect filling. It is the same principle of spreading the gold that makes the soft-gold method such an admirable, serviceable filling and is the only method that perfects a filling equal to the one from soft gold. Hand pressure is the most kindly toward the patient, which is another redeeming feature, and should forever lay the automatic mallet on the shelf if for no other reason. I think this instrument, the automatic mallet, the most torturous device in the den-

tist's list of instruments other than the forceps or turnkey, and is the most dreaded nerve-racking implement obtainable for inserting gold. It has other disadvantages. When used in the hands of an unskilled operator, the quick, decided blow with the sharp angle-point is most admirable for chopping up the enamel margins, and when viewed under the magnifying lens reminds one of chipped ice and a cold, refreshing drink they would like to have. Where the rounded plugger point is used with any mallet, condensation is obtained only at the point immediately in proximity with the gold. The curved portion of the point does not touch or condense the gold next the wall of the cavity, it being held away by the cavity wall. Thus perfect condensation is not obtained at the most vital portion of the filling. In using the round-faced plugger with hand pressure with a rotary motion, the gold is condensed under all surfaces of the point. Another disadvantage of the mallet is inaccessibility to all points of the cavity. In distal portions of bicuspids and molars there are parts of the cavity altogether inaccessible to a direct blow with the mallet and unless hand pressure is used a worthless filling is the result. Hand pressure, on the other hand, can be used in any conceivable direction in any cavity, properly prepared.

### RAPIDITY OF INSERTION.

The rapidity of insertion should be mentioned. This is a much-abused factor, and there should be a speed limit in this as well as on automobiles. When I hear any one laud his wonderful accomplishments along this line, unless I know his merits, I feel sorry for him and shudder for those who fall into his machine. I have never heard a surgeon boast of how fast he could cut legs off, and there is more cause for speed on his part and a good deal more honor in it. True, there are those who are blessed with the ability to accomplish results more rapidly than others. They are skilled, deft-fingered artists and I doff my hat to them; but you and I know, if we are in that class, and they know it, so please let us use the low speed and not so much gasoline, and we may obtain the same result, although the speed trophy goes to the other. But the honor comes to us just the same, and the hat is taken off twice for our painstaking.

### HAND PRESSURE.

With hand pressure over-condensation is not very probable, and bridging over should ever be guarded against, the same as in any method of filling. A certain manufacturer of a most admirable crystal gold claims for it the advantage of not bridging. They may be sufficiently blest with gray matter, but they certainly assume that the members of the dental profession are dubs or easy marks. It will bridge over as badly as any gold, but perhaps less easily.

A crystal or mat gold is preferable where hand pressure is used, although any cohesive gold may be employed. I have used several of the different forms on the market and find that the working quality of each is somewhat different. I favor moss fiber least of any. It seems to have a sponginess that prevents thorough condensation. It is less cohesive and bridges more easily. Next is Watts' crystal, which works similar to moss fiber, but is more cohesive, less spongy, and bridges less easily. DeTrey's is an excellent gold, condenses easily, is very cohesive, but is too crumbly and is easily over-annealed. Eoff's gold is exceedingly cohesive, is not crumbly, not so likely to bridge, condenses easily and rapidly into a hard mass, and is difficult to over-anneal. Keaton & Williams' mat gold has all the qualities of Eoff's, but condenses more rapidly, makes a more dense filling, spreads admirably under pressure, is not so likely to bridge, and is very difficult to over-anneal. Not having any stock in the company, I can conscientiously say that it is the most satisfactory cohesive gold, in all respects, that I have ever used.

### PURPOSE OF THE PAPER.

In conclusion, let me state the purpose of this paper. It is to bring to our minds as forcibly as possible the fact that we are not wholly launched into a new era of dentistry; that we are daily called upon to perform the same tasks as they were long since done; that in seeing the new we may not lose sight of the old and thus become less proficient in the old as well as the new, for I believe that the proper manipulation of gold has developed the real skilled and cunning hand more admirably than any other operation the dentist is called upon to perform, and helps more than all other duties the practice imposes upon him; that the learned men of the profession no

matter how much time is spent by them in developing some newer phase in dentistry, or how devoted and enthusiastic along that given line they may be, still recognize the great value and necessity of earnest study and pursuit of the methods and practices of older dentistry. I also wish to awaken an alert keenness on our part to seek to do our work intelligently and proficiently, ever striving to a higher attainment of skill and perfection, thus raising dentistry to the higher scientific plane so much desired, and where it is so worthy of being.

## MODERN PROPHYLACTIC TREATMENT WITH THE CO-OPERATION OF THE PATIENT.

By B. G. Simmons.

The prevention of dental caries so far as possible, and the prevention of a recurrence of caries at the more vulnerable points of teeth already filled is the aim of many earnest workers in the dental profession today. The vital importance of this work is not fully realized as yet, but it is fast gaining ground, and the time will come when many of the better class of people—your best patients—will come largely for preventive treatment rather than for the repair of nature's material which they failed to take care of.

There is a fair proportion of the public with whom this ideal can never be realized unless in future generations human nature undergoes a very material change. Pain and only pain will drive them in and they will have to continue to be "repaired". The number of this class of patients, however, may be considerably reduced by education. With the hopes of the most sanguine realized it would be several generations before the amount of filling necessary to save the teeth of suffering humanity would be greatly changed. With the education of the public, the recruits from the class who do nothing to their teeth until driven to do so by pain would come in to absorb filling material while the more advanced and properly trained patient would be occupying another chair where his teeth were being properly shaped and polished according to approved methods for the resistance of decay.

With the proper training of the patient regarding the care

of his teeth a change for the better that might be noticeable almost from the start would be the services of the dentist being brought into requisition at an earlier stage and at more frequent intervals. The average size of fillings would be much smaller. The work done would be far more successful and satisfactory. Those hopeless cases which are beyond successful treatment when they come in would be of rare occurrence, and the actual loss of teeth would be almost as rare as amputations in surgery.

The co-operation of the patient in maintaining as thorough cleanliness of the teeth as possible will be found a most important factor in the success of modern prophylactic treatment as performed by the operator. With all spaces properly formed and each tooth polished to the highest degree, they must still have constant care on the part of the patient to get the best results from this periodical treatment by the operator. Teach them how to brush the teeth. Demonstrate the proper rolling motion of the brush. Instruct them in the use of floss silk, the most important point of all. It is the only way of removing every particle of food from the spaces between the teeth.

There have been many improvements in the form of this material of late and in making it more convenient for the user. A dental floss that is ideal for use by the patient has been recently introduced. It is a flat thread with fine corrugated surface designed particularly to remove all particles of food and it will penetrate the narrowest spaces. It is put up in a glass retainer with cutting device, very convenient for the pocket and is impregnated with an antiseptic together with an essential oil that is pleasing. It has noticeable effect in disinfecting and deodorizing the spaces between the teeth if bits of food have been allowed to decompose, and it imparts a pleasant taste and fragrance to the mouth. This silk is waxed with beeswax, for which there is no substitute, and is attractively clean, being drawn out of the glass container through a rubber eyelet, and, placed in the hands of the patient, may do a great work in prophylactic treatment.

The patient should use floss silk systematically three times a day, and the importance of this can not be too firmly impressed upon all. Where the teeth are highly polished and are thoroughly clean, the particles of food that lodge in the

spaces are easily removed with floss silk, yet if these particles of food are allowed each day and each night to remain and decompose the high polishing and proper shaping of spaces is of no avail—caries will surely follow. Let the everlasting battle-cry be Clean Teeth. After they are put in the best condition to resist decay by the operator and until it is time to repeat this operation let every patient be impressed with the fact that in the intervening time the salvation of those teeth lies in cleanliness. If he can not keep them clean, keep them as clean as he can. An actually clean tooth—surgically clean—could not decay.

## DENTAL PARADOXES.*

By C. M. Wright, D. D. S., Cincinnati, Ohio.

I wish to thank your committee for the honor conferred upon me by their invitation to read a paper to this Society. I take great pleasure in accepting.

The subject, "Dental Paradoxes," was selected because I have been impressed many times, by the apparently glaring inconsistencies which exist between our commonly accepted methods of practice, and statements advanced by scientific and reliable men.

Our fundamental principles of practice are so frequently shaken by authoritative dicta from men whom we have all learned to honor that I have asked myself the questions, Where is the truth? Do we really know anything? Can we not even see the stars from the bottom of the well where Truth is said to dwell?

Many years ago Dr. Wm. H. Atkinson said, in his characteristic manner, "Truth is Truth pro-tempore—or, until we know better."

In reviewing the changes which have taken place in the principles of medical and dental practice within the recollection of some of us here present and within the lifetime of this society, we can easily agree with Dr. Atkinson.

The investigations of the bacteriologist, the physiologist and the modern pathologist along the lines of etiology and of

*Read before the Northern Ohio Dental Association, June, 1907.

function, and of the interdependence of different and remote parts of an organism, have certainly caused volcanic changes in the aspect of the landscape. Surface boundaries and elevations, and deep-sea soundings have so changed that if our own late medical teachers should return to earth they would be as strangers in a new country.

Man has not changed in this time. He exhibits no evidence of marked evolutionary modifications in structure or function. No tissue or organ, or part of an organ, shows increased degenerative alterations, or tendency toward sinking into a vestigial incumbrance.

Environment has not affected to any appreciable degree the eye, the ear, the throat, the vocal cords, the teeth, the blood-elaborating glands, the nervous tissues, or even the vermiform appendix and the pituitary body, since our personal study or historical records began. Our attitude as medical men, as surgeons, physicians, dentists and specialists has changed towards this immutable man—man our patient.

Our treatment of him has been so altered that we can hardly claim relationship with the individual bright lights that illuminated the path of medicine in ancient times. Such lights as Hippocrates, Galen, Ambrose Pare, and the more recent Harvey (1578-1658), and Haller (1708-1777).

This glimpse is a suggestion of what we may expect in the way of change in theory and practice as knowledge grows under more favorable opportunities for study and as we climb higher or dig deeper into the science of medicine.

The man who climbs a tree for the first time is so astonished by the wide view of hill and dale, of sky and cloud, and by the near view of interlacing branches and waving leaves, that when he looks down the objects he has left below appear to him as curious and unexpected as they did to the man in Boccaccio's tale. And his statements should be modified in the same way. He should always explain: "That's the way it looks to a man up a tree."

The man who digs a deep hole in the earth passes various layers. He may come to a stratum which seems to him curious and unusual in structure, color and temperature, and he is liable to construct a theory, then and there, which would be paradoxical and in no way agreeing with the generally accepted notion about strata formations.

This danger from premature conclusions besets all science —it is the reason for many a medical and dental paradox. It does not, of course, account for all, for old theories upon which orthodox practice has been founded have frequently been proved to be obscure or false. Vox populi in medical matters is not always Vox Dei. But leaving the possible causes—let us call to mind some facts.

There are in this country and Canada some 50 colleges, with full corps of teachers, separate buildings, costly appliances, long terms of study and drill, lectures and demonstrations, and well-equipped infirmaries—all for the purpose, definitely expressed, of preparing men for the practice of the profession of dentistry. There are 35,000 men, more or less, specially educated, now spending their lives and best energies in the practice of this distinct profession. In the face of this we are asked every now and then, by distinguished men in this profession, to stop and consider whether teeth are essential to civilized man! The man up a tree looks down, and from his hight sees an old fellow ninety years of age on the ground below grinning with superabundant vitality, and while bolting his food, swearing that he has no need of teeth, for he has not had one in his mouth for half a century. Again he sees from his lofty perch a lot of pre-chewed, predigested, "prepared-by-modern-chemistry" foods. He believes that he has made a discovery, and immediately builds a doctrine and announces that, in this age of chemistry and ingenuity, civilized man does not need natural teeth.

Our dear friend, Dr. Fletcher, of this state, whom we all love and admire, asked the question a year ago in a paper entitled, "Are Teeth Essential to Civilized Man?"

Another friend and leader in the east, a strong man and a grand Goliath in the camp of the Philistines, in a recent paper bitterly criticises the methods of educating modern dentists, and deplores the fact that students are not taught to get down to a fundamental principle in the salvation of human teeth. He has been digging for many years, and has come to a stratum of prophylaxis which so attracts his attention that he calls from the bottom of his hole, "I have discovered the foundation of the whole medical and dental profession. They rest on this 'Take this away and the entire superstructure falls—colleges, practitioners, editors—all fall!'"

He does not stop at this—his best friends sincerely wish he had—but continues: "I have also discovered all that you need know about the secretions of the mouth. These products of the glands are water, and of very little physiological value; mastication is a simple pastime; oral digestion is a fad; teeth are unimportant appendages."

Then the giant comes up to the surface and says, "The only way to save these useless appendages is for the 35,000 or more dentists of this country to buy orangewood by the cord, and pumice by the barrel, and get busy polishing the teeth of everybody all the time."

A basal doctrine in dentistry has been, and is, that the teeth are valuable organs of mastication, and that thorough mastication of foodstuffs is essential for the proper preparation of this raw material for the subsequent action of various ferments. These convert the different proximate principles of the food into the solutions which will appeal to the absorbent cells which line the alimentary canal. And again, that these living cells, by their functional activity, metamorphose these several solutions, so that they may enter the currents of lymph and blood in a form that can be carried to every living cell in the body.

Every now and then the value of this vital initiatory preparation, by mastication and insalivation and "oral digestion," is called in question by some man up a tree or down in a hole.

I remember a dentist friend who was practicing in a city of Switzerland many years ago, who said he had been watching his dog eat, and that the dog swallowed a piece of steak after one or two bites, and that his teeth were of no use as masticators.

At that particular time there was a wave of incredulity passing over medical minds about the functions of different parts of the alimentary canal. The mouth and the stomach were taking back seats. The duodenum was first at the feast. My friend tried to learn physiology from his dog, and from that time began to cultivate the function of deglutition on large pieces of meat and chunks of hard-boiled egg, to the exclusion of the preliminary function of mastication and insalivation—until I wished he would choke.

When, from pyloric cancer, a stomach has to be removed entire, and a surgical attachment has been completed between

the duodenum and the oesophagus, and the patient lives and after a while accommodates himself to the maimed condition, would it be logical for surgeons to set up the doctrine that the stomach is not essential to civilized man, or that it is only a handy pouch?

The propositions of the layman Fletcher were of sufficient interest to physiologists like Cannon and Chittenden and Sir Michael Foster to cause them to review the accepted belief in the value to health of thorough mastication, insalivation and ptyalin digestion. The conclusions of these distinguished gentlemen after the careful and ingenious experiments, in their review, should put a quietus on paradoxical propositions on this subject by dentists, of all men.

Personally, the recent studies of these and other men on the function of well-arranged teeth have so impressed me that I entertain a feeling of deep gratitude to the physiologist, whether he be a dentist or a physician, for lifting dentistry out of the tooth carpentry business, into which she has a tendency to fall, and placing her side by side, on the same plane with other specialties, like rhinology, laryngology, opthalmology, etc. I have taken so much of your time with this that I shall hasten over one or two other paradoxical aspects of dentistry.

What about the toothbrush as a prophylactic instrument and mouth-toilet necessity? I do not know the origin of the toothbrush, but I think I am safe in saying that, among the so-called better classes of England, France, Germany and America, nothing would be more humiliating today than for one to point the finger and say this man or woman or child doesn't own a toothbrush. The family toothbrush and "the toothbrush that belongs to the boat" have receded into a dim past. The use of this individual article is universal and its hygienic value thoroughly believed in by dentists and patients; yet Dr. Clowes, a celebrated dentist of New York city, publicly proclaimed 35 years ago, as was reported in a dental journal of that day, "If I were called before a court of justice and asked the question whether the use of the toothbrush does more good than harm to man, I should have to reply: 'Before God, I believe it does more harm than good.'" This did not affect the generally accepted belief in its hygienic importance, nor in the custom of its use. Every dentist recommends its

daily employment, together with some more or less abrasive powder. Your Dr. Barnes of Cleveland has given platform demonstrations of a scientific way of using this indispensable article of the toilet for hygienic purposes.

In the early months of this year (1907), Prof. Miller, of Berlin, whom we consider the composite Koch and Pasteur of the dental profession, published in the Dental Cosmos a series of profusely illustrated articles showing the abrasive qualities of the brush and powders on natural human teeth. The destruction of hard tissue which follows the continued employment of this universally recommended article is appalling. Dr. Miller's articles are records and illustrations of coldly scientific methods. Ach! Mein Gott im Himmel! Am I right in classifying this as a dental paradox?

To me, I am free to admit, these experiments and the conclusions which hover about them are as startling and as confusing as was a recent midnight explosion of 250 pounds of dynamite in my neighborhood in Cincinnati. The windows of my mind are shattered and my brain must show new cracks.

Again, in the line of hygienic care of the mouth and teeth, we have taught for years that floss silk should be passed between the teeth to remove the resting debris of food which forms such fine breeding grounds for fermentative organisms of various species, until now it is a part of the creed of the dental profession and a daily habit of dainty patients. But a slip of the floss causing it to cut through the stratified epithelia of gum tissue, after this floss has been nicely charged with septic matter, is known to be a successful operation for the inoculation of marginal gingival tissues.

This brings us to the very recent studies of the cultured bacteriologist, biologist and pathologist, Dr. George W. Cook, of Chicago. In a valuable paper published in The Summary, and in the Dental Digest (February, 1907), on "A Study of the Mucous Membranes, with Special Reference to Oral Prophylaxis," the doctor dashes very "hot water" on our thoroughly incorporated and broadly accepted notions about antibacterial and antiseptic mouth washes in our care of the teeth and mouth.

Dr. Cook says: "Ever since the elucidation, by Miller and others, of the fact that bacteria are constant inhabitants of the oral cavity, and that these organisms play an important role

in the causation of dental caries and other pathological lesions, the profession of dentistry has been seeking an agent that will destroy the bacteria of the oral cavity, completely losing sight of the fact that the oral mucous membranes, for the best maintenance of the digestive processes and for the protection of the deeper structures, should be kept in the most healthful physiological condition. When we take into consideration that the mechanism of the mucous membrane in itself is protective against any foreign parasitic life, and the fact that the mucous membrane plays an important part in furnishing a neutral chemical field for carrying on certain digestive processes, we gain the great fact that no agent should be used as a bacteri cidal; for such a compound will invariably produce harm, not only in that it disturbs the action of the ptyalin of the saliva, but that it renders the functional activity of the mucous cells incapable of furnishing the various compounds that are so essential to the ferments of the saliva, and that it many times destroys the true mechanical structure of the mucous membrane, thus changing it from a physiological to a pathological structure.

"In the study of the morbid physiology of the mucous membrane of the human mouth, after using any of the so-called germicidal agents, or even those that are feebly antiseptic, the mucous cells are found to degenerate gradually, and instead of having constantly discharged mucin in the normal quantity and normal chemical constituents, it becomes a pseudomucin."

From this we learn that our beloved profession, with the best possible intentions, has been placed in the position of applying drugs just as does the veriest charlatan. After reading Dr. Cook's paper, I felt like exclaiming with Napoleon to his physician at St. Helana: "Believe me, we had better leave off these remedies. Life is a fortress which neither you nor I know anything about. Why then throw obstacles in the way of the defense? Its own means are superior to all the apparatus of your laboratories. Medicine is a collection of uncertain prescriptions the results of which, taken collectively, are more fatal than useful to mankind."

Verily, Truth is Truth pro-tempore.

# OUR DUTY TO THE PUBLIC AND WHY WE FAIL.*

By Arthur P. Bell, D. D. S., Zanesville, Ohio.

Bacon says every man owes a duty to his profession. It is equally true that every professional man owes a duty to the public which he serves, and without fear of contradiction, I say we fall far short of our duty to the public.

The reasons for this are many, and the fault is not wholly with us, though we cannot shift all the responsibility to the second party. But till the time comes that there is a better understanding between us and the people we serve we must feel, if we think at all, that we are "weighed in the balance and found wanting".

Wanting in what? Not in knowledge of dental science, for it compares favorably with the other sciences. Not in skill, for the dental art is as well developed as other arts. But the true educational or missionary spirit which has been so sadly neglected must be developed and cultivated if we wish to improve the present condition.

The profession of dentistry is scarcely half a century old and ignorance and superstition stand in the way of its every step forward for the betterment of the race.

The practice of medicine in uncivilized countries has the same conditions to meet. In China as the foreign doctor passes along parents hide their children so the doctor cannot get them to carry them away to his dispensary to cut them in pieces. In civilized countries this feeling, to a large extent, has disappeared. The services of a physician are considered beneficial and practically everybody is benefited by them.

Our services are not so regarded. One authority estimates that not more than ten per cent. of the people of the United States receive dental service, and it is surely less in other civilized countries.

By a great many people we are regarded as the foreign doctor in heathen China. Parents tell their children exaggerated stories of the torture we inflict till they are ready to hide when they see us. They regard us as preying on humanity, waiting to entice them into our offices and crown

*Read before the Ohio State Dental Society, Dec., 1907.

and fill, whether necessary or not, for our own gain. These ideas are often held by people who are very intelligent along other lines.

To illustrate: Not long since I was called to a hospital to see a dental case. In the wash room I was introduced to the matron, an intelligent lady, who informed me that she had a horror of a dentist and that she felt like running away when she met one, and that her niece was of the same mind.

Having practiced twelve years and hearing sentiment of this kind expressed at least once a week I managed to recover from the shock and replied by saying that I knew people who regarded the hospital as a morgue and sending for a trained nurse in a case of sickness as equivalent to having your death certificate signed. But I added: "It is only the very ignorant class who hold such ideas."

The whole matter of duty to the public resolves itself into one of education.

Two years ago Dr. G. V. Black stood on this platform and delivered an illustrated lecture on "Preparation of Cavities in Teeth for Metallic Fillings". A teacher of language in one of the literary colleges of this city was in the audience and listened attentively to the address. After the meeting he expressed his pleasure at having heard the lecture, and surprise, too, at the thoroughly scientific nature of the paper. He said: "If this is the spirit of dentistry the people ought to know about it." And that is the point, they do not know about it and never will if we do not teach them.

After I returned from a state meeting a friend of mine remarked: "What do dentists find to talk about at their meetings?" As our lay friend remarked, people should know more of the spirit of dentistry. They should know that commercialism is not the motive of our every thought, word and deed; that there are men who have sacrificed their means and time that humanity might be benefited by their labors and discoveries.

It was Dr. W. D. Miller's dream that he might find some toilet method that might prevent the decay of the teeth. It is said that his experiments and studies on a single subject, erosion, cost him 10,000 hours' time.

Dr. Miller was a genius. What Virchow is to medicine

he was to dentistry. The public knew little of his achievements. Those who knew him admired and honored him. The German Emperor decorated him and conferred honors on him for his scholarly achievements. A rich citizen of Berlin offered to build and equip a laboratory for him on the condition that he remain in Germany.

Dr. Black's studies in amalgam and physical characteristics of the teeth are classical. Read them and admire the man who had the genius to not only make and report the many experiments, but devise and make most of the instruments used.

When these facts become common knowledge; when the public learns that we serve them and not ourselves primarily; that we are laboring for the good of humanity, laboratories and hospitals will be equipped for our use at public expense and with private donations.

When Dr. Osler addressed the dental students at the Royal Dental College, London, in 1905 on the importance of care of teeth, his address was published by nearly all the dental journals of England and America and by many of the medical magazines of both countries.

The New York Sun, of November 12, devotes one column of the editorial page to a discussion of the address. An editor of a certain New York medical journal took the pains to clip the item and send to the editor of the Cosmos. Dr. Kirk says: "When these remarks of Dr. Osler are divested of all of the force and charm which the personality of the distinguished author confers upon his utterances, we are confronted by the cold fact that these same sentiments have been taught and advocated for many years past in every dental educational institution, every dental society and every dental text book and periodical in the civilized world. They have been discussed in their local, national and international aspect, and yet, when expressed by the Regnis Professor of the University of Oxford, these familiar thoughts come with all the emphasis of originality, a new discovery, and the busy world stops its business just long enough to hear the tale. Verily it is important to speak as one having authority, not as a scribe.

"Dentistry has sung the same song through the whole gamut in tones like the roaring lion and in the gentle cadences of the sucking dove, and is still lifting up its voice to the same theme; but the public ear is guided in matters of health, even the health of the teeth, by the physician, for he speaks with authority and in case of the teeth usually with more authority than knowledge.

"Hence arises the difficulty which confronts the dentist of impressing on the public mind the truths advocated by Prof. Osler. From which we reach the conclusion that in order to effectually convert the public to the ways of dental rectitude we must begin by converting our medical confreres."

This was written two years ago and they are not all converted yet. An acquaintance of mine, who for some time past has been suffering from vertigo and debility caused by faulty nutrition, has often said to me: "Well, doctor, I am 45 years old, have never lost a tooth, have never used a tooth brush and have never needed your service and probably never will." And yet at the same time every tooth was badly affected by pyorrhea with heavy deposits of tartar. He had had treatment with several physicians, one of state reputation, and this dental lesion had been overlooked entirely. In a case of this kind which would you suggest first, oral prophylactic treatment, or pepsin, strychnine, etc., ad libitum?

Now Dr. Osler has spoken again. He says: "Diseased teeth are responsible for as much physical degeneracy as alcohol." This is a broad statement but it is probably true.

It simply points out to us our great responsibility to the public we serve and the great opportunity for usefulness if we accept the responsibility resolved to do our whole duty.

Let me read what the surgeon general of the U. S. navy says in his report to the secretary of the navy, for he speaks as one having authority and not as a scribe:

"That the services of skilled dentists are required by the navy cannot be questioned by those acquainted with the conditions and who know the far-reaching results of neglected dental disorders. With the increase in the personnel the question of attention to the teeth of the enlisted men with the navy is becoming more and more pressing each year, and there are few matters within the province of the medical officer that at times cause him more embarrassment.

"Like the eyes, the teeth are coming properly to be regarded

as intimately associated with the various organs and functions of the body, and that defective teeth may be responsible for much ill health is recognized by all who keep in touch with the accumulating truths of medical science.

"The teeth and the mouth are indubitably important factors in the causation of certain diseases of bacterial origin. This is not a hypothetical conclusion, it has been proven beyond a doubt that not only are bacteria found in great numbers in uncared for and neglected mouths, but their disease-producing properties are greatly increased, particularly in and about decayed teeth. The amount of dental disease that exists in the navy is considerable."

The conditions in the navy are no exception to conditions elsewhere. With a better understanding between us and the public let us work in unison for the betterment of the race physically, mentally and morally. A sound mind in a sound body, not excepting the teeth, is even more desirable now than in the days of ancient Rome.

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## DISCUSSION.

**Dr. Auber Peebles, Wilmington, Ohio:** As I have not seen much of Dr. Bell's paper on "Our Duty to the Public and Why We Fail", I must say I am not prepared to discuss it, but should like to merely suggest two or three points wherein a number of us may improve. Having a clean, neat and beautifully furnished waiting room does not excuse us for having an operating room which does not harmonize. In the last few years I have been in probably not less than one hundred offices through the central and western states and wish to say that there is sufficient in many an operating room to cause the patient to lose confidence in dentistry, especially in these enlightened times when every one knows something of microbes, and a great many are well informed on the sanitary management of affairs.

How can we expect to make a good impression upon the public when our patients can see our instruments uncleansed, say nothing of sterilization. I think if some of us who spend so much time pondering over gold and porcelain inlays would just spend a little of this time figuring out a method to conduct a more sanitary practice, with instruments free from all impurities, and the cabinets, dental tables, floors and windows scrupulously clean, people, many times, instead of saying, "I dread to go to the dental office", would say, "It is a pleasure, everything there is so neat and clean."

Another thing which I should like to mention is our negligence in regard to dental journals. I'll guess there are a few present who do not subscribe for more than one dental journal and I doubt if they read more than the advertisements in it. I am not

insinuating that we think we know it all, it isn't that, it is that we allow other duties or pleasures to have our attention first, and in this way neglect one of our most important duties to the public, that of keeping up with the times by reading ideas and practical experiences of brighter minded and harder working men than ourselves.

At a meeting of the Chicago Dental Society a few years ago I heard stated by a friend and intimate associate of the late Dr. McKellops, that this worthy gentleman received regularly twelve dental journals and instead of glancing hurriedly over them read diligently every article of importance in them. Is it any wonder this gentleman, of whom we all know so well, acquired such an enviable place in his chosen profession?

We should, no doubt, endeavor to educate our patients and as Dr. Black has suggested, have a dental meeting occasionally which will be interesting to them. Let them see what we are trying to do, or rather what we are doing, for their benefit. We should also educate them in the value of our services. Impress upon them the fact that we are not competing with some other dentist on prices, but quality of work. And then what? "We should deliver the goods," and let them pay us sufficient to justify us for having put forth every effort within our power to do good, conscientious work.

**Dr. H. M. Semans, Columbus, Ohio:** I listened to Dr. Bell's paper with a great deal of interest. It is a timely one, coming as it does at this time when we are desirous of a change in our constitution; a change which will be of vast benefit to the profession throughout the state. That which benefits us is benefiting the public and is therefore fulfilling our duty to them that much more. Also the bringing about of proper means whereby dentists may be placed in our state institutions, as is now desired by our society, is but a dutiful act towards the public. Gentlemen, put your shoulders to the wheel and let's shove and push until we effect this much desired and sadly needed benefit to the confined members of our commonwealth. You all have heard today several different remarks concerning text book use in oral hygiene in our public schools, also the benefit of dentistry in our city and county institutions, such as the children's home, infirmaries, etc. Here again does duty call. Then let us look to our own improvement also, and be alert every day, as Dr. Bell suggests, to take advantage of every opportunity to make ourselves better and more skilful dentists. Even though we may be very busy men, let us be faithful in the reading of several of our magazines and never miss a chance to not only attend society meetings, but work in them. No dentist ever gives a clinic but that he himself is thereby benefited.

# EXCHANGE OF PRACTICAL IDEAS

[This department being an exchange of practical ideas, it depends upon our readers furnishing material to keep it going. Just a few practical ideas from each subscriber will make it of mutual benefit and practical worth. Are you willing to do your share? Help the good cause along by sending the editor a few practical suggestions. Send something today. Address Dr. L. P. Bethel, 1255 Neil Ave., Columbus, Ohio].

## HOW TO MAKE AN ELECTRIC FURNACE.

By Dr. W. H. Reaben, McComb, Miss.

Here is where I am beating the supply houses, for I am going to show you how to make an electric furnace for not more than about $2.50, that is, if you have thirty-seven dollars' worth of mechanical ability you can make the furnace yourself.

You first procure what is called the cartridge heat unit of an electric sad-iron. You can get this from any electric supply house that handles General Electric Co. goods. Costs about $1.50. You first remove the brass shield from coil inclosed, which coil you will use for muffle. You will find one of the terminals running through the coil, which terminal you cut off and remove, leaving a nice clear opening inside of coil, just the right size for a muffle. Pull all the mica out of the brass cartridge and wrap coil with same. I will here caution you to take steps to prevent coil from becoming unmanageable. This you can do by breaking a match long enough to reach across open end of coil, to this match tie a thread, and run the thread clear through the coil, tying same to terminal which you have not disturbed. This terminal is nicely held in a piece of porcelain, which porcelain becomes the back of muffle.

You proceed to wrap coil in mica after smearing inside

and outside with any good investment compound which prevents oxidation of coil under high heat. Now wrap asbestos over mica until it is about a half-inch deep all round. Finally bend a piece of brass or tin around all this to facilitate handling. You have now only to turn on your current and your furnace will fuse porcelain, Jenkin's low fusing.

I have been using one like this, but mine is a little more elaborate. I made a nice door for mine and fastened muffle to a slate base through which holes were bored for wires, etc. I have a switch for mine and a resistance coil, or rheostat, by which means I regulate the amount of current running through coil of muffle.

In next month's Summary I will describe a way to make a cheap electric gold annealer.

## A SIMPLE METHOD OF CASTING GOLD INLAYS.

**By R. L. Hesser, D. D. S., Louisiana, Missouri.**

First obtain from a gas fitter a piece of $\frac{3}{4}$-inch seamless brass tubing $1\frac{1}{2}$ in. long (Fig. 1). Take a carborundum lathe cone, same diameter as brass tube, and immerse in boiling water to remove carborundum and glue; when dry dip in melted wax to make moisture proof. Drill a small hole in pointed end and insert securely a piece of about No. 36 copper wire so as to project $\frac{1}{4}$ inch (Fig. 2). Take the rubber out

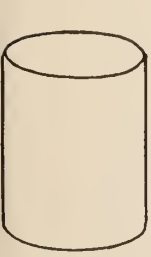

Fig. 1

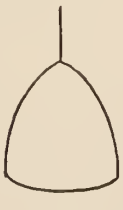

Fig. 2

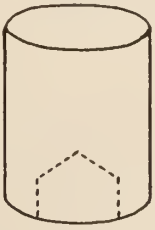

Fig. 3

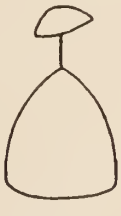

Fig. 4

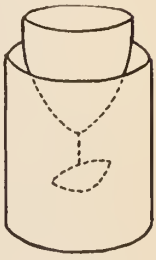

Fig. 5

of your Coates' swager and fill full of well-softened moldine (Fig. 3). Prepare cavity as for inlay and after obtaining model of inlay with inlay wax, heat end of copper wire in cone and catch model on end of wire (Fig. 4). Chill model in cold water. Paint investment around model with camel's hair brush and fill brass tube almost full of investment. Now

push cone, carrying model about half way down in tube (Fig. 5). After investment sets remove cone and wire by slightly rotating. Dry out very slowly, then apply blowpipe, keeping tube red hot until all the wax is thoroughly burned out. Have some gold scrap previously fused into a button about twice the size the inlay is to be, place button into depression of investment and apply needle point flame until gold boils. Now quickly place Coates' swager containing moldine over brass tube and press down firmly for a few minutes. Remove tube and cool in water, when inlay may be removed and polished. I have been using this method six months and get as perfect results as obtained with an expensive machine.

# SUGGESTIONS

## WHERE TO USE PORCELAIN.

**W. A. Capon, Philadelphia, Pa.**

Porcelain is not a substitute for every filling material in every part of the mouth, but it is a substitute for gold or any other material when conspicuous or when shade, or the tooth structure is endangered by metal. I shall specify with the statement that if the proportion of lost tooth structure is large, just in that ratio is porcelain valuable, which is contrary to the rule when applied to gold. For an illustration I will take the surface of a first bicuspid. Filled with gold it is unsightly and uncertain, but filled with porcelain it is an ideal restoration without any added difficulty of manipulation in proportion to its increased size, adding to this practically no consideration of pulp complications.—Pacific Dental Gazette.

## A METHOD OF REMOVING A BRIDGE.

**T. T. Baker, Litchfield, Ill.**

When necessary to remove a bridge it may be done by the following method without mutilating the abutment crowns: Take a piece of copper wire, 36-gauge, and 15 to 18 inches long, pass one end through the interspace near the crown to be loosened, bend the end down and around the wire several times, forming a loop. Form a loop in the other end through which pass an instrument, and drawing the wire taut, strike it several sharp blows with a mallet. This will jar the cement loose from the tooth. Do this at each attachment.—Practical Points.

## CAUSE OF MATRIX FRACTURING A FILLING.

H. E. Latchem, Grand Junction, Ia.

In some instances it is extremely difficult to remove the matrix from an amalgam filling as advantageouly by drawing it to the mesial or distal as by the occlusal, and the result then is a piece of the material is broken from the occlusal of the filling. This spoiled many a filling for me until I discovered the cause. The matrix is higher than the proximo-occlusal margin of the adjoining tooth, and the filling material has been banked up higher than it should be, so while exerting the required pressure for proper condensation the matrix has been forced over this marginal ridge, and in removing the matrix the filling is fractured. By shaping the occlusal surface of the filling before removing the matrix or by cutting the matrix so that it does not extend above the marginal ridge of the adjoining tooth, or better still, by doing both, I have not had this trouble.—Dental Review.

## CROWN AND BRIDGE WORK.

John O. McCall, Binghampton, N. Y.

The application of bands to roots, no matter how well fitted, is empirical, although it is not to be denied that a tolerance to the edge of gold, little short of marvelous, is displayed in many mouths. Some practical means must be found of obtaining an inlay margin for all gold applied beneath the gum margin, as well as on the crown of the tooth. But this is not all. How many times do we see bridges, which should never have been inserted, whose abutments are rapidly loosening after only a few years of service? The patient doesn't blame the dentist—he says that the bridge was all right, but the teeth loosened up. Even supposing his motives to be above reproach, the dentist who fails to take into account the prognosis of a case, in this as in other branches, has not approached his work on a scientific way.—Dental Review.

# SOCIETY

## WISCONSIN STATE DENTAL SOCIETY.

The 38th annual meeting will be held in La Crosse, Wisconsin, July 21, 22 and 23, 1908.

## DENTAL ALUMNI SOCIETY UNIVERSITY OF PENNSYLVANIA.

The 28th annual meeting of the Dental Alumni Society, University of Pennsylvania, will be held in Philadelphia, June 15 and 16, 1908. Surgical clinics, gymnasium exhibitions, base ball, bon-fire and parade of classes will be features aside from the reunions and banquets of classes.

## IOWA BOARD OF DENTAL EXAMINERS.

The Iowa State Board of Dental Examiners will hold its next meeting for examination at Iowa City, June 12, 13, 15, 16 and 17, 1908.

Written and practical examinations will be required. For further information address,

E. D. BROWER, Sec'y,
LeMars, Iowa

## INDIANA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Indiana State Board of Dental Examiners will be held in the State House at Indianapolis, beginning at 9 o'clock, Monday morning, June 8, and continuing three days. All applicants for examination will be required to be present at this time. For further information address the secretary,

F. R. HENSHAW,
Middletown, Ind.

## UNIVERSITY OF PENNSYLVANIA.

### Dental Department, Class of 1902.

The sixth annual reunion of the class of 1902, dental department of the University of Pennsylvania, will be held on alumni day, Tuesday, June 16, 1908. Will you be there?

J. ARTHUR STANDEN, Sec'y,
1220 Locust st., Philadelphia, Pa.

## PSI OMEGA FRATERNITY.

During the progress of the Pennsylvania State Dental Society sessions at Philadelphia, June 30, July 1 and 2, there will be held a reunion dinner of the Psi Omegans. Full details at the meeting.

J. ELLIS NYCE,
1001 Witherspoon Bldg., Philadelphia, Pa.
J. ARTHUR STANDEN, Sec'y,
1220 Locust st., Philadelphia, Pa.
Committee.

## STATE BOARD OF DENTAL EXAMINERS OF PENNSYLVANIA.

The Board of Dental Examiners of Pennsylvania will conduct examinations simultaneously in Philadelphia Music Fund Hall, 808 Locust street, Pittsburg, Pittsburg Dental College, Pride and Bluff streets, June 10-13, 1908.

For application papers or information address,

Dr. N. C. SCHAEFFER, Sec'y,
Dental Council, Harrisburg, Pa.

## VIRGINIA STATE DENTAL ASSOCIATION.

About April 1st I sent you notice of annual meeting of this association to be held in the Medical College of Virginia, at Richmond, Va., with the request that you insert it in your publication. Since then we have changed the place of meeting to Murphy's Hotel Annex, July 14, 15, 16, 1908, in Richmond, Va.

Please change your notice to conform.

W. H. PEARSON,
Corresponding Sec'y.

## OHIO STATE DENTAL BOARD.

The regular semi-annual meeting of the State Dental Board of Ohio will be held at the Bliss Business College, 185½ South High street, in Columbus, June 16, 17 and 18, 1908.

At the present time the board cannot accept a license from the board of examiners of another state. Applications must be accompanied by the fee of twenty-five dollars ($25.00) and should be in the hands of the secretary not later than June 6.

For further information and application blanks address,

F. R. CHAPMAN, D. D. S., Sec'y,
305 Schultz Bldg., Columbus, O.

## WYOMING STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Wyoming State Board of Dental Examiners for examination of candidates for license to practice dentistry in the state of Wyoming will be held on July 1, 2 and 3, 1908, in the senate chamber, Cheyenne, Wyoming.

Candidates must be graduates of a reputable college, recognized by the N. A. D. E. Applications and fee of $25.00 must be in the hands of the secretary ten days before the examination. For further particulars apply to

PETER APPEL, JR., Sec'y,
Cheyenne, Wyo.

# AFTERMATH

**Fires.**—Dr. H. A. Baldwin's dental office, Wadsworth, Ohio, destroyed, April 22. Dr. C. Z. McArthur's office, Fort Valley, Ga., destroyed, May 1.

**South Dakota State Dental Examiner Appointed.**—Governor Crawford has appointed A. A. Cotton, of Vermillion, as a member of the State Board of Dental Examiners.

**California State Dental Examiner Appointed.**—J. W. Neblett, of Riverside, has been appointed a member of the Board of State Dental Examiners, vice Garrett Newkirk, resigned.

**Tennessee State Dental Examiner Appointed.**—Dr. John R Beach, of Clarksville, has been appointed by the governor to succeed himself as a member of the State Board of Dental Examiners.

**Washington State Dental Examiners Appointed.**—Governor Mead has appointed C. C. Mann, of Spokane, and A. W. Burns, of North Yakima, members of the State Board of Dental Examiners.

**Dr. J. R. Waldon Commits Suicide.**—Dr. J. R. Waldon, of Holdrege, Neb., committed suicide at his office, April 20, by drinking a solution of cyanide of potassium. He leaves a wife and one child.

**Bequeaths Teeth to Dentist.**—John Wade, who committed suicide near Touchet, Wash., Feb. 22, left a will in which he bequeathed his false teeth to Dr. E. B. York, a dentist of Walla Walla, Wash.

**Dies from Effects of Chloroform.**—A well-known lady of Morrisburg, Ont., suddenly collapsed, April 30, while under the influence of chloroform, which had been administered by a doctor while a dentist was extracting some teeth for her.

**Commencements.**—Southern Dental College (Ga.), 55 graduates; University of Tennessee Dental Department, 19 graduates; Louisville College of Dentistry (Ky.), 49 graduates; Royal College of Dental Surgeons (Ont.), 38 graduates.

**Council Bluffs (Iowa) District Dental Society.**—Officers elected were: President, Dr. Horace Warren, Missouri Valley; vice-president, Dr. R. D. Miller, Atlantic; secretary, Dr. S. W. MacColl, Council Bluffs; treasurer, Dr. R. D. McEvoy, Missouri Valley.

**Dental Repartee.**—Patient: "Doctor, are there any dentifrices which don't scratch the enamel of the teeth?"

Dentist: "Sozo-don't."

**Oklahoma State University Departments.**—An important measure was advanced by Billups establishing departments of law, medicine, pharmacy and dentistry at the Oklahoma State University. The law course is made two years, medicine four, pharmacy two and dentistry three.

**Vulcanizer Explosion.**—Dr. Linsted, Hartford, Conn., was painfully injured, April 16, by the explosion of the vulcanizer in his dental office. His face was burned by the steam and bruised by the flying fragments. The back of his hands and fingers also suffered from burns.

**School for Dentists' Assistants.**—A new institution to be known as the American College of Dental Assistants has been organized in Kansas City and is to be opened May 1. It is to be incorporated under the state laws. So far as is known this is the first institution of its kind to be established. Its purpose is to train young men and women to be dentists' assistants.

**Dr. Spalsbury Found Dead in His Office.**—Dr. DeWitt Spalsbury, Ypsilanti, Mich., was found dead in his office, April 27, by his wife. Heart failure caused his demise. The doctor was home for supper as usual, and had made arrangements with his wife to accompany her to a banquet. Having a little work to perform at the office he asked her to call for him when she was ready.

**Southwestern Michigan Dental Society.**—Officers elected were: President, Dr. James B. Boyle, Grand Rapids; vice-president, Dr. A. A. Welch, Battle Creek; secretary-treasurer, Dr. C. W. Johnson, Lawton. Fifth district officers are: President, Dr. O. C. Carr, Lansing; vice-president, Dr. J. B. Dowdigan, Charlotte; secretary, Dr. N. H. Moore, Lansing; and treasurer, Dr. A. N. Lawrason, Lansing.

**Deaths.**—Dr. Zena W. Keiser, of Cincinnati, Ohio, at San Antonio, Texas, April 1. Dr. G. G. Rosenthal, Jersey City, N. J., April 1. Dr. William Westlake, Roselle, N. J., April 7, aged 60 years. Dr. Pierce F. Smith, Denver, at Arvada, Col., April 7, aged 71 years. Dr. William H. Webber, New Bedford, Mass., April 12, of heart trouble, aged 44 years. Dr. W. D. Worley, Craig, Mo., April 30, aged 61 years.

**Norwalk (O.) Dentists will take a Weekly Half-holiday.**—It is remarkable with what pleasure the dentists of Norwalk look forward to the first Wednesday in May, when after 12 o'clock all offices are closed for a half-day relief from dental care.

This is to continue until October 1. This is our third season of closing and has met with much favor with us. We cheerfully recommend it.—T. S. Seeley.

**Marriages.**—Dr. Oliver Harsted, Sioux City, Iowa, and Miss Pearl Schlott, Sioux City, April 5. Dr. Willard K. Conrad, Hackensack, N. J., and Miss Grace M. Soley, Rutherford, N. J., April 14. Dr. Elmer F. Shaulis, Somerset, Pa., and Miss Elsie M. Lambert, April 15. Dr. Francis A. McCan, Stockton, Cal., and Miss Birdie Rohrbacher, Stockton, April 15. Dr. A. L. Steger, Chelsea, Mich., and Miss Elizabeth Brietenbach, Jackson, Mich., April 27.

**Dentists Burned out in the Chelsea, Mass., Fire.**—Herbert G. Akins, 392 Broadway; John Bell, 41 Harvard; Francis D. Carlton, 176 Chestnut; Robert I. Davis, 6 Congress avenue; Samuel Gefand, 145 Chestnut; Ernest L. Johnson, 407 Broadway; William E. Knox, 32 4th street; F. Ernest Mallette, 384 Broadway; James H. Reed, 409 Broadway; Oscar M. Springer, 234 Broadway; Elmir L. White, 3 Washington avenue and Charles F. York, corner Broadway and 4th street.

**Report of Rhode Island State Dental Board.**—According to the annual report of the State Board of Dentistry, made to the senate, 36 candidates took dentistry examinations during the past year and 20 passed successfully. The report shows that there are now 369 dentists authorized to practice in the state.

The dentistry board consists of Drs. Forrest G. Eddy, Harry L. Grant and Albert L. Midgley, of Providence, Charles H. Davis, of Pawtucket and James F. Gilbert, of Woonsocket.

**Dr. Chase Badly Burned.**—Dr. F. C. Chase, of Manchester, N. H., was painfully burned, April 30, in a fire which broke out in the laboratory in the rear of his office. He was talking with a patient in his front office, and having occasion to go to his laboratory and extracting room, opened the door and was met by a burst of flames. A kerosene lamp had been burning there, but whether the oil had "sucked up" or exploded is unknown. A couch fed the flames and the doctor was badly burned in trying to smother the fire. His face and hands were blistered and his hair scorched.

**St. Louis University** has acquired the St. Louis Dental College, which will hereafter be conducted as a branch of the university, in connection with its medical department, the Marion-Sims-Beaumont College of Medicine. The buildings of the medical school and the dental college adjoin at Grand avenue and Caroline street.

The St. Louis Dental College was started fifteen years ago.

It was conducted as an auxiliary to the Marion-Sims College up to the time the medical school was taken in by the St. Louis University five years ago. That acquisition did not extend to the dental school, which was a separate property. The school has about 100 students in its three classes.

**Public Dental Treatment in German Schools.**—Consul E. Theophilus Liefeld makes the following report on the results of the public dental service established in the city schools of Freiburg, Germany, on April 2, 1907:

Up to the end of 1907, on 37 different days when examinations were made, 2,478 children were treated. The number of extractions was 3,689, fillings 1,231, new teeth put in 102, and roots treated 64. The number of extractions must gradually decrease and the fillings increase before the real object of this dental clinic will have been attained. Of the children examined, only two in every 1,000 had ever before been treated by a dentist, hence the condition of the mouths of the children was deplorable.—Consular Reports.

**Robberies.**—Dr. J. A. D. Hutton, Berkeley, Cal., April 7, articles valued at $200. Dr. William G. Cummins, Chicago, Ill., April 8, $100 worth of gold and dental instruments. Dr. F. D. Taft, Oakland, Cal., April 12, articles valued at $40. Dr. H. C. Mitchell, Rockford, Ill., April 15, gold leaf and dental instruments to the value of $80. Dr. Charles H. Wikoff, Chicago, Ill., gold teeth and crowns valued at $150. Dr. Hanford Brown, Chicago, material valued at $125. Dr. Willard Graybeal, Chicago, 23 gold crowns valued at $200. Lockers in the St. Louis Dental College, total loss is estimated at $100. Dr. Henry J. Nichols, Washington, D. C., April 30, gold fillings and false teeth valued at $200. Dr. Charles B. Munson, Washington, D. C., $50 in gold fillings. Dr. S. W. Young, Birmingham, Mich., $50. Thieves have also been visiting dentists of Racine and Milwaukee, Wis.

**A New Work on Dental Orthopedia.**—Dr. C. S. Case, of Chicago, has at last published his long-promised work, "A Practical Treatise on the Technics and Principles of Dental Orthopedia."

No expense has been spared in stock, printing, illustrations and in the elegant binding of half-morocco with gilt edges, to make this work in finish and durability second to none that has ever been offered to the dental profession. It contains over 100 working drawings of practical regulating apparatus, with every detail for construction; 120 half-tone illustrations, mostly from cases in practice; and about 300 zinc and wood-cut illustrations, of disconnected appliances, tools, instruments, methods of force, etc.

The matter condensed into the 400 large (6 x 8½) type pages of this work could easily have been padded into two volumes of the ordinary page size. Price of volume, $10.00. (The Case Company, Stewart Bldg., Chicago.)

A review of the book will be given in another issue.

**Memorial Tablet for the Late Dr. J. Bond Littig.**—Class Day exercises were held at the New York College of Dentistry, on April 25, 1908, on which occasion was unveiled a memorial tablet to the memory of J. Bond Littig, D. D. S., professor of prosthetic dentistry and orthodontia until May, 1907. The exercises were opened with an address by Prof. Faneuil D. Weisse, M. D., dean of the college, in which he called attention to the services rendered by the late Dr. Littig. I. E. Kaufman, president of the class of '08, addressed the audience in the name of the student body. Dr. Ellison Hillyer, D. D. S., successor to the deceased Dr. Littig, also addressed the audience and led up to the unveiling of the tablet which was done by Miss Harriett B. Littig, daughter of the deceased. The tablet reads:

In Memory of
Our Friend and Teacher,
J. BOND LITTIG, D. D. S.,
Born 1840, Died 1907.
Erected 1908
By Members of Classes of
1907—1908—1909.

During the exercises music was furnished by members of the senior class. The exercises were attended by trustees and faculty of the college, students, members of the profession and friends and the immediate family of Dr. Littig.

SAMUEL J. KESSLER.
Sec'y Class of 1908.

**German Dental Decision.**—According to Consul-General Richard Guenther, the district court at Frankfort recently rendered the following interesting decision in a suit between American dentists practicing in that German city: A firm composed of two leading American dentists here about eight years ago had taken an assistant, contracting with him that in 1908 he would be admitted to the firm as a member upon certain stipulated conditions, among which was the payment of a considerable sum of money. Should he fail to fulfill the contract, the assistant was not to be allowed to practice dentistry for the next two years within a radius of 100 English miles from Frankfort unless he paid the firm 30,000 marks (about $7,000). The assistant, after unsuccessful negotiations with the firm to permit him to practice on payment to them of a lesser sum, brought suit in the district court for the abrogation of the contract, claiming that such stipulations for preventing competition were against good morals and public utility. He rested his claim upon a decision rendered in a similar suit between authorized dentists by the supreme court of the Empire (the highest legal tribunal in Germany) which had so declared. The district court adopted this view and decided in favor of the plaintiff, holding that it is against the public interests when a dentist in his feeling of responsibility, incumbent upon the exercise of his profession, is handicapped by stipulations which treat the professional activity from the point of view that it

is solely a money-making matter. Stipulations of this sort must therefore be considered as being injurious to the public good and, for this reason, they should not be sustained. This decision will give satisfaction to the public at large, as well as to aspiring American dentists. Germany and other European countries offer excellent chances of success to dental graduates. American dentists in good practice in the leading European cities have a larger professional income than their colleagues who practice in the United States.—Consular Reports.

**Crude Dentistry in China.**—How crude is the dentistry of the humbler inhabitants of modern China is disclosed by Rev. John MacGowan in the following bit of description published in the North China Daily News. "Right in front of us on the street doctor's table is a small heap of teeth, not manufactured by any cunning workman, but by the subtle alchemy of nature. They are of all sizes and conditions. There are huge molars that have done yeoman service in the past and even teeth strong and determined looking and worn, as though they had failed in the battle of life, and had come here to end their days. They were all marked and discolored with the signs and symbols of the wear and tear they had gone through. They were a grewsome sight to look upon and I wondered much how such a curious collection could have been gathered together. 'Where did you get those from?' I asked the doctor, pointing to the heap, which, however, I was careful not to touch."

"'Oh! I bought them,' he replied. 'When a man has to part with a tooth,' he continued, 'he does not throw it away. He brings it to me and I buy it for a few cash, for he knows that in my profession it will come in handy some time or other.' Just as he was speaking a patient came up to him. On being asked what he wanted he replied simply by opening his mouth to the very widest extent. It was a huge cavern and reminded one of the entrance to the Thames tunnel. It was seen that his four upper front teeth were wanting, having been knocked out by a fall from a wall, and he was anxious to know if the doctor could supply their place with new ones."

"'Of course I can,' he promptly replied, and measuring the cavity in the jaw, he carefully and with practiced eye selected from the heap the four teeth that would exactly fill it. He then drilled a hole in them longitudinally and inserted a bit of coarse iron wire to bind them to each other. The ends of the wire were next inserted in holes that were carefully drilled into the teeth on each side of the cavity and at once the chasm disappeared and the crowd that had been looking on with critical eyes declared that his mouth looked as natural as though the new ones were those with which nature had originally supplied him."

**Recent Patents of Interest to Dentists:**

882879—Machine for boxing toothpicks, C. C. Freeman, Dixfield, Maine.

883106—Dental appliance, C. C. Galloway, Washington, D. C.

882711—Dental instrument, W. B. Pearsall, Hampstead, London, England.

883055—Dental impression tray, H. F. Smith, Seattle, Wash.

883382—Removable dental bridge work, E. C. Bennett, New York, N. Y.

883232—Dental mouth-prop, N. L. Polinger, New York, N. Y.

883592—Dental cavity-impression tray, T. C. Trigger, St. Thomas, Ont., Can.

884311—Press for swaging seamless crowns, W. G. Bridge, Boston, Mass.

884087—Holder for dental flasks, F. Groshans, Baltimore, Md.

884159—Dental plate, E. A. Jackman, Hartington, Neb.

884977—Crown and bridge work, C. M. B. Boos, Muscatine, Ia.

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

# REGULAR CONTRIBUTIONS

## DIAGNOSIS AND TREATMENT OF ALVEOLAR ABSCESS.

By Arthur D. Black, D. D. S., Chicago, Ill.

(Continued from page 437 June Summary.)

### TREATMENT.

The treatment of the conditions under discussion naturally divides itself into the treatment of the pulp chamber and canals, and of the tissues external to the tooth, in addition to the constitutional treatment. Let us consider first the pulp treatment.

No matter what the condition presenting, the rubber dam should be placed whenever practicable and the field of operation sterilized by swabbing the parts with a good antiseptic, such as oil of cloves, before any operating is done in the pulp chamber, and before the rubber dam is removed the cavity should be absolutely sealed. At each subsequent sitting the rubber should be in place and the field sterilized before the cavity is exposed and the cavity should be again sealed before the rubber is removed. Nothing should be allowed to get inside of the pulp chamber except what the operator puts there. Many men seem to hold the opinion that in removing infected and disintegrated pulp tissue there is no necessity for using a sterile broach. This is wrong, for the reason that the unsterile broach may carry in a much more virulent organism than those present and thus greatly increase the inflammatory condition.

It is my practice to thoroughly cleanse mechanically the pulp chamber and canals in all cases at the first sitting,

or as soon as the soreness of the tooth will permit. The only exception I would make to this is in those cases where the chamber and canals are dry and the pulp tissue dried up. In such cases I would seal in an antiseptic first and remove the pulp at the second sitting. But where the pulp is decomposed and the contents of the canals is more or less liquid, I think less of this infected material will be forced into the apical tissues in removing it, if proper care is used, than will be in placing a treatment without thorough removal. After removal the canals should be thoroughly sterilized and an antiseptic treatment sealed in with gutta-percha, the walls of the cavity having been slightly moistened with eucalyptol. This treatment will then have the best possible opportunity to control the inflammation that is present or that may occur in the apical space.

It is my rule to leave treatments in a week, unless there is indication for an earlier change. Following the removal of a dead pulp, it is often necessary to change the treatment sooner, occasionally in less than twenty-four hours. The general tendency in the profession seems to me to be to overtreat, to change the treatments too frequently. These two points can not be too strongly emphasized; the positive sealing in of all treatments and the rule of allowing them to remain a week. Teeth from which dead pulps have been removed will often be more or less sore and painful during the next twenty-four or forty-eight hours, but these symptoms will usually subside if the case is not disturbed. If the symptoms should be sufficiently severe, necessitating the removal of the treatment, the rubber dam should be put on and the new treatment sealed in. It is too common practice to remove a treatment and allow the pulp chamber to remain open a day or two resulting in a repetition of the pain and soreness when the cavity is again sealed. Thus many teeth are treated for months and years without success. My records of all cases in which I have removed dead pulps show that the root fillings were made in about seventy per cent. of cases within two weeks after the pulps were removed and in an additional seventeen per cent. within three weeks, leaving only thirteen per cent. that were treated longer. I do not see how it is possible to get better results by an extension of this treatment over a long period of time. All

that can be accomplished through the root canal can generally be accomplished within two or three weeks, and at the end of that time I fill the canal and await developments with the feeling that if the case does not heal it will be due to some condition outside the root which will need treatment through the process.

Cases of acute or chronic apical pericementitis require little difference in treatment from the simple cases of dead pulps. It is generally an advantage to raise the bite to relieve the occlusion on the sore tooth, and frequently local counter irritation and constitutional treatment, as for alveolar abscess, should be employed.

In the treatment of acute alveolar abscess I wish to emphasize two things: the lance should be used early, often before pus can be definitely palpated; and it should go deeply enough to penetrate the periosteum. Early incision will assist the pus in finding an exit and thus give the patient relief at the earliest possible time. If the incision is carried through the periosteum it will frequently prevent it from being lifted from the bone which might result in necrosis. The incision should be kept open by packing with gauze. Cloths dipped in water as hot as can be borne and applied to the face will often relieve the pain. Saline cathartics should be given in all cases, also a hot foot bath before retiring, and anodynes when necessary.

Chronic alveolar abscess should be treated in accordance with the findings of a careful diagnosis. I believe the common practice of forcing any medicine through the tract under pressure does more harm than good in many cases; if much of the peridental membrane about the end of the root has been destroyed, such treatment is inadequate; and if this membrane is intact, medication is unnecessary, as the case will heal as readily without it as soon as the dead pulp is removed. Peroxid of hydrogen is a dangerous drug to use in the treatment of these cases as it is apt to force the infection deeper into the tissues as it expands.

If the peridental membrane about the end of the root has been destroyed and that root has been bathed in pus for a considerable time, or if the end of the root has been roughened by absorption, or if it is covered with deposits of serumal calculus, the case will rarely, if ever, be cured while that

root end remains. If easy access may be had to the root through the process, and the tooth is not much loose in its socket, there is a chance to save it by resecting—cutting off the end of the root after filling the canal, thus removing the cause of the continuation of the abscess. If it happens to be the lingual root of an upper molar the entire root may be amputated; or one root of the lower molar may be extracted, after having been separated from the other roots These operations are simple and should be performed by any dentist. Frequently the best treatment will be the extraction of the tooth.

In case the root end is not much involved, the destruction of the tissue being largely in the bone away from the root, then the sterilization and filling of the root canal is generally the only treatment necessary. Those cases in which the pus has followed along the side of the root, discharging at the gingival border, are generally hopeless.

If there is a cavity in the bone it is a good plan to scrape or curret it, freshening its surfaces. If the surrounding bone is carious all of the softened bone must be removed to effect a cure. Occasionally a small piece of bone will have become necrotic and separated from the healthy bone, thus causing the continuation of the abscess. We should be on the lookout for such pieces and remove them. Whenever a cavity of considerable size or depth is found or made in the bone it should be packed and irrigated frequently to keep it in good condition while it heals from the deepest part. A mild antiseptic solution is sufficient for the irrigation and there is nothing so good as iodoform gauze for packing.

### DEFINITIONS OF SINUS.

CENTURY. "In pathology, a narrow passage leading to an abscess or other diseased locality; a fistula."

WORCESTER. "(Surgery). A long, narrow, hollow tract leading from some abscess, etc. Dunglison."

WEBSTER. "(Medical). A narrow, elongated cavity, in which pus is collected; an elongated abscess with only a small orifice."

STANDARD. "(Surgery). Any long, narrow opening leading to an abscess or to a diseased structure."

FOSTER'S MEDICAL DICTIONARY. "A long, narrow pathological canal communicating with an abscess or a diseased tract."

GOULD. "An abnormal pathway or canal, usually the result of ulceration."

QUAIN. "Pathologically, sinus means a narrow tract of variable length, leading from a chronic abscess to a free surface."

### DEFINITIONS OF FISTULA.

CENTURY. "In pathology, a narrow passage or duct, formed by disease or injury, leading from an abscess to a free surface, or furnishing an abnormal means of egress from some normal cavity, as in vesico-vaginal fistula."

WORCESTER. "(Medical.) A long, sinuous pipe-like ulcer, with a narrow orifice and without disposition to heal." Hoblyn. "Fistulae have different names according to the discharge which they afford, and the organs in which they are seated, as lachrymal, biliary, salivary, synovial, urinary. Dunglison."

WEBSTER. "(Medical.) A permanent abnormal opening into the soft parts with a constant discharge; a deep, narrow, chronic abscess; an abnormal opening between an internal cavity and another cavity or on the surface—as a salivary fistula; an anal fistula; a recto-vaginal fistula."

STANDARD. "(Pathology.) Any abnormal opening into a natural canal or hollow organ. A long, narrow canal caused by diseased action, and not disposed to heal, because of morbid conditions."

FOSTER'S MEDICAL DICTIONARY. "An unnatural channel leading from a cutaneous or mucous surface to another free surface or terminating blindly in the substance of an organ or part."

GOULD. "An abnormal tube-like passage in the body."

QUAIN. "A narrow tract or canal leading from a free surface and extending more or less deeply to some seat of local irritation; or it may be constituting an abnormal communication between two or more cavities, as in the case of a vesico-vaginal fistula."

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### DISCUSSION.

**Dr. N. S. Hoff, Ann Arbor, Mich.:** The author has given us a classic presentation on the subject of alveolar abscess and the underlying principles of its treatment. I have little criticism to make, as the points he covers are in accord with my own observation and experience. I feel, however, that his presentation is somewhat incomplete in that it makes no mention of alveolar abscess originating other than from infection by a decomposing pulp. There are many cases on record, and every practitioner of long experience has encountered alveolar abscesses of considerable gravity originating either from pericemental infection or the contiguous facial air cavities.

Dr. E. C. Kirk and Dr. D. D. Smith are both on record with cases of at least pericemental abscesses which they claim developed from pericemental deposits of calculus, and which will if not cured promptly, develop into true alveolar abscesses. There are cases of infection from the maxillar sinus which do not involve the tooth pulps primarily. These, however, are exceptional and need not be considered in this connection, as the essayist obviously had in mind only the negligence of many practitioners who do not place a proper appreciation on the value, if not the necessity, for the most careful treatment of diseases of the pulp and the root environment that the teeth may be saved for service.

This point I wish to emphasize, if I may. It seems to me that the dental profession in the past has been and is too largely at the present time giving altogether an unwarranted amount of time and attention to the filling of the teeth with gold, amalgam and inlays, and to the insertion of crown and bridge work, to the neglect of the fundamental part of the tooth, the root.

It is true the roots are generally out of sight, and the work done on them is too frequently done almost gratuitously, and the patients are allowed to believe that such work is not deserving of a compensating fee, therefore it is done either perfunctorily or unscientifically by the operator. I know there are a large number of practitioners in this room who can not be charged with neglecting their duty in this respect, as they take the utmost pains to faithfully treat all diseases of the teeth to the best of their ability. But as the essayist says in his paper, the mass of the profession is not coming up to our knowledge of the treatment of pulp and alveolar complications as it should to meet in any large degree the needs of their patients. I feel almost impelled to make a stronger statement and say that none of us place as high an estimate on the value of the roots of the teeth as we should. The essayist himself states that there are cases where the pericemental membrane is denuded to the gum margins, which call for the extraction of the abscessed tooth as its cure is doubtful. Now I feel that any ideal that is practicable in a considerable large degree is worthy of our support. I know that I have cured many abscessed teeth and made them serviceable when only one side of the root was attached, and the more I study the mission of the dentist the more convinced I become that our ideal should be to save every tooth and its supporting tissues from disease or other accidental mutilation and that we should try to save even these desperately diseased teeth. I wish that I could impress this audience with the idea that no tooth should ever be lost without persistent effort to save it and place it in its normal functional place and capacity. Then we should not carelessly tamper with the teeth of our patients until pulp complications ensue which sooner or later may lead to disease of the alveolar support and loss of the tooth. Our attainments as a profession and the intelligence of our patients demand that we serve them more efficiently now than ever before.

Many seem to think that we have reached the pinnacle of our

fame and see nothing to be done in the future. We have developed a marvelous degree of technical skill in the past fifty years, but I contend that we have still to develop the high ideal of complete service which shall bring health and happiness to our patients and the honor of an exalted profession to us. You will pardon a personal reference when I say that a closer study of the possibilities of the two departments of practice, orthodontia and oral prophylaxis, have done more to convince me that dentistry is falling seriously short of its duty to the people at the present day, and that the people are actually suffering for the lack of competent dentistry. In a recent letter from Dr. E. A. Bogue, of New York, a man whom you all know, by reputation at least, he tells me that he believes that dental caries is as amenable to treatment as any other disease that affects the human body, and that he knows from cases in his own practice that it is absolutely preventable.. If dental caries is preventable, and I believe that it is practically so, why should we allow our patients to have abscessed teeth at all?

If this is so, how are we to expect that dentists are going to give time to the rational treatment of diseased teeth? We surely can not expect dentists whose time is fully taken up in making cast gold or porcelain inlays at from ten to thirty dollars each will consent to treat teeth, which is a laborious and tedious operation, for a fee of from three to five dollars each, and spend hours of time doing it. We have got to have an ideal that will support us when the fee is so evidently insufficient. But I am certain that ample compensation will accrue to any one who may take up this work with the same earnestness of purpose that he displays in the more technical procedures in other departments of practice.

We must save the roots of the teeth, even should it become necessary to neglect the crowns. I regret that the essayist has not given us more details of his own technical procedure as I feel confident that the final word has not yet been said on the subject of treating abscessed teeth, for we are losing entirely too many teeth from this cause. Whether it is due to the fact that our patients fail to consult us as faithfully as they should, or whether we are unable to master the therapeutic and technical details of the work, I can not tell, but it has seemed to me that there is a tendency at present in the profession to rely upon the quick and so called sure cure methods of our commercial friends. It ought not to be necessary for an intelligent profession to resort to secret nostrums for success in this work.

There are certain fundamental principles that must be observed to insure success, and I would earnestly commend the essayist's injunction that it is of vital importance that we make a right diagnosis before we go far with any form of treatment. Then the treatment can be clearly laid out. It is, after all, not so important that we know what drugs to use or how they are applied as it is that we know the needs of the case as it presents for treatment. A putrid root canal needs positive and complete disinfection,

then it should be imperviously filled to prevent reinfection and its becoming a source of injury to the supporting tissues. Can this be done certainly with the so called mummifiers, or the comparatively insoluble antiseptic pastes? Apparently success has come from such methods, but is it scientific or in accord with surgical practices elsewhere? The rational and ideal method would exact absolute cleanliness of the canal and its complete obliteration by an insoluble filling material, and the large majority of alveolar abscesses would yield to such a treatment, but as the essayist has stated, many roots require resection because of their irritating ends, or curettement of necrosed or incurable diseased contiguous tissues. I believe that too little attention has been given to surgical treatment of chronic alveolar abscesses; many cases would yield promptly to surgical treatment that require an exasperating amount of time when treated only medicinally. I once saw a case where the entire labial alveolus and a large pocket at the end of an upper central incisor root had resulted from months of treatment with phenol and iodine. The dentist had injected it through the root and applied it directly and was discouraged to find that the wound would not heal. While this is an exaggerated case, it illustrates a practice which is altogether too common. It stands to reason that gum and alveolar tissues freed from infectious environments and kept so will become healthy, and there is no easy or short cut method or hocus pocus medicines that will accomplish as much as a direct attack and surgical removal of the entire infected area. Now this is logical and scientific, but I am well aware that it is not always practicable because our patients can not always be made to submit or co-operate; but with the present methods of painless operating on the oral tissues much more definite work of this kind can be done than we have before undertaken. There are a few men now specializing in this subject and attaining results that we have heretofore considered impracticable. Dr. Schamberg, of Philadelphia, and Dr. Curtis, of New York, are doing admirable work in this line. It does not, however, follow that we must specialize this work, but that we give this method of treatment, at least to our obstinate cases, a greater consideration. Let us set for our ideal the salvation of all the teeth and prepare ourselves to accomplish this ideal by the best methods available.

**Dr. J. H. Wible, Canton, Ohio:** Dr. Black is to be commended for the pains he takes in the diagnosis and treatment of these cases, and still more for the way he has tried to impress upon the minds of everyone here the necessity for so doing. To make an accurate diagnosis is not always easy, especially in the earlier stages of development. In its incipiency, of course, we make percussion to ascertain how much periosteal inflammation is present; if not much, apply thermal tests, etc. The case in hand may be one of which we know nothing, neither can the patient enlighten us oftentimes. Temperament sometimes has much to do with slow or speedy results in treatment.

Death of pulps under large metallic fillings is about the most common cause. Improperly cleansed or filled roots, and once in a great while from a too much filled root. Undue exposure, resulting in a chill, as Dr. Black says, often ushers in and precipitates such tooth troubles.

I use an iridio-platinum instrument for exploring the sinuses and if after thorough treatment and filling of canals the sinus is not healed I cauterize with trichloracetic acid or curette wash aseptically, etc.

After opening pulp chamber one ought to proceed rather slowly to cleanse canals, using not to large a broach, so as not to force septic matter ahead. I usually leave treatment in 4 or 5 days; I don't agree with him in the early and free lancing. It doesn't afford any relief until the pus burrows through the process. Use counter-irritant in earlier stages.

I don't understand how he raises the bite during the elongated condition of the tooth in question.

His advocacy of saline laxatives and foot baths is very timely, especially when a considerable rise in temperature is present.

I confess I do not take the pains to use the rubber dam very often, but doubt not his adherence to such practice is an admonition that we ought well heed.

**Dr. M. H. Fletcher, Cincinnati, O.:** It is a great pleasure to me to have heard Dr. Black's paper and I wish to compliment him and congratulate the society on having this paper presented in so able a manner. His diagrams and descriptions display the anatomy and pathology of this disease in a most excellent manner, and should indicate to us that the treatment of this disease, like that of all other bone pathology, lies in removing the exciting cause, viz., the obliteration or permanent sterilization of the pulp chamber and root canals; rarely there may be the necessity of removing some dead bone.

The technique of filling root canals is familiar to all so that I do not need to go over it, excepting to say that I universally use chloro-percha and gutta-percha canal points for filling the canals and chamber; if, however, I am in doubt as to having opened any canal to the apex of the tooth, and am not sure I can completely obliterate it, my habit is to insert one one-hundredth of a grain of arsenious acid as far into the canal as I can get it before inserting the gutta-percha, for the purpose of keeping the root or space sterile should there be any unfilled.

The particular tooth which in my hand has had the greatest varieties of outlets to the sinuses is the superior lateral; I have seen the pus burrow from the apex of the tooth as far back as the fauces, discharging back of the soft palate. It so occurs also that there is now one under my treatment, a superior left lateral, which is discharging just beneath the lower turbinated bone in the nose, yet without any connection with the antrum whatever. Where

pus burrows to these distant points the time for recovery is greatly lengthened, but by proper handling the teeth can be saved if it is desirable to do so, and yet have perfect recovery.

The fact that the lateral teeth are situated near the sutures of the incisive bone probably accounts for the extent of the sinuses that these teeth make; this, of course, makes them more difficult of successful treatment.

In examination of the antra of 600 skulls I found in quite a per cent., say 12 to 15, where the apices of the first and second molars came against the floor of the antrum, that there was nothing covering the apex of the tooth save the soft tissues and consequently when an abscess occurs at the root of such teeth the discharge would naturally be into the antrum, that being the direction of least resistance.

This same condition of the absence of bone at the apices of many of the teeth is found on the buccal and labial surfaces, especially of the lower jaw, and can be seen very plainly in almost any skull that may be examined for that purpose. The burrowing of pus through great extents of tissue seems strange, but pus follows the direction of the least resistance at the time and continues discharging through that tract until its source is stopped, unless interfered with by accident or conscious effort.

## ENLARGED METALLIC POSTS TO CONFORM TO BADLY DECAYED ROOTS.*

By B. J. Cigrand, M. D., D. D. S., Chicago, Illinois.

The dental profession during the past five years has devoted much attention to crown and bridge work, the consideration of the superstructure, root preparation, band construction and crown formation. We have arrived at a point where we fully realize the importance of the mechanical principles involved, in that we appreciate the force of the jaw and the necessity of perfect fit on the roots. In this consideration of force, we have, in a measure, forgotten the importance of the basic purpose which determines the ultimate success of the mechanism. Imperative as it may seem to fully comprehend the superstructure, the substructure of the crown or bridge, its anchorage is indeed primal. The one is no more essential than the other and both are indispensable.

In the past we have been concerned in the construction

*Read before the Southwestern Michigan and Fifth District Dental Societies, April, 1908.

of the bridge and have practically lost sight of its fundamentals, and if its pillars of location are disregarded, discouraging failure must be the climax.

In my mind the opinion exists that there is still a disposition on the part of too many operators to employ the forceps whenever the dental organs present conditions slightly unfavorable for a filling, inlay or crown. There is much comfort, however, in the fact that a happier era is upon us, for the dentists are in eager search for a method or system which will make it possible to restore badly decayed roots and restore the dental arch. The general public is gradually educating us to a full realization of the importance of saving teeth, and the time is not far distant when "the loss of a good tooth will bring sorrow to the entire household."

It is deplorable that too frequently the lateral or first bicuspid roots are extracted, and a tooth supplied by some system of bridge work, cutting down the sound adjoining teeth, collaring them with gold, when it was within the province of dental prosthesis to save the root, and place upon it an individual crown, such as would afford the natural denture with a hygienic substitute fully in accord with physiological laws. Nature scorns to be tied up or confined, and the present systems of bridge work, with their yokes of gold, are contrary to nature and work ill results—more especially when the load is unbearably large, as in the case of an attachment of five or eight artificial teeth resting on two roots. How pre-eminently better to save these roots by affixing individual crowns. To avoid applying bridge work in every instance possible and attach the individual crown instead, should be the earnest ambition of every member of our profession, yet some continue advocating large bridges on weak foundations and inefficient anchorage.

The individual tooth as nature supplies it is independent of its neighbor, being only in touch at what is known as the contact point, and the principle of mastication can be shown as complete in one superior and two inferior teeth, or vice versa. That we should all strive to preserve this separateness must appeal to all who value nature as a model in creation.

We are all applying bridges where individual crown work would be far more logical. Bridge work has suffered because of its injudicious employment, but that is the usual complaint

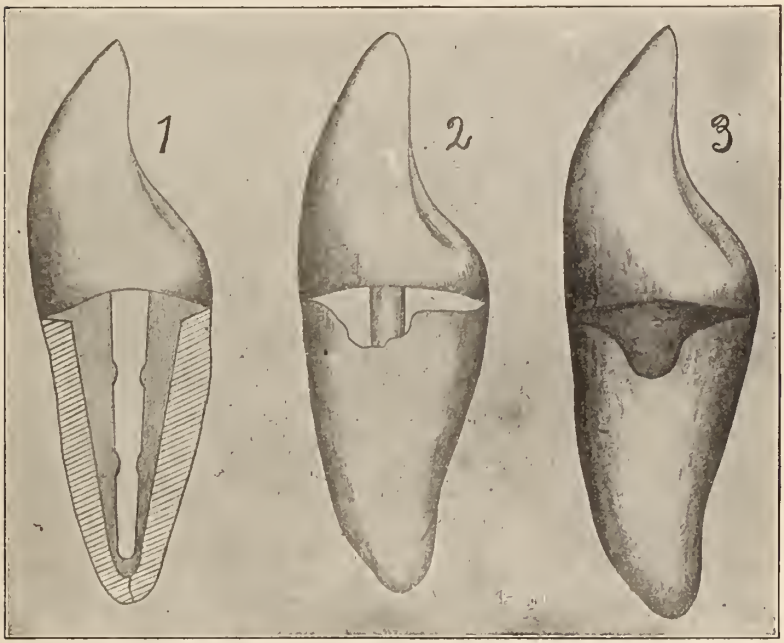
against all new discoveries or inventions. Eagerness to employ the find, or creation, has lead to the discontinuance of many a praiseworthy appliance or medication. Enthusiasm is a necessary attribute in all progressive work, but it must be curbed by a judgment founded on experience. That bridge work has suffered much through too prevalent applications, no one familiar with its history will dispute. Advances in the arts and sciences must be of slow growth. Like government affairs, reform must be of so gradual a process that, unbeknown, it steals its way into the hearts of men; for when of too rapid a nature it is both unhealthy and shortlived. In our profession, as in all organized society movements, the conservative must be the "pillars of strength."

The conservative practitioners throughout the land have recognized the error of the enthusiastic bridge builder. They have observed that the hastily constructed Richmond crown with ill-fitted band has inaugurated a siege of peridental and alveolar troubles. They have noted that the all-gold-telescope advocate, who caps a slightly decayed tooth, has outraged his profession.

Dental annihilation properly belongs to the oral surgeon and has nothing in common with prosthetic dentistry, which has come to mean dental substitution and preservation. Crown work has advanced in theory only when the theory has brought fruit in actual practice. In its two-fold evolution it absorbs from every available source which tends to broaden its art or perfect its science, and in consequence calls to its aid mechanics and medicine.

In a prominent dental society not long since, the question of saving bad roots was discussed, and some few entertained the idea of using gutta-percha, advocating that this material admitted of easy removal of the crown and also acted as a soft, yielding cushion for the porcelain substitute. I am not prepared to accept this method as practical or hygienic. I doubt the practicability of such a procedure, besides it indicates a temporizing effort. But this is not the main reason for my objection to the use of gutta-percha alone; I cannot believe that a crown which is set on a material which acts as a cushion is sufficiently dense to exclude the oral fluids. If it yields, springs and changes to every form of pressure, it goes without saying that the material is porous

and in consequence harbors the oral fluids, and this would quickly destroy its efficiency, and also allow lodgment of debris. I have tried this method and have discarded it since I have greater faith in the employment of cement in combination with metal. If any practitioner depends on gutta-percha may I ask that the next case of crown or bridge work he is called upon to reset he will do himself a great favor by subjecting the removed piece with its aged gutta-percha to a microscope; that ocular object lesson will suffice as to the

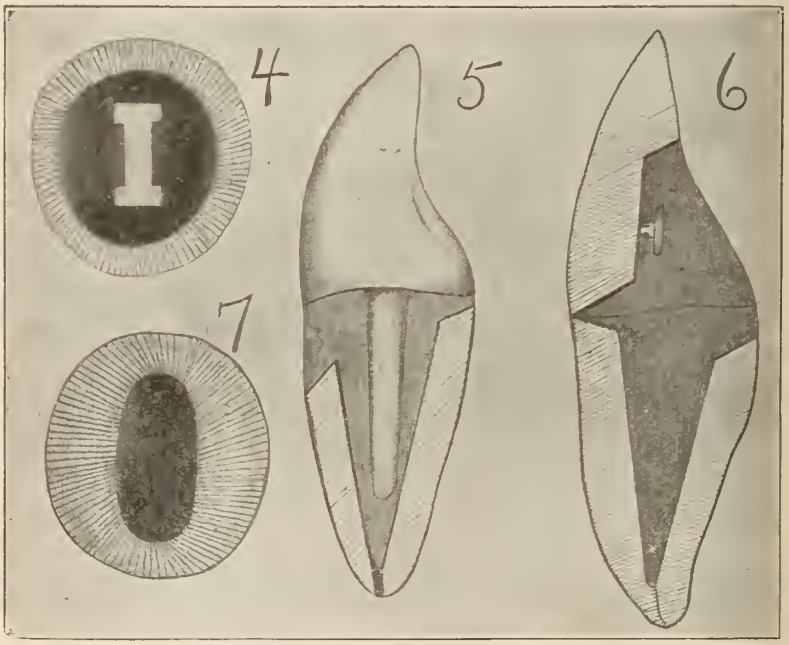



cleanliness or efficiency of this deteriorating, temporizing material.

If I have convinced you that these badly decayed roots can be saved and made normally useful, I shall feel that my years of thought and study on this line have not been in vain. The method I have incorporated in several papers and clinics during the past ten years, though not until within the past two years have prosthetic operators appreciated the principle underlying my suggestion.

If the root or roots in question are still possessed of sound or healthy tooth substance there is no reason why

they should be extracted; if you can attach to them a firmly anchored, well-fitting crown and accord to that root the natural exercise of mastication, you restore to its peridental membrane a renewed circulation of blood and in turn recreate a vigorous dental antagonism, the basic principle of sound dental organs. While, if the root is allowed to remain uncrowned and its exposed portion is denied contact, certainly nature will inaugurate an effort to throw off the useless member, but observe the rules of mechanics, and apply a

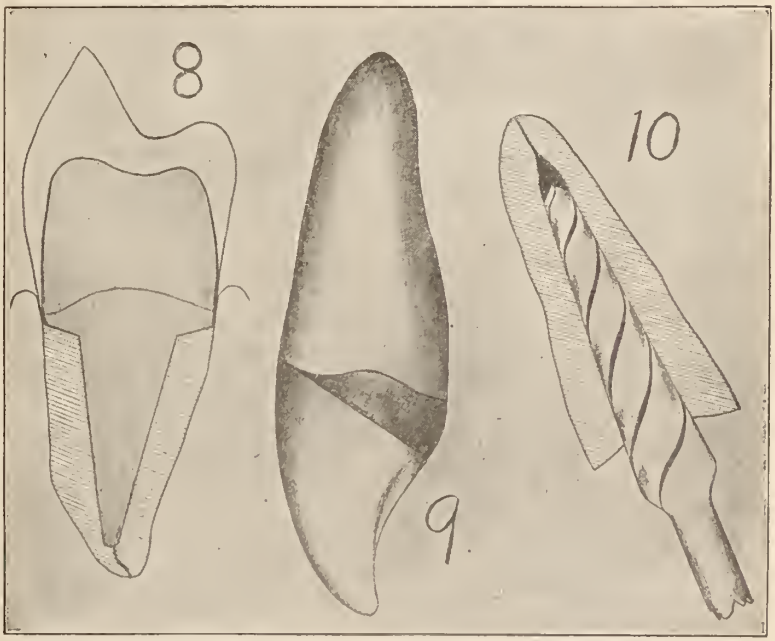



crown to this apparently drone root—the change which proceeds is astonishing and the prosthesis is perfect.

The method is simple and effective. Prepare the badly decayed root as one in ordinary practice, ream out all the broken-down tissue and depend on sound structure, fit the crown, be it Logan, Davis, Brewster or Justi, in the usual manner; just before setting same apply a bit of wax to the metallic post and insert in the cosmolined canal. At first introduction you may have an excess of wax; remove, and over alcohol flame soften and trim where indicated, then reinsert and after getting a good, accurate adaptation, the initial step

is complete (Fig. 1). Then take the crown with its wax-encased post and invest entirely in the ring of your casting apparatus and after freeing the wax from investment and being assured of the perfect dryness of the case proceed to liquidate the gold and by means of air, steam, or better still, suction, cast the case. While gold is the metal indicated I must confess that after diligent investigation, Acolite will practically give the same results, in that as a pure metal it is acceptable to the tissues and gives us all the desirable qualities so essential in a metal permanently located in the mouth.

There are innumerable cases where the mesial or distal




surfaces of roots are broken down, and by this method all you need to do is to drill away the decayed portion, adapt the wax and cast as already indictated (Figs. 2 and 3).

In shaping root canals for crowns or bridges it is a mistake to employ a large drill and produce a large circular opening into the root to receive the metal post (Fig. 4). Choose a small reamer, and by giving it an anterio posterior movement you are enabled to cut an opening of an elliptical

character, and you leave the root structure thick at its lateral sides, where the major strain falls and where the root must of necessity be the strongest. Further, this rhomboidal opening thus affords additional anchorage to the crown (Figs. 7 and 5).

It is evident that a crown set as recommended cannot loosen or fracture the root unless the post first stretches, and this, I believe, is the cause of many of our crowns loosening. The primary cause does not lie hidden in this, however, but in a factor of which I will speak later. If the posts in the Logan, or in any of the full porcelain crowns, were made of iridio-platinum instead of pure platinum there would be less likelihood of the yielding process, and the stability of the crown would be more assured.

This form of casting so accurately fits the canal and adjacent parts that independent of cement the crown would be held firmly in position, but a film of cement, or insoluble varnish or fluid, the crown is definitely lodged (Fig. 10).

Then there are cases not infrequently met where the anterior half of the root is partially broken away and these cases tax the ingenuity of all operators, but by the method I advocate, these distressing cases are made simple indeed. Just pack cotton or gutta-percha into the space crowding away the gum tissue, then dismiss the patient for an appointment on the following day, when full and easy access is accorded to the space, and after packing the wax both in root canal and broken anterior aspect, you remove the entire mass of wax and cast as already noted.

In the event you wish to employ facings to harmonize with remaining teeth, the method is also very adaptable, since the facing is ground to fit, being backed up by wax, and after removing entirely you have produced a very acceptable crown and not only saved a bad root but restored a denture (Fig. 6).

It may seem like an extreme statement, but this method should be employed in the setting of every crown and bridge, since it gives promise of permanent work. Besides it is in accord with the science of mechanics, an element which deserves our constant attention.

The all-gold shell, when telescoped over a large amalgam filling often results in failure because of the action of the

mercury in the filling, and when this filling is anchored by screws other than gold or platinum, it will invariably result in failure, notwithstanding that the gold crown was constructed without a fault. The anchorage was insufficient (Figs. 8 and 9).

In a case of this character just adapt the wax and build same to conform to a natural crown properly shaped, then remove and cast, set same with cement and you have formed an anchorage for the gold crown not only congenial with the surrounding tissues but absolutely compatible with the gold telescope it is to receive, since Acolite in this instance is pre-eminently indicated because of its virtues in conjunction with gold and tissue.

Now this method of restoring badly decayed roots is not advocated by me because of its productions of restorations in a simple way, though it does accomplish this event, but because it conserves dental organs and brings to our enfeebled humanity an element of redress and accords to the philosophy of mastication—an attribute indispensable and yields pronounced results.

## DISCUSSION.

**Dr. A. C. Runyan:** I feel honored, indeed, to be asked by Dr. Cigrand to open the discussion on his paper. Myself, as well as all of the members of the Southwestern, feel very kindly towards Dr. Cigrand because of the fact that he has always met with us, and has always responded with good papers. In the matter he now brings before us I have been very much interested, indeed. No doubt all of us have tried at different times in our lives to bring about results as suggested by Dr. Cigrand. In my practice I have tried a great many times to bring about, to a certain extent, this result by amalgam, by putting in posts and by building up the amalgam, but I have never been fortunate enough to get good smooth results. They always left places for debris to collect and for irritation, or produced irritation. Dr. Cigrand puts this operation into this thorough and concise form which it seems to me is very simple. It opens up a new field to us. The nearest thing that I ever saw to it was at the National Dental Association, in Niagara Falls, several years ago, Dr. Carmichael, of Milwaukee, presented a clinic something along this line. He took the broken-down teeth very much in the same way and used platinum and inserted it into the cavity and enlarged it and built on to that post, and this was all filled with solder; but in this case with the casting machine, as I understand Doctor Cigrand, all

these things are eliminated and you have the whole thing made at one fell swoop, as it were. These beautiful drawings—and, by the way, I think Doctor Cigrand is an adept at drawing—show every step of the method so thoroughly that it seems to me that there is no point left open for discussion. So far as the technique is concerned, it does certainly seem to me that it has brought about one of the most perfect ways of restoring teeth. Now it is astonishing what badly broken-down roots will stand. I have been in practice for nearly 30 years and I have restored or have put Logan crowns on teeth that it seemed to me would stand only a very short time, and it has been astonishing to me to see how long they will stand being used. I have always been a very great friend of the Logan crown. I believe they were one of the greatest inventions in dentistry from the fact that you can restore a single tooth in a way that is certainly artistic and very useful. By the way, I have set the old wooden-pin crowns when we had to depend upon the swell of the wood to hold them. But as soon as the Logan crown made its appearance I adopted them. The great fault that he speaks of regarding the Logan crown is in the incisors that almost invariably have the condition that he speaks about. For that reason I have discarded using the Logan crown for lateral incisors. However, by strengthening them in the manner he speaks of, they can be used. Now the reason why I am so pleased with the Logan crown; those who have porcelain can color them in any way they have a mind to, they can change the shade of them, they can put on the streaks or grind them up and you can get very artistic results, while with some of the other crowns you cannot. Possibly with the Davis crown you can use it in the same way. But I have used the Logan crown so long that I think I can set it more readily than almost any other crown there is. For lateral incisors I have been using the 20th Century crown for some time. Bicuspids that are broken down are difficult to replace with the porcelain crown; often the walls are broken down so badly that you cannot get a satisfactory result in crowning in any way, and when attempting to remove the roots, or to swing the tooth onto the next bicuspid, we almost always find that in the case of a few years it is a sad failure. In this manner you can save the bicuspids and they will be of good service for a great many years.

**Dr. N. S. Hoff:** I was called out of the room and did not hear all of this paper, but there is one feature of it that I wish to emphasize. Technically, I find no fault with the method employed. And I wish to commend any effort in the direction of saving roots of teeth. My remarks a few moments ago in regard to the paper on orthodontia were to the same point. If I have a hobby it is saving teeth. There are few roots of teeth that are so bad that they cannot be cured and utilized in some way, unless, of course, there is a condition of necrosis about them that makes them a menace to the health of the patient. A great many times we

extract roots of teeth that we think are of no special value in order that we may supply bridge work, as Doctor Cigrand has said. And I wish to say in parenthesis here that I am not exactly in harmony with Doctor Cigrand's idea that we should never make bridge work. I don't know as he meant that exactly, but I think very often a root or tooth that has a very slender or precarious attachment to the process can be made substantial and valuable in mastication if it is attached to an adjoining tooth which has a better and a stronger support, and be made much more useful than if it were crowned alone and had to depend upon its own strength and support for its use. I think bridge work fills a very important and essential place in our work and I am not ready now to abandon it, but this plan of saving broken-down, or what are apparently hopelessly decayed roots which don't appear to be of much consequence or value, is a great thing. Now of what use would be this beautiful work to which Doctor Land has called our attention today, if it was to be put upon roots of teeth that were loosened and coming out? The roots of the teeth are really the important elements of the teeth. The crowns are not valuable in comparison with the roots. It is the roots of the teeth that are the foundations upon which we build the masticatory apparatus and unless we save the roots of the teeth by all or any means, how can we make the beautiful restorations that Doctor Land and Doctor Cigrand have called to our attention? It is a waste of time and skill to do any of the high grade technical work on worthless or badly diseased roots of teeth. We must put these roots in good, healthy condition first, and this is our chief work in dentistry; it seems to me it is fundamental and basic to all other successes. I believe we are losing sight of the value of the roots of the teeth in our efforts to beautify the portions of the teeth that show, and are conspicuous in the mouth. I want to commend Doctor Cigrand's paper on that point, if no other. All roots, however badly decayed they may be, unless hopelessly diseased, are capable of restoration to health and to do great service and usefulness by Cigrand's method, or Land's, or by some other such method, and it seems to me this is going back to the fundamental point, and we must save all the roots of the teeth. Save every root and do not abandon any root until you are thoroughly convinced or satisfied that it cannot be made useful, because it would have to be a pretty bad root that could not be put into good form and use by this method that Doctor Cigrand has suggested to us.

**Dr. C. H. Land:** I am always glad to hear anything from Doctor Cigrand, and also from Doctor Hoff in his remarks on this subject. The remarks that I would like to make on this work here particularly is the adaptation. It has been my practice for years in all my work to use the minimum amount of cement and have always been particular in that regard. I have taken especial

pains and I have shown a good many how to take an impression of the root clear to the end so that they could make good work of it. There is one thing that is going to make Doctor Cigrand's method successful, and that is it is simple and inexpensive and substantial, and an excellent principle also is to use the minimum amount of cement. It is the excessive amount of cement that makes such work unsuccessful. When Doctor Capon, of Philadelphia, came to me to take instruction in porcelain several years ago, I gave him a very prominent and wealthy man in Detroit for his first patient. To teach him the idea of putting the old roots in good condition, I asked him to take the case and treat every one of the several badly decayed roots because this patient had a good constitution, and the only reason why the roots were badly decayed was because they were not in use, seven or eight of them. Any one who would look at them would say, "Get them all out." I insisted on him taking great pains to treat them and finally he treated them and put on porcelain. I have never told Doctor Capon the result of that work. That work was in use just exactly 18 years. The man started for a trip around the world and dropped dead of heart disease in a restaurant at San Francisco, but all the teeth were there. It is all because they were put into use. You let any part of the body be out of use and it will begin to decay. You put it in use and it immediately hardens and braces right up. If you can get the roots into use they will be all right.

In regard to bridge work, I agree that the more you can individualize teeth, unless where they have absolutely no support, as Dr. Hoff has said, you are much better off. If I can make a bridge in four sections, I would rather do it. I do not want to claim that we are not doing better bridge work than the ancients did, because we are, but they needed it in their time, and they bound teeth up with wire, showing that they were troubled with pyorrhea. I wish to congratulate Doctor Cigrand on his neat, simple, practical way of making this work. I want to ask him one question, however; I want to know how he gets the cement down deep in those roots and knows that he gets it there before he puts in the post?

**Dr. R. C. Brophy:** In the first place I want to express my appreciation of the courtesy extended to me in asking me to take the floor. I have met with you several times before; I have always had a good time. I am having a good time here at the present time. I attend a good many meetings necessarily, but I never yet attended a meeting that I have thought there was quite as much strenuousity exhibited on the part of the presiding officer as I have seen in connection with this meeting.

During the last 50 years of the history of dentistry a number of very prominent and important innovations have been introduced into the practice. Even the younger men present will recall the more prominent ones of these innovations. For instance we have had

the introduction of the vulcanizers, a great curse to dental art and skill. We have had the introduction of crown and bridge work, or at least the modernizing of crown and bridge work. We have had the innovation and change, the introduction of porcelain work. We have had the introduction of gas and gold inlay work. Various results have followed these different innovations, from the standpoint of the benefits which have accrued to the dental profession and to humanity.

In regard to the introduction of crown and bridge work, or the modernizing of it—of course I cannot go back to the time when the bridge was made as the doctor just spoke of, because I was not there at that time—I would say in regard to bridge work that I am very much in accord with some things which Doctor Hoff said; I believe that bridge work has proven a blessing to humanity. I know that it has proven a blessing to the dental profession. Why? Because it has led up to a higher standard of mechanical skill in the dental profession. Now we pass along to porcelain work. I believe, ladies and gentlemen, that porcelain work has proven one of the greatest blessings to both humanity and the dental profession of anything that we have ever had. It has proven a blessing to humanity because it has led people to regard the science of taste, beauty and the philosophy of fine art; it has brought out for the benefit of the profession perhaps greater mechanical skill, not only greater mechanical skill, but greater artistic skill, than anything else that we have ever had introduced. I don't know but I might better not go any further. Cast gold inlay work in my humble opinion, when confined strictly to decay in the crown of the tooth, will prove a blessing to humanity. On the other hand I am very much afraid that it will prove a curse to the profession of dentistry from the standpoint of mechanical and professional skill.

I believe that the idea of restoring badly broken-down, unfortunate roots of a tooth, that like the maiden that Doctor Blackmarr spoke of a while ago, who longs for the embrace of a strong arm, with a cold piece of steel at the end of it; when we can restore those teeth, I believe we shall find this process one of the greatest blessings to humanity and one of the most important, if not one of the noblest and kindest services that the dentist could possibly render. I believe that in years to come, when you look back at the introduction of this work of restoring broken-down, hopeless cases of decay by this casting process, you will find it to be a most important and valuable achievement. I believe that the simple matter of casting fillings for cavities in the crowns of teeth will dwindle into insignificance when the entire field, including the restoration of broken-down roots, is known. I congratulate this society upon the fact that Doctor Cigrand has made this meeting the office for the introduction of this process. Doctor Cigrand has of late months taken this matter up with

fresh vigor and he has developed a system of doing this work that I know when you return to your homes to your respective practices and take it up you will be very grateful to him.

**Doctor Cigrand:** Your kind commendations come to me rather unexpectedly because I had anticipated some serious criticism. Seeing that I do not get this, I cannot see that there is anything for me to say other than that I am glad, indeed, and grateful to you for your generosity in having, at least in my opinion, had the intelligence to grasp the principle at stake. The method has been given in clinics before, but after 7 or 8 years of actual practice in my office I know it is one of the most valuable things; and I want to tell you, Mr. President, that the profession is being educated by the patients. Don't think for one moment that we are educating the public altogether. I want to say frankly and freely, and I want to endorse it with all my heart, that my practice and my patients are my kindest teachers. They are the ones that say to me, "Doctor, can't you save that tooth?" They inspire me with an ambition that means something. When a lawyer comes to me and has a broken-down central tooth and I suggest that it ought to be extracted, never before any living jury has his voice quite that meaning when he looks into my face and says, "Doctor, can't you save that tooth?" That is the thing that educates us and these are the things that we are asked to do every day of our practice, to save teeth. That is our business and should be our ambition.

Conservation, preservation, restoration, that is modern dentistry; extraction is all wrong, it is surgery, it doesn't belong to dentistry. I want to say, and I want to emphasize it with all my heart, that our patients are our kindest teachers if we would but listen to them, for a man that does not get the right impulse from his practice is not in love with it. And it is my patients, and it is your patients, that make you climb hills and scale mountains and lie sleepless nights thinking what shall I do to save those teeth, preserve their beauty and restore that health—what a nobler mission! The lawyer, the minister and the physician all have their glorious places, but we are today the most exact, the most demonstratable profession that there is; we demonstrate to the public what we do, they don't have to believe it by Christian Science, they get it by the optic nerve, they see it, and they feel it.

Now then, let me say in conclusion, Doctor Hoff is a dear old friend of mine; we have been together, saddled together and been marched out together in various kinds of conventions, national, interstate and everything else, and I always value very much what Doctor Hoff says. And I wish in kindness to Doctor Hoff to correct just one little statement as it goes down in this report. This sentence I wish to go down in the discussion. "To avoid applying bridge work in every instance possible; to attach individual crowns instead, where nature so indicates it, should be the ambition of every practitioner."

Doctor Land has asked how I know that I get the cement up into the root before I shove the metal post down into position. Just before introducing that metallic post, by a little brush made of platinum with about 5 or 6 apparent bristles of platinum, I take that cement, when it is still in the cream of consistency, and paint down all the root canal surfaces before I introduce the post, and then I put a very sparing amount of cement on the metallic post and I quietly force it into position and I am satisfied that the cement is up to the apex because I have introduced the cement before I put the post in.

This paper is the result of years' experimenting, and while this may seem like a curiosity to you, and is known by my students as my "old pipe," it was the beginning of this casting idea, as it contained the original principle. With this grappling pair of pliers, the asbestos, or any other material, was grappled when the metal was in a molten condition and all I had to do was to get air pressure, which I did by shutting this valve, and the case was cast. I want to say that I certainly would not be inconsistent enough to come here and for one minute claim that I was the originator of casting metal under pressure, because that is as ancient as the hills. I saw Doctor Carrol, 20 years ago, cast some cases of aluminum under pressure, and we find in the records of ancient France that a patent was taken out in 1400 where a man cast iron under the pressure of a large piston. This is not a question of who invented casting by pressure, because there is no man living today in the world who can justly claim the invention. The man that invented it has long since gone to dust and "is nourishing some posy somewhere," as Shakespeare says. The idea is, is it of service to humanity? If it is, let us take it home to our heart to serve that for which we stand.

## TEMPERAMENTS.*

By Gustavus North, A. M., D. D. S., Cedar Rapids, Iowa.

### CHAPTER III.

Most individuals represent mixed temperaments. There are but few persons of the true basal type. If one can read the basal, they will have but little difficulty in reading mixed temperaments, for they are composed of the four basal, and the predominant feature is generally distinguishable.

There are a variety of mixed temperaments, for example, take the bilious for the predominant feature, nervo-bilious; nervo-lymphatic-bilious; nervo-lymphatic-sanguo-bilious, etc.

The following descriptions will only cover the twelve dual

*Erratum—In June Summary, page 427, third line from bottom, change "dark" to "fair," so it reads: "the sanguine is fair complexion."—Ed.

temperaments. These are divided into four classes representing the different individual characteristics, also the vital and recuperative force, and the general structure of the teeth.

Class I. Bilio-sanguine and sanguo-bilious, indicates strong vital and recuperative force; general and oral diseases favorably treated: teeth are good in structure.

Class II. Lymphatico-sanguine, lymphatico-bilious, nervo-bilious and nervo-sanguine, indicates good vital and recuperative force; general and oral diseases favorably treated; teeth are good in structure.

Class III. Bilio-nervous, sanguo-nervous and lymphatico-nervous, are only medium in vital and recuperative force; general and oral diseases are only fair in treatment; teeth are medium in structure.

Class IV. Sanguo-lymphatic, bilio-lymphatic and nervo-lymphatic, the vital and recuperative force, poor, indicates feebleness; general and oral disturbances are not favorable in treatment; teeth generally poor in structure.

The predominant temperament determines the vital and recuperative force, and the structure of the teeth, as bilio-sanguine, the sanguine being the predominant feature, also where the bilious is the predominant feature there is good vital and recuperative force; the teeth are good in structure as represented in Classes I and II.

Where the predominant feature is nervous or lymphatic, as represented in Classes III and IV, the vital and recuperative force is generally poor, also the teeth, and especially Class IV.

Dr. Black's system of cavity preparation should be followed with all classes of teeth. Fillings on the proximal and proximo-occlusal surfaces should be made with good contact points.

### BILIO-SANGUINE TEMPERAMENT.

Person about average size: broad shoulders, full chest, strong and well-built; head well-developed; fair complexion; hair dark and generally wavy; eyes dark, large and expressive; arch rounded; teeth medium dark cream color, average size similar in shape to the sanguine, except a little narrower at

the neck, with nicely developed cusps, good in structure, not very liable to be affected by caries. Gold is an excellent filling material.

The jaw rotates in masticating; the Bonwill system should be well considered in arranging artificial teeth so as to allow a free lateral motion of the jaw without the cusps interfering; occlusion moderately firm. Disease often takes an acute form. The vital and recuperative force good. General and oral diseases are favorably treated, as represented in Class I.

### SANGUO-BILIOUS TEMPERAMENT.

Person above average size; dark complexion; forehead large; jaw large and strong; hair dark; arch flat; teeth yellowish in color, with prominent cuspids, similar in shape to the bilious; good in structure; cavities are not very sensitive and often not noticed until deep-seated.

Gold is an excellent filling material. The jaw rotates slightly in masticating, occlusion moderately firm. The vital and recuperative force good. General and oral diseases favorably treated as represented in Class I.

### LYMPHATICO-SANGUINE TEMPERAMENT.

Person above average size; solid structure; small hands and feet, high instep; fair complexion; hair brown and inclined to curl; eyes generally blue and expressive; mouth medium and shapely; arch rounded; teeth grayish to a clouded cream color, similar in shape to the sanguine, average size, shapely edges and cusps; good in structure, not very often affected by caries. Gold is a good filling material; inlays are advisable for bicuspids and molars.

The jaw rotates in masticating; the Bonwill system should be observed in arranging artificial teeth; the occlusion is generally loose. The vital and recuperative force good. General and oral diseases are favorably treated as represented in Class II.

### LYMPHATICO-BILIOUS TEMPERAMENT.

Person average size; dark complexion; tendency to freckles, moles, etc.; hair dark and wavy; eyes dark and strong in expression; mouth large, lips firmly set; teeth yellowish

color, similar in shape to the bilious, except a little shorter and thicker, with prominent cuspids, medium in structure. Gold is a good filling material, either in foil or inlays.

The jaw rotates but little in masticating; the occlusion moderately firm. The vital and recuperative force is very good. The treatment of general and oral diseases is favorable as represented in Class II.

### NERVO-BILIOUS TEMPERAMENT.

Person below average size; small muscular development; small waist and tapering limbs; hands and feet small; head small with high forehead; dark complexion; hair generally dark brown and curly; eyes brown; mouth average size, lips thin and shapely; chin and jaw small; arch narrow, with prominent cuspids. Persons of this class are pleasing in manner, decided in likes and dislikes. Teeth yellowish at the neck and bluish at the cutting edge, similar in shape to the bilious, enamel hard, dentin, when exposed, decays rapidly.

Gold is a good filling material either in foil or inlays. (Alloy makes very good fillings for molars with all classes of temperamental teeth.) In deep-seated cavities the sensitive structure should be protected with some non-conductor material to avoid thermal changes. The jaw does not rotate in masticating, has almost a direct up and down motion, the occlusion is firm.

The vital and recuperative force is very good and quick to respond. General and oral disturbances are favorably treated as represented in Class II.

(To be continued.)

## THE RATIONALE OF ROOT-CANAL FILLING*

By M. Curtis Ramaley, D. D. S., Cleveland, Ohio.

I offer no apology for presenting to this society a paper on so commonplace a subject as the reason for the filling of roots when it is of so vital importance to both patient and operator. The busy dentist seldom, if ever, passes a day in his office that he does not have to face this matter of filling roots in some form. Scarce a dental magazine which does not have references to this

*Read before the Cleveland City Dental Society.

matter in the shape of advertisements of abscess cures, guaranteed to cure abscesses where they already exist and to prevent where they have not as yet occurred, or mummi-somethings which need only be applied in sufficient quantity, and the thing is done to a turn, with no danger of further troubles. These things, together with the conditions we see and remarks we hear, indicate that the "profession" has not as yet attained perfection in this important procedure.

From a practical standpoint the root of a tooth corresponds to the foundation of a house, and as such supports the crown in which we build inlays, gold or amalgam fillings, and also artificial crowns. No building is safe and useful for a longer period than its foundation, and no crown or filling is of value after the root has become annoying or useless.

I shall not attempt to discuss pathologic conditions, or their treatment in this paper, but will confine myself to the filling of roots, referring to medication only as it attaches itself to the subject by contiguity.

For everything that man does there *is*, or at least *should be*, a reason, though this is not always the case. We sometimes offer an excuse, sometimes a dollar, or lack of time, or we are not feeling well, as the explanation of certain acts.

## WHY DO WE FILL ROOT CANALS?

Now for the question, "Why do we fill root canals?" Most of us think the answer a simple one, but there is a difference of opinion on the subject in what we hear expressed, and in that which is implied in the conditions we so often find in the mouths of patients.

Let us note conditions. When for any cause the pulp of a tooth has been destroyed, or for a purpose must be removed, there results an opening in the crown and root large enough to have contained the pulp at the time of its removal, which varies usually with the age of its possessor. We are told that nature abhors a vacuum, and when this space formerly occupied by the pulp is left open an attempt is made to fill it, causing it to become a cesspool, into which is thrown blood serum or waste products.

If left in this condition it is liable to infection and is then the rendezvous of pyogenic organisms which cause all sorts of trouble for its unfortunate possessor. The troubles which result from the foregoing condition are many and varied, from slight irrita-

tion under certain conditions, such as cold and heat, to sharp pains that are almost unbearable and nearly or quite continuous, resulting in inflammation with accompanying results and conditions, these sometimes being widespread.

Another trouble arising either from roots that have not been filled at all, but much more frequently from roots improperly filled, is reflex pain, commonly known as neuralgia and headache. This is by far the most interesting condition, from the standpoint of the dentist, for to him the patient must look for help, and to him belongs the privilege of giving the much-desired relief, which will not only be thankfully received, but well remunerated.

To these diseased roots may be traced 90 per cent. or more of all the facial neuralgias and headaches which are not accounted for by some *specific known* cause to the contrary.

With these facts before us we cannot but agree that root-fillings are essential to our success and to the comfort of the patient.

## HOW CAN THE FILLING OF ROOTS BE ACCOMPLISHED SATISFACTORILY?

In answering this second question, it will be necessary to review for a little the conditions to be met. For convenience we will classify roots, first as to pathologic condition, into infected and noninfected: as to accessibility (including environment), those first which may be accurately filled and those which cannot.

First, then as to those that have already been infected: Dr. Kirk says that in these cases the pulp proper is first infected and then the tubuli. Let us remember, then, that after the pulp canal has been cleansed, there remain the tubuli to serve as pabulum for bacterial action. It is, therefore, necessary to obtain a thorough sterilization of both canal and tubuli by some means in order to secure comfort to the patient, or else use some filling material that will hermetically seal those tubuli. This is sometimes a difficult task, especially when found in small and almost inaccessible roots. However, these conditions are usually found in the roots of second and third molars, where the application of medicaments which discolor, but are very efficient in action, is not objectionable. In this class of roots, owing to the difficulty in thoroughly filling, something which will thoroughly seal the tubuli and make them impenetrable to the action of pyogenic organisms should be applied. The best medicament for this purpose of which we at present know is silver nitrate, applied either by means of a

broach or by cataphoresis. The root should then be filled as far as possible with chloropercha and guttapercha points. Some operators advise leaving the root without any attempt at filling, trusting wholly to the action of the silver nitrate to prevent further trouble; and not without some ground for such belief, for many teeth so treated have given comfort for many years.

Where silver nitrate has been used in roots is the only place that a purely mechanical stopping, such as wood points, lead points, or chloropercha and guttapercha points, should be used For this reason neither of the above is anything more than purely an occupier of space, having no sealing or sticky properties, which tend to seal the tubuli, nor can the operator be positively sure of sealing the apex with any of these substances.

With this difficult class disposed of, we will now speak of the others:

Difficult or practically inaccessible roots that have never been infected would indicate a different procedure. All work should be performed with aseptic precaution, and all pulp tissue that is possible removed, arsenic having been applied first to devitalize; oil of cassia or cinnamon applied on a pledget of cotton and evaporated, by means of blasts of hot air; the pulp chamber and any part of the canal that is accessible filled with the following pulp mummifier: Oxid of zinc, dried alum and thymol, equal parts, thoroughly mixed, to which is added when ready to use, sufficient glycerine to make a stiff paste. (If this preparation be mixed with the glycerine and allowed to stand for a period of time, it cannot be used). This is perhaps the best mummifier known at the present time, which is applicable to any case, having nothing in it which will discolor tooth substance or cause any marked pericemental trouble. It will become hard after a few weeks, and experience has shown it to be a good filling for any root. Dr. Soderberg, of Australia, who was first to recommend this preparation, claimed that only the pulp chamber need be filled. Some operators make similar claims for oxychlorid of zinc, but of this substance the writer of this paper knows but little. The zinc-oxid-alum-thymol preparation has never yet failed in my own practice in this class of roots.

We now come to the other classes, viz., the accessible, non-infected and infected, which, after being prepared for filling, may be treated alike. These two classes include fully 90 per cent. of

all roots to be filled, and therefore will be considered more in detail. By the proper use of sulphuric acid many otherwise inaccessible canals come into this class.

On page 351 ofAmerican Text Book of Operative Dentistry are mentioned root-filling materials—gold, tin, oxychlorid of zinc and guttapercha, later mentioning cotton, warmed paraffin and Balsamo del Deserto. After a brief consideration he discards, for various reasons, all but oxychlorid and guttapercha. In addition to the above, we have seen advocated in dental magazines the following, each of which has its good points: Orange-wood points dipped in some antiseptic, as warmed salol or one of the essential oils, lead points, asbestos fiber (also dipped in an antiseptic), rosin dissolved in chloroform, vaseline, and so on.

However, the ultimate object to be accomplished must be considered, viz., the permanent sealing of the apex and the mouths of the tubuli, thus rendering them forever uninhabitable to pathogenic organisms. We are granting, of course, that the canal is thoroughly accessible, and in an aseptic condition; what will best accomplish the desired end and give best results? To this question each operator has his own reply.

Oxychlorid of zinc is recommended by many good operators, but according to American Text Book of Operative Dentistry (page 353), because of its irritating effect on vital tissue, it must be preceded by a non-irritant, as cotton dipped in an antiseptic, or a small piece of guttapercha. In either case we do not believe that the apex has been sufficiently sealed to prevent the ingress of bacteria, unless we depend wholly on the antiseptic properties of the bulk of the filling. This it is not safe to do, for all antiseptics lose their power in process of time unless they be strong enough to alter tooth structure so that it is not capable of furnishing pabulum for the support of pathogenic organisms. This latter was advocated by Dr. Weld, but the method, so far as we can learn, has not been a success.

Guttapercha is used by perhaps the largest part of the better class of operators, but no dentist, however skillful he may be, is able to fill perfectly all accessible canals with this substance without an intervening medium. There are thin spaces (as in the lower incisors and cuspids, first bicuspids and mesio-buccal roots of upper molars) which cannot be filled unless sufficient heat be used, that on cooling there would be enough shrinkage to cause failure, allowing room for bacteria by the thousand. These cases

may exist without causing abscess, or even producing any marked inflammation, but they are the cause of indefinite, unpleasant sensations about the head and face, evidence of which is found when, for any reason, the tooth has been lost. The skiagraph would be of no value in such cases.

A combination of chloropercha with guttapercha would be liable to a similar defect owing to the shrinkage of the chloropercha.

To come to the point, no root should be filled until some non-irritating, sticky substance has been applied which will thoroughly seal the tubuli, so that in case of a slight defect in closing the apical foramen, their contents will be inaccessible to bacteria.

Where the apical foramen is large, it is a very difficult matter to seal perfectly, and any substance that does not adhere to the surface of the root leaves a condition that is likely, at some time or other, under the influence of an irritant, to cause trouble to a greater or less degree. If the tubuli are sealed so that nothing remains in them that is accessible, there would be little danger, even with an imperfectly sealed apex.

### METHOD OF PREPARING AND FILLING ROOT CANALS.

In accomplishing this, the writer uses one of two preparations, depending on conditions to be met. When canals are large and filling them with guttapercha is an easy matter, they are first dried by means of an Evans root drier or hot-air syringe, and dried thoroughly. Then a wisp of cotton is twisted on a broach and dipped in Howard's Antiseptic Balsam. This is passed into the canal and carried clear to the apex, and after allowing a minute or two for drying, using the hot-air syringe, a second application is made. This is followed by a thick chloropercha, heavily charged with Aristol powder (or, if you do not object to the odor of iodoform, it may be used), and guttapercha points firmly pressed home. The balsam serves two purposes: first, to seal the tubuli, and second, to cause the chloropercha to stick to the walls of the root. The balsam will also facilitate the introduction of the chloropercha; for those who have used chloropercha to any extent know that it is not an easy material to introduce, as it will often be drawn out as the broach is withdrawn.

If the root be small, and more or less tortuous, though easily entered with a broach, but more difficult to fill with guttapercha with any degree of certainty (viz., mesio-buccal roots of molars and the roots of lower incisors and cuspids) we would use Bal-

samo del Deserto and guttapercha points. This substance will stick to a wet surface and is easily worked into the finest canal into which a broach may be inserted.

Dr. White, its discoverer, claims that it remains unchanged in roots, and having used it myself for a considerable period of time, will say that no tooth in which it has been used has, so far as I know, ever given any trouble. The part of a canal so filled that is large enough, should have a guttapercha point inserted to fill the bulk of space, and should this not reach the apex, the canal is still filled with an antiseptic.

A word might be said about inserting Balsamo del Deserto. Dry the root as thoroughly as possible, and with a smooth broach carry the Balsamo del Deserto into the canal with a pumping motion, rotating the broach at the same time; then remove and insert the heated point of a root-drier or a heated iridio-platinum broach. This will cause the Balsamo to flow away from the instrument and toward the apex.

A second similar treatment will result in a well-drilled root. We have taken care of the apex and tubuli, and now the coronal portion must receive attention. It is an acknowledged fact that by far the largest part of septic trouble in teeth results from infection through the cavity in the crown of the tooth.

It is also known that very often pulpless teeth remain quiet so long as the cavities are filled and sealed, but become troublesome as soon as the filling is removed or comes out. Therefore, care must be exercised to perfectly seal this part of the canal, and this should be done with either oxyphosphate or oxychlorid of zinc. These steps carried out will result in a satisfied patient as well as a satisfied operator.

1. A thorough removal of anything which might serve as pabulum for pathogenic organisms.

2. A thoroughly sterilized canal.

3. Application of an antiseptic, non-irritating, sticky substance which will seal the tubuli and apex if possible.

4. A thorough sealing of the crown end of the canal with a cement, to prevent the ingress of bacteria.

# SUCCESSFUL PRACTICE BUILDING.

By Otto U. King, D. D. S., Huntington, Ind.

(Continued from page 455 June Summary.)

## BOOKKEEPING.

I have experienced a great deal of satisfaction from the double entry bookkeeping system, used with both the books and cards. I have noted that bookkeeping not only relieves the worry and gives one a feeling of satisfaction and confidence in himself and his business, but it promotes order, thoroughness, regularity and honorable methods of business.

All my regular bookkeeping is by the use of the day book, cash book, journal and ledger.

## RECORDS.

Besides this we keep a card system of records of each operation, with name, address, date, etc., and with the kind of material used, and a diagram of the teeth showing the exact location of the operation. I have purchased a large Macy Card Index Filing Cabinet in which all closed card accounts are kept, so that in a moment's notice we can secure the record of every patient and every dentist knows the clinical advantage of such records, and then the satisfaction you receive when you kindly but firmly impress upon an erring patient that your records prove that the other fellow's filling dropped out but that yours still remains steadfast and unmovable. I have saved many and many times over the cost of my records from these forgetful patients alone.

Another very important advantage of keeping records relates to the rendering of accounts.

No dentist or business man can keep his affairs in a systematic or satisfactory order who fails to make and preserve accurate records of all his work. To me it is a great stimulation to better work when at the close of the month I make out my trial balance and ascertain my weak places. You know exactly how much you are making on your bridge work, plate work and every phase of your work. Each tells its own story of profit or loss, and then you know where to strengthen your business and hence measure your income.

### EXAMINATION.

When a patient enters your office make a thorough examination of the teeth and note the dental service needed in an Allen examination pad, mark these cavities so the patient can see it, for few have any idea of the number of fillings needed. I believe in most cases it is best to give them an idea of the cost, for I have made it a rule of my life to never allow a person to do any service for me without first agreeing on the cost to me. This rule strictly adhered to has saved many annoyances, and so I try to give my patients the same privilege, for I learned from experience that if you have a definite understanding as to fee and patient's ability and method of payment before any work is done that there would be no misunderstanding when the bill is presented for payment. These examination blanks may be used to indicate the work as it is completed, also to transfer the record with the charges to the diagrams on the permanent card at the close of the day, so that it will always indicate to you the work done and save your making an examination of the teeth at every sitting.

### COLLECTING ACCOUNTS.

The greatest evil in the dental practice is that of long credits and yet with the customs as they are today in most communities it is frequently necessary to extend credit to some patients. Nevertheless we should make it apparent to our patients that we are opposed to unlimited credit, for every dentist must bear in mind that to pay his own bills promptly necessitates prompt collections.

The successful dentist will be the one who not only understands his profession but who has a keen insight into human nature so as to be able to collect accounts, even those of long standing, without offending the patient. Some time ago I asked a prominent dentist in northern Indiana how he collected his accounts and still kept his patients so loyal to him. He replied: "Expect people to pay." This is the best method to pursue. Make it apparent to them that you never had any other thought but that they would pay. If they are getting slow make it your business to warm up to them, and when things get a little doubtful get more friendly, take special interest in their welfare, children, business, etc. Stop them on the street and make inquiry about their inter-

ests. Never lose your temper, but wear one of those smiles that will not come off. You have lost half the battle when you "give them a calling down." However, I would not have you think that I do not believe in being firm, for there are cases, I suppose, where some find it necessary to resort to the law.

As a rule a dentist should mail a statement to each of his patients on the first of every month, making notation of it on their card, so that if no response is made in a reasonable length of time you can, on the bill-head or otherwise, call special attention to their account. I find that most people will pay promptly if I am prompt and systematic in my method of collecting.

### BILL-HEADS.

The bill-head should be printed on a good grade of paper, not on the same generally used by a butcher or blacksmith, for the difference in cost between the best and poor grade is so trifling that a dentist who desires the better class of patients will not care to reflect his artistic taste by economizing on his stationery.

These accounts should not be itemized but read simply: "For professional services," and then on the lower border I have printed this little notice, (which was suggested to me by Dr. C. N. Johnson in his book "Success in Dental Practice") "A diagram is made of every operation. This with a detailed statement of all accounts is kept at the office where the patient may examine it at any time."

### FEES.

Whether you regulate your fees by the hour or by the operation, remember that to establish in your community a reputation for being the highest priced dentist in your town is often one of the best advertisements. It is true it may drive some people away, but if your prices are within reason you will attract the more desirable patients. Of course a dentist must have the skill to do the artistic work that will make people anxious to pay the larger fee. The dentist whose fees are lower than his neighbor's the public would naturally suspect of not being so competent a workman and hence he attracts to himself the lower strata of humanity.

I think a dentist, as he becomes more proficient in his profession, should gradually raise his fee. From his system of bookkeeping he finds in what particular work the fee should be increased to net him a larger financial return, so that little by little, without any blow of trumpets, he is gradually increasing his financial returns, weeding out undesirable patients until a permanent and remunerative practice is established among the best paying patients.

### LADY ASSISTANT.

The greatest missionary of refinement in the world today is the presence of women in the business world. Their ladylike reserve commands respect and will add much to the refinement, neatness and attractiveness of a dental office. Many lady patients hesitate to enter a strange dental office, but with a lady assistant in the office this feeling is allayed. I feel that outside of the great service they may render, their very presence in any dental office is a great drawing card.

### PRACTICAL METHODS RECOMMENDED.

I know some dear brothers have before this time, to some extent, lost interest in this paper because of the seemingly hard methods recommended, especially those on bookkeeping and collecting, and have been fanning themselves into ease of conscience by saying, "Too much red tape," and "How do you expect a dentist to be an expert bookkeeper, etc." Now every method I have advised we have made a practical demonstration of its value. I have not dished out to you a lot of theories, but up-to-date system in a dental practice, only those methods used by all leading business men today, and instead of belittling ourselves by pleading ignorance and inability to accomplish what others have accomplished, let us straighten ourselves up to our complete manhood and see our possibilities and then take on a new spirit of determination to dig to the very bottom of things, which will mean to us a broader outlook and greater financial success.

### DON'T BELITTLE YOURSELF.

Gentlemen, it positively wounds my pride for our profession when I hear a dentist on the floor of a convention say that he has no time and patience for the treating of children's

teeth, or that plate work can be done as well by a dental laboratory. I grant that this is often true, for a great deal of our plate work is a disgrace to dentistry. They say there is no money in prosthetic work. Then when it comes to orthodontia many are too willing to recommend even the most simple cases to a specialist or let a patient go through life with a disfigured physiognomy. It seems to me that it is high time that we are waking up not only to our duty and privilege but to our opportunity, for the secret of success in life is to be able to see an opportunity and then being prepared to make the most of it, and those who make the most of opportunities make the most money. There is no theory about this, we see it demonstrated every day. I know dentists who say they think certain cases should be turned over to a specialist, that have time to stand on the street corner talking politics, discuss other subjects at the club and loaf elsewhere.

What some have accomplished others may do if willing to pay the price in concentrated purpose, pluck and perseverance.

### HAVE A PROGRAM.

Every dentist should make a mental program of his day's work the first thing in the morning and then make a business of accomplishing this work. Such a plan helps to keep the work moving and each day sees definite progress made. A dentist should not permit his work to accumulate, even though he be compelled to work late in the evening. "Do it now," is an excellent motto to stimulate one when he begins to lose interest in his work. When you begin a piece of work complete it. Don't let it drag along or permit patients to delay work. Finish it as soon as possible and the collections are more easily made.

See to it every morning that you are in perfect tune with yourself and the world before you ever leave your home for the office. Mental discord is fatal to quality in work. The man who goes to work feeling out of sorts with everybody is in no condition to do the taxing work required of a dentist. Did you ever notice how, when you are in harmony, you feel like a giant, then it is that you are ready to meet the duties of the day?

## TIME TO THINK.

Dr. G. V. Black suggested to the graduating class of '97 that we should early get the habit in our profession of devoting the first hour of the day to study, saying that he knew very well what this method of study had done for him. Carlisle has said that "The true university of these days is a collection of books."

Every dentist should be a subscriber for from four to five dental magazines, and then read them. Some dentists say they haven't time to read. It does not pay to be too busy. Unless a dentist has some time to think he loses a great measure of mental growth. Quiet thought is refreshing to the busy man. Too many spend their time from their work in an endless round of social and pleasurable activities. From a strictly business basis this does not pay, for the mind loses thoughts and ideas that might open up new opportunities.

(To be continued.)

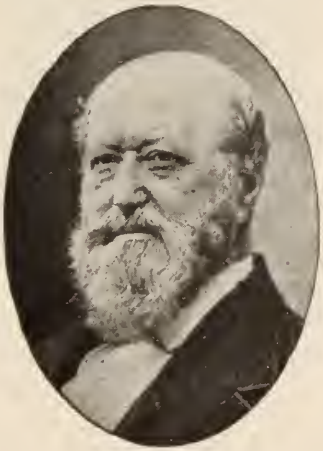
# THE CONTRIBUTIONS OF PIONEER DENTISTS TO SCIENCE ART, LITERATURE AND MUSIC.

By Burton Lee Thorpe, M. D., D. D. S., St. Louis, Missouri.

(Continued from page 446 June Dental Summary.)

## OHIO DENTISTS.

The profession should be deeply indebted to Ohio for the contribution it has made to our science. Some of our foremost pioneers, the most enthusiastic and talented in the profession, were either natives or afterwards practitioners of dental surgery in this state. One of the first and best known was



James Taylor

**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 18 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, in

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 him who said, "If I had two loaves of bread, I would sell one and buy white hyacinths to feed my soul."

Geo. Watt

**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, O. 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 he 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, in 1862. He was one of the organizers, and for the first two years of its existence president of the Ohio State Dental Society. He was twice president of the Mad River Dental Society. Oct. 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 on (1868) were republished in book

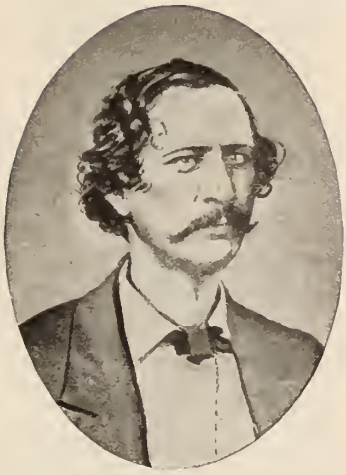
form by Dr. Watt, as "Register Papers, a Collection of Chemical Essays in Reference to Dental Surgery". Among these were his masterpieces, "Lord Oxygen" and "Lady Hydrogen". He was a brilliant scholar in English literature, and familiar with all the classics. His remarkable retentive memory enabled him 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 ten years until his death, in 1893.

J. Taft

**Jonathan Taft,** he of gentle and blessed memory, whose friendship to us, 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.

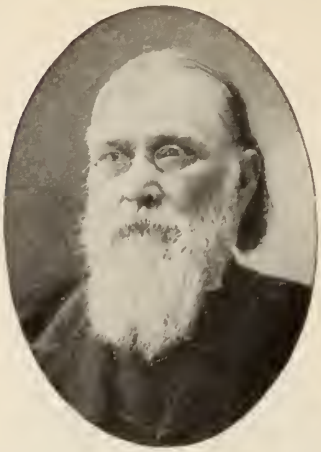
John Allen

**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 of 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

**Wm. M. Hunter,** a teacher and demonstrator in the Ohio College of Dental Surgery. Experimented along the same line with porcelain as did Dr. Allen; also claimed to be the originator of 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 prosthetic operator and metallurgist. He was the father of your Dr. Frank Hunter, of Cincinnati.



W. H. Atkinson

**William Henry Atkinson,** leader, "teacher of teachers," prophet and past grand master dental enthusiast.

> "The flash of wit, the bright intelligence,
> The beau 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, O., where he became interested in dentistry, a profession which he studied. Removed to Cleveland in 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 researches along this line in the new field of dental therapeutics, pathology and histology in which he was a profound student and investigator, soon gave him prominence in the dental profession. He was an expert operator in all departments of dentistry, and advocated, and the first in Cleveland to claim a high standard of fees for dental operations, and the first to place his services in time basis; believing his services at 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 dmonstrations. 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 Microscophy, 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 eccentric, aggressive, progressive, enthusiastic, magnetic and oratorical. His brillant flights of oratory he said were inspired by "the angels," for he was a spiritualist, and a follower of Swedenborg.

R. W. Varney

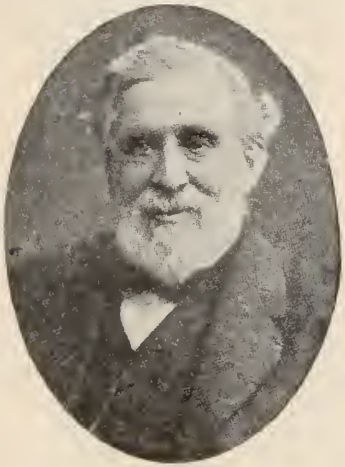
**Royal William Varney,** native of Brecksville, Ohio, a dental student of Drs. Atkinson and Chas. R. Butler, and apt and earnest scholar, graduated in medicine in 1863. Later a student of Dr. Corydon Palmer, at Warren, Ohio. He was an especial favorite and pet student of Atkinson. He practiced in New York city, and developed a marvelous skill as an operator. His especial 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, McKel-

lops and Corydon Palmer. He was an enthusiastic, microscopical investigator, a student of nature, an idealist, and had a pronounced musical taste, and was a skilled preformer on the violin.

Corydon Palmer

**Corydon Palmer,** born in 1820, at Warren, O., where he has practiced his profession continuously to the present time. He "picked up" dentistry and by perseverance and natural ingenuity, developed a most superior skill. In early life he was in 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 a 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.

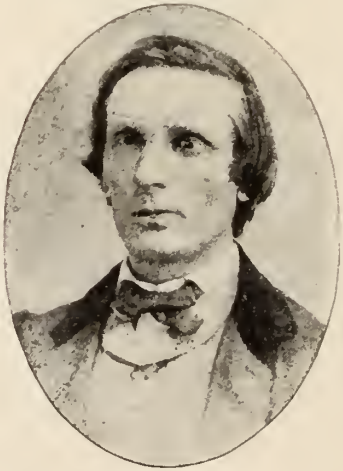


James Leslie

**James Leslie** located in Cincinnati, 1838. He was a noted maker of gold foils, and owner of a dental depot. Secretary and treasurer for 15 years of the Ohio College of Dental Surgery. One of the organizers of the Mississippi Valley Association of Dental Surgeons, and frequent essayist before the society. He claimed to have been the originator in the discovery of cohesive properties of gold foil. Robert Arthur Amos Westcott and W. H. Dwinelle also claimed to have been **first** in this discovery, as did A. J. Watt of Ohio. As an expert metallurgist, he materially contributed to the dental profession.

W. Storer How

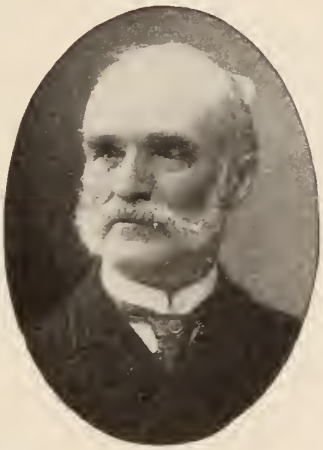
**W. Storer How,** a former practitioner of Cincinnati, and for the past twenty-three years mechanical expert for the S. S. White Dental Manufacturing Co., Philadelphia, and a writer of many papers of interest to the profession.



Andrew M. Leslie

**Andrew Macbeth Leslie,** located in Cincinnati in 1838. graduated as D. D. S. in the first class of the Ohio College of Dental Surgery 1847, and was appointed Demonstrator of Mechanical Dentistry and Metallurgy in this instituton. Later he was appointed Professor of Mechanical Dentistry and Metal-

lurgy. In 1853, on account of ill health, he removed to St. Louis, where he established the first dental depot west of the Mississippi river. He assisted in the organization of the Missouri State Dental Association and of the Missouri Dental College, and became a publisher and editor of The American Dental Review, the first dental journal ever published west of the Mississippi river. He contributed a number of papers of merit on Metallurgy and Mechanical Dentistry.



L. C. Ingersol

**L. C. Ingersol,** a native of Ohio, who practiced for many years at Keokuk, Iowa. He was a teacher in the University of Iowa, Dental Department, and an authority in the early days on Dental Histology.

W. D. Miller

**Willoughby Dayton Miller,** likely the greatest scientist our profession has yet produced, born August 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 The University of Berlin. Here his health gave away, and while convalescent he met Dr. F. P. Abbott, an American practitioner in that city. His acquaintance with Dr. Abbott 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 Kock. 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 the 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 Councilor" to the emperor. The fourth

international dental congress at St. Louis, 1904, bestowed upon him a gold medal for his paper, "A Study of Certain Questions Relating to Pathology to the Teeth". He was an honorary member of some 40 different professional organizations at the time of his death, 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.

**George L. Paine** practiced for nearly half a century at Xenia. He was a linguist of rare ability. For more than 40 years during the latter part of his life he daily read the Latin classics. He also spoke Latin fluently, having many eminent scholars as friends, with whom he conversed in the original Latin.

Among the living men prominent in American dentistry are a number from Ohio, whose fame and talents are not alone confined to dentistry. A few of these are:

**H. A. Smith,** dean of the Ohio College of Dental Surgery, who has exerted a marked influence as a dental educator.

**L. E. Custer** and **Weston A. Price,** electrical wizards and mechanical geniuses.

**L. P. Bethel,** editor of The Dental Summary, a talented writer of verse and prose.

**Wm. H. Whitslar,** amateur artist of merit and palmist. His collections of the outline of the hands of great dentists are rare and interesting.

**George H. Wilson,** well known as a writer and expert prosthesist.

**H. L. Ambler,** author of "Facts, Fads and Fancies," and "Tin and Its Combinations," and compiler of interesting dental historical data.

**Chas. R. Butler,** an accomplished worker in steel, jewel mountings, instrument making and other fine work, and a setter of precious stones.

**H. C. Brown,** bull's-eye rifle shot, and dental society enthusiast.

**M. H. Fletcher,** naturalist and scientific kite maker.

**F. R. Chapman,** collector of Indian relics.

**E. B. Lodge** and **L. L. Bosworth,** musicians and violinists.

**A. F. Emminger,** race horse enthusiast.

**C. M. Wright,** talented writer and advocate of prophylaxis. His fad is the "nurse". I am not informed whether he prefers a wet or dry.

**Henry Barnes,** a bold lake navigator.

**Ira Brown,** hydro-therapist.

**Frank L. Sage,** well known writer of short stories. One of the few dentists who have an annual income from their literary work.

**F. F. Douds** and **C. D. Miles,** both musicians with highly cultivated musical taste.

**W. Buzzell** and **L. S. Vinez,** both talented church organists.

**J. F. Siddall,** "the poet laureate" of northern Ohio.

Time will not permit me to go into further detail, yet I will mention a few other famous men who have contributed largely to dental science:

**Sir John Tomes,** of England.

**G. V. Black.**

**E. C. Kirk.**

**J. Leon Williams,** of England.

**A. H. Thompson.**

D. O. M. LeCron.

E. H. Angle.

J. D. Patterson and Chas. E. Esterly, both Ohioan's by birth.

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 beneficent 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."

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**DISCUSSION.**

**Dr. Edward C. Mills, Columbus:** To those who have listened to the valuable paper of the essayist, it is evident that the profession has in Dr. Thorpe, an able historian, and as a biographer, he is facile princeps.

In tracing our lineage back to our own professional forefathers, those illustrious names who gave to their calling that impetus which has elevated it to the dignity of a profession—a historian in passing over the successive generations of practitioners, pointing out those whose precepts have been a factor in this upward movement, must in a manner assume the role of a genealogist. We have heard of the genealogist, who in tracing his family tree, root and branch finally discovered far out on one of the branches, one member of the family hanging, and immediately ceased his research.

The earliest dental notice that ever appeared in this country, to our knowledge, is an article in the New York Weekly Journal, Jan. 6, 1735, as follows:

*Teeth drawn and old broken stumps taken out very safely and with much care, by James Mills, who was instructed in that

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*Dental Cosmos, Vol. 48, page 983.

art by the late James Reading, deceased, so famed for drawing teeth. He is to be spoke with at his shop in the house of the deceased near the old Slip Market.

Whether additional information relative to this James Mills, his fate etc., was brought to light and investigations ceased, I cannot say—if he was found suspended, cut him down, or obliterate that branch of our professional ancestry, that no reflections may be cast upon his namesakes in the profession today.

How the presentation of this subject has impressed the various members of this society I am unable to state; with me personally, it has touched a sympathetic chord. Some time since it was my privilege to walk through the aisles and cloisters of Westminster Abbey, to look upon the busts and tombs, and read the epitaphs of England's illustrious dead; the noiseless reverence of that hallowed place impressed me no more than do the results of the essayist's untiring research into the biographies of the pioneers of our profession, and the manner in which he has presented them to us this evening.

Though Dr. Joseph Lemaire is often referred to as the first practicing dentist in America, a diversity of opinion exists on this point. Robert Woofendale, from England, began practice in New York in 1766, and John Baker, of English parentage, was practicing in Philadelphia in 1767, and though an itinerant, practicing in Boston and New York, he was again practicing in Philadelphia in 1784, the year Joseph Lemaire first landed in that city. Though the name of John Baker may be unknown to fame as a dentist, and he had not acquired the attainments of some of his contemporaries, we must accord him a place in our ancestral tree, because under his precepts, Paul Revere and Isaac Greenwood Sr., of Boston, received their knowledge of dentistry. The latter, through his four sons, Isaac Jr., John, whose name has been immortalized in the dental profession as the dentist to George Washington, Clark and William Pitt Greenwood, all dentists, made a lasting imprint on American dentistry. These practitioners, having such a revered name as Horace Hayden among their students, their precepts went far toward moulding the destiny of their profession.

While this bit of history may be a digression from the paper, it is offered as evidence that the influence of dentists from our mother country was well grounded before the revolutionary period, at which time Lemaire and Gardette came from France.

There is one member of our profession, omitted by the essayist, to whom we should point with pride. I refer to Charles Willson Peale, probably the most famous artist America has ever produced; born Chestertown, Md., 1741, died in Philadelphia, 1827. Having an inventive and ingenious mind, and gifted by nature with creative powers, he was successively a silversmith, watchmaker, carver and dentist; credited by some authorities* as the first American manu-

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*Universal Cyclopedia, 1900. The Rise, Fall and Revival of Dental Prosthesis, B. J. Cigrand, 2nd edition, 1893, page 192.

facturer of mineral teeth. Turning his mind to art, he studied first in Boston, later at the Royal Academy in London.

To him belongs the distinction of painting the first portrait of George Washington, as a Virginia colonel, in 1772. He was a Revolutionary patriot—painted portraits of the most prominent officers of the Revolution—was a promoter of the Pennsylvania Academy of Fine Arts, opened the first American museum, and besides being an inventor of a variety of machines, published a number of scientific essays. His son, Rembrandt Peale, will ever hold an enviable position among our American artists for his portraits and literary contributions.

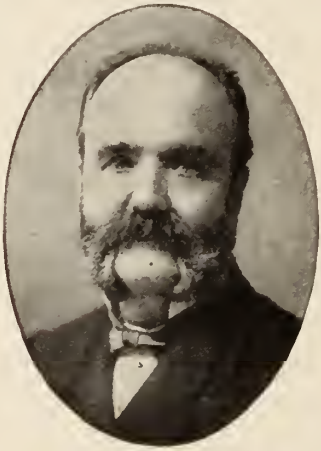
In closing my remarks, I desire to reiterate a few statements made by the essayist. Chapin A. Harris, founder in 1840, of the Baltimore College of Dental Surgery, the first dental college in the world, author of first dental dictionary, and of a work that has passed through more editions than any book ever published on dentistry; the first sole proprietor of a dental journal in 1850, (The American Journal of Dental Science, founded in 1839); studied dentistry in Chillicothe, Ohio.

James Taylor, founder of the Ohio Dental College in 1845, the second dental college; one of the founders and member of the editorial staff of the Dental Register, 1847; was born in Ross county, Ohio.

Chillicothe being my native heath, it is with no little satisfaction that I call attention to these distinguished confreres.

**Dr. H. L. Ambler, Cleveland, O.:** I wish to thank Dr. Thorpe for coming here and giving us such an interesting stereopticon lecture, and it certainly has been very instructive, both to ladies and gentlemen, or else they would not all have remained until eleven p. m.; this fact is the highest compliment that could have been paid to him. He deserves our thanks for showing us so many pictures of pioneer-professional plodders, and telling us so many interesting things about them. I believe we fully appreciate his work in this direction, and assure you that any one who has not attempted this kind of work, can hardly imagine the amount of correspondence, the number of personal interviews and expense involved in it. What is more appropriate than that we should know something about the men who made our profession? There is not a profession—law, art, medicine, theology and literature—that does not talk, write and print a great deal about their history and the men who made it. It is high time that we should arouse ourselves and do the same thing, and thus place ourselves on a level with them and thus raise ourselves to a higher plane in our own estimation and that of the public. If a copy of Dr. Thorpe's lecture could be sent to every adult in the state, it would do more to place the profession of dentistry in a proper light before the people, than anything that has been done since the state was admitted to the Union. By reading it, people would comprehend the fact that our pioneers were men of brains as shown by their writings, and men of brawn as shown by

their hard work in caring for the teeth and making so many ingenious instruments and appliances, and now we and the public are reaping, to a large extent, the benefits bestowed by our illustrious predecessors. Let the people be educated; let them be told that many men of high scholarship devoted their time and talents to the development of our chosen calling, and then they will have learned something which will be a mutual benefit.



Henry S. Chase

[On page 444 June Summary, by a shifting of cuts Dr. Henry S. Chase was not correctly illustrated, so we present his likeness above.—Ed.]

# EXCHANGE OF PRACTICAL IDEAS

[This department being an exchange of practical ideas, it depends upon our readers furnishing material to keep it going. Just a few practical ideas from each subscriber will make it of mutual benefit and practical worth. Are you willing to do your share? Help the good cause along by sending the editor a few practical suggestions. Send something today. Address Dr. L. P. Bethel, 1255 Neil Ave., Columbus, Ohio].

## HOW TO MAKE AN ELECTRIC GOLD ANNEALER.

By W. H. Reaben, D. D. S., McComb, Miss.

Last month I explained to you how you could make an electric porcelain furnace at a small cost. In describing these instruments and appliances it is with a view of helping those of you, situated as I am, who desire to be up-to-date, and yet have not sufficient income to purchase all the conveniences to be desired.

In making an electric gold annealer the first thing to procure is a "heating unit," of a one-pint water heater, made by the General Electric Co. This is a flat, disc-shaped affair, about $3\frac{1}{2}$ inches in diameter. The supply houses (General Electric) will usually sell this unit separately for about $1.50. Next, procure an old alarm clock, the round, nickel-plated kind, of the larger size, say about $4\frac{3}{4}$ inches in diameter. Get a sheet of mica, quite thin, and cut it to fit nicely within shell of alarm clock, which, by the way, is all of the clock you need, except the back. When you have placed the mica disc into the shell of the clock, it now occupies the same place that the glass front did. You then proceed to carefully place heat unit in close contact with the mica, introducing same from beneath so as to preclude disarrangement of coils of the heat unit. Now procure some sheet asbestos, made from the pads you can find in almost any hardware store—

pads made to set upon the dining table, upon which to place hot dishes. With this cut into strips, you nicely fill up all space between heat-unit and case. Drill holes through side of case through which pass screws or wires which will be necessary to hold heat-unit in firm contact with mica disc.

You now have an annealer that will work all right. If you wish to elaborate and make a more complete instrument, as the writer did, you first cut something from the height of case, this renders completed annealer more compact. To the side of case the writer attached a kind of hinge or swivel, through which a screw passes to fasten annealer to under surface of bracket table. When in use the annealer is rotated out to a convenient position, and when through with it it is turned until it is entirely under bracket table and out of the way. The back of the clock is slipped on bottom of the annealer also, to which binding posts are attached.

While the above annealer is not exactly "a thing of beauty," it is "a joy forever."

## A GOOD INVESTMENT MATERIAL.

**By J. B. Reeves, D. D. S., Orwell, Ohio.**

The fact that the majority of dentists are taking up gold inlay work leads me to suggest that it would be a good thing for your journal to give them the components of an investment for same that could be heated to a red heat without cracking or changing form. I have been casting practically all my gold filling for the past two or three months and have used different investment materials, but the most perfect and sure results have been by using three parts of lithowhite to one part of plaster of paris, well-mixed and sifted.

Lithowhite is what is called XXX grade of silex and costs eight cents a pound in 10-pound cans, or six cents a pound in 50-pound cans. So you see it makes a very cheap article, and it is far better than most of the compounds sold.

I write this as I have tested it and have made my work easier, both for my patients and for myself, and I sincerely believe a good deal better and lasting work.

## EXTRACTION OF TEETH.

By Charles L. Meriwether, D. M. D., Louisiana, Mo.

During the past decade there has been much written upon this subject; but I practiced my profession for some time in Thurber, a mining town in Texas, where dentists would starve if it were not for the extraction of teeth, and in this place I gained a few practical points which have stood the test of several years' experience and which I desire to publish for the benefit of others.

It is impossible to formulate a set of exact rules by which one can make a success of extracting without pain unless he is a good diagnostician of the shape and structure of the teeth and their fangs, and also the bony sockets which contain them.

The forceps should be selected by the doctor himself and should be of such size and shape as to allow a firm grasp of the hand, for the hands of different operators vary in size. They should be made of the best quality of steel in order to give strength and stiffness and at the same time toughness, so that they will not be liable to break. All know how much pain it causes when the forceps break during extracting.

After you have decided what forceps to use, the next thing is to use a local anesthetic that will thoroughly deaden the tissue and not cause any bad effects afterwards. The branch of therapeutics dealing with anesthetics being in its infancy, we have yet no ideal local anesthetic. The one that has given the best results, in my practice, is the solution of the muriate of cocain. This solution should be prepared fresh and the strength to be used depends upon the condition of your patient. I generally use a two per cent solution, and in making this solution fill a dram vial with distilled water (if the water is warm it is very much better), and to this I add two grains of cocain. In injecting the solution into gums which are sore, always inject a small amount on the side which has the least soreness and wait a short while before injecting again as that will deaden the sore tissue, and you will then be able to inject without pain to your patient. If the piston of your syringe goes down too easy, use sparingly, for it is either going into the systemic circulation which will

affect the heart, or it is spilling in the mouth, causing a disagreeable feeling in the tongue as well as in the surrounding tissues. However, if it requires all of your thumb pressure in forcing the solution into the tissue you can continue till the tissue becomes white or blanched. The tooth is then in such a condition that it can be extracted without pain. The syringe which you use should be aseptic, of small caliber with strong finger rests, so you can use great force when gums are hard. Fill it with the solution, push, and keep the plunger up until the medicine appears at the end of the needle point, for this expels the air and makes it ready for use. The main thing to bear in mind in extracting teeth is always to inject the solution so that the hemorrhage after extraction will carry off most of the medicine used. Never get excited during the operation, it will cause your patient to become uneasy.

# SUGGESTIONS

## REPAIRING A JACKET CROWN.

**W. A. Capon, Philadelphia, Pa.**

The repair most likely to be needed is re-attaching a veneer. This, if not well attached, generally comes free from the metal, but if the metal tears away with it a new crown must be made. If the framework is intact and firm in place, loosen all the free edges with a thin, sharp, flat instrument, getting out the cement as much as possible and then use an old scaling instrument as a hook at the neck and in many cases the frame will come away, and with a little straightening be as good as ever. Sometimes a pair of pinchers nipping the free point of the platinum will draw it off when other means fail. When removed, clean all the cement out of it and put under the blowpipe, making it clean for new porcelain. If the same veneer is used all the old porcelain should be ground away and the metal framework be put in front of the furnace for a few minutes to burn out any impurities; then proceed as if the crown were new. The time usually consumed for this repair is an hour.

An unusual cause making repair necessary is the cutting away of the palatine surface of the occluding teeth. I have several cases which have required this mending after several years' use and in every case the porcelain was intact. If they are worn sufficiently to be easily taken off, clean out the cement, burnish thin platinum or gold foil on the tooth where the cap has been worn through, replace the crown and attach the two with wax; then withdraw them and invest. Solder with 21k. or 22k. gold, and re-cement the crown. It will be none the worse for the repair and will probably last many years longer if ordinary care is given in the soldering process.—Pacific Dental Gazette.

# CORRESPONDENCE

## WHO MADE THE FIRST INLAY?

I note in the "Aftermath," page 414, Summary for May, 1908, under the caption, "The First Inlays," seemingly a challenge for proof of their use before 1887. Now, what is an inlay? The question is just now before the profession, "Who made the first cast inlay?" Now, what is a cast inlay? We take a plaster model, make from it a sand mold and pour zinc into the sand mold, and get a "cast." We pour lead into a bullet mold and get a cast lead bullet. We take a piece of gold or platinum foil or plate, make it conform accurately to the walls of a cavity in a human tooth, and so get a mold into which we fuse or pour gold. Is not that as much a casting as is the zinc duplicate of the plaster model? If it is not as truly a cast inlay as an inlay cast in a closed mold, what is it? Some have taken an impression of a cavity, made from it a mold in investment material, fused gold in the mold, and quickly pressed it down into the mold, and got, if not a cast inlay, what? A few years ago, for a time, a workman in my laboratory, made all the masticating portion of gold-shell crowns by fusing sufficient gold, dropping it into the selected depression in a die-plate and quickly pressing it down with the face of a small hammer. If that was not casting under pressure, what shall we call it, drop-forging?

Long years ago expert dentists ground a portion of a natural or artificial tooth to fit into a cavity, and secured it in position by packing gold around it. This was done before the introduction of cements, and they came into use about 1857. They were inlays. Any one is safe in saying when they made their first inlay; and may be equally so in saying when they first saw an inlay, but to say when, or by whom the first inlay was made is a question; who can answer? Who

knows all there is to know of the past of dentistry is a very wise one. Recollections in these matters do not count, memories are treacherous, refer to records, if you please.

Before me is a little work entitled, "A Popular Treatise on the Structure, Diseases and Treatment of the Human Teeth," by J. L. Murphy, London, 1837. On page 200, he has this to say:

"Glass of any color may be bought in the cane ready for use. All dentists ought to be provided with some of the various colors, as it is useful in many instances; thus, in a case where a cavity is in front of a cutting tooth, the amalgam stopping is objectionable from its metallic appearance; but, if a small piece of platinum be cut so as to fit the mouth of this cavity, and at each side of this a few catching points be soldered, glass, the color of the teeth, may be fused on one side, and the cavity being partly stopped with amalgam, the catching points on the side uncovered by the glass, are pressed into the amalgam firmly, and in the course of an hour or two the glazed platinum becomes fixed by the hardening of the amalgam: this operation, if neatly performed, must give the greatest satisfaction to the patient. It is two years since the idea of trying the experiment suggested itself to me, and since then I have often practiced it, and I can say always satisfactorily."

Now, if this operation of Mr. Murphy's was not an inlay, what shall we call it? This same gentleman made gold-shell crowns, and glazed the fronts of them if they were conspicuous. He was not the first, however, to do this. Mons. Mouton, a Paris dentist describes gold-shell crowns for use in such cases as we now use them, and when placed on front teeth enameled them to the color of the adjoining teeth. His work was published in 1746, and since that date mention of them constantly occurs in dental literature. Lots and lots of things have been forgotten, to be rediscovered and claimed as new, but these old records in black and white, which so many look upon as trash, are constantly proclaiming in the words of the wise men, "There is nothing new under the sun." The moral of it all is this: We should not be so much wrapped up with the present as to forget the past. Many a good idea long discarded, modernized, may prove as good as new. A broadly educated man does not con-

fine himself to his own calling exclusively, nor yet confine his wisdom getting to things belonging to the period since he was born. Inlay nomenclature is becoming quite complicated. We may have glass inlays, enamel inlays, porcelain inlays, gold matrix inlays, hollow inlays, Taggart inlays, centrifugal inlays, the kind that I make, the kind that you make, the kind that the other fellow makes, and other kinds too numerous to mention, so it is important to be explicit when making claims of originality.

Yours truly,

WILLIAM H. TRUEMAN,

Philadelphia, Pa.

## WHO MADE THE FIRST INLAY?

In your May number, 1908, under the head of "Aftermath" appears an article headed, "The First Inlay," giving credit to Dr. O. H. Simpson, of Dodge City, Kansas, of having produced the first inlay in 1887, before the Topeka, Kansas, Dental Society. You ask that "If any one made them in practice before this we would like to know it."

On referring to my register for the year 1884, I find quite a number (small number) of inlay fillings registered. They were made across the labial part of the upper central incisors. The inlay was prepared by selecting an artificial tooth the same shade as the natural tooth. It was then ground on the corundum wheel until about the proper thickness was attained, then fastened on the end of a hard piece of wood with shellac and ground to the width of the cavity. Repeated trying of the inlay in the cavity determined the width to a nicety. When ready to place, if the groove extended to the approximal spaces, this was filled in with No. 4 gold foil, the inlay being backed at each approximal aspect to give the gold required thickness. The inlay was wedged in the cavity by planing gold foil on each edge, allowing a sufficient amount to extend out of the cavity, to allow of thorough condensing after the filling of the approximal aspect. Some of these fillings remain in teeth today.

I claim nothing for originality, as I must have obtained my idea from reading the journals at that time.

F. S. CASPER,

Austin, Texas.


## WISCONSIN STATE DENTAL SOCIETY

The 38th annual meeting of the Wisconsin State Dental Society will be held at La Crosse, July 21, 22 and 23, 1908.

Wednesday and Thursday mornings will be devoted to clinics, other sessions to papers and discussions.

HARVEY N. JACKSON, Sec'y,
Wells Bldg., Milwaukee.

## RESOLUTION ADOPTED BY THE SOUTHWESTERN MICHIGAN DENTAL SOCIETY.

Whereas the Michigan State Dental Society, in a most commendable spirit anticipates the organization of various district dental societies, and

Whereas, the Southwestern Michigan Dental Society fully recognizes the good that will arise from such affiliated organizations, therefore be it

Resolved, that while the Southwestern Michigan Dental Society will remain as an independent organization, its membership earnestly pledges itself to assist the state committee to organize within its territory two or more district dental societies to be affiliated with the state society;

Furthermore, the Southwestern Michigan Dental Society will prosecute a campaign in the interests of these district societies with a vigorous and faithful purpose.

## NEW JERSEY STATE DENTAL SOCIETY.

On account of the large increase in clinics and exhibits, the New Jersey State Dental Society have been compelled to secure larger quarters than heretofore, and the executive committee have been able to secure the beautiful new Casino, situated on the Beach Front, with excellent accommodations for clinics, exhibits and meetings and abundant space, perfect light, delightful ocean breeze.

The Casino is the most superior meeting place in Asbury

Park, and within easy access from trolleys and trains. To realize the beauties and charms of this new meeting place will necessitate attendance at the annual meeting of the New Jersey State Society.

Meeting commences as heretofore announced, July 15, and continues through the 16th and 17th.

CHARLES A. MEEKER, D. D. S., Sec'y,
29 Fulton st., Newark, N. J.

## ASSISTANCE WANTED FROM DENTAL SOCIETIES.

The following circular for dental societies is self-explanatory:

"Our object in writing your society is to enlist your co-operative efforts in having the president of your society appoint a committee, as our society has done, for the purpose of investigating pyorrhea alveolaris, its causes, symptoms (in its earlier stages), origin, treatment, cure and its prevention. We are to report at our next annual meeting.

"This disease is the knottiest problem that confronts our profession, and our mission is, therefore, to write to all dental societies with a view of getting their co-operation by appointing committees to help in this investigation, so as to concrete the opinions of the profession at large on this disease.

"The list of questions which you also receive with this letter is to be answered by your committee and to be forwarded to the chairman of this committee. We hope in this way to arrive at a settlement of some of the questions, and we may in the future be able to obtain aid from the government to ferret out the cause, treatment, cure and prevention of this disease.

Yours fraternally,
E. H. RAMELLI, Chairman,
No. 620 Canal street, New Orleans, La.
Committee,
DR. JULES J. SARRAZIN,
DR. H. E. BELDEN,
DR E. H. RAMELLI."

### QUESTIONS.

Do you consider pyorrhea alveolaris incurable?

Do you know of any cases that have been cured?

In what stages were the cases when first under observation?

Have you ever recognized the disease before serumal calculus appeared?

What were the symptoms?

Do you think salavary calculus has any effect on the disease?

Were the patients under your observation of robust or delicate physique?

Have you ever seen the disease in youth, and at what age?

Do you know of any properly treated devitalized teeth being lost by the disease?

Did the devitalization and root canal sterilization and filling precede or follow pyorrhea development?

At what time of life do you find treatment most efficacious?

Do you find pyorrhea more in males or in females?

Do you find it more in the upper or lower jaw?

Does the disease attack all teeth alike?

Were patients ever afflicted with syphilis, tuberculosis, uricaemia, chronic indigestion or chronic constipation?

Have you ever seen cases where malocclusion was a cause?

Do you think auto-intoxication a cause?

Do you think uricaemia a cause?

Is it a disease of the gum?

Is it a disease of the alveolar process?

Is it a disease of the peridental membrane?

(It is of the utmost importance, in order to insure the success of this vital investigation, that your society should take this matter up at once and favor us with an early answer, giving the disposition decided upon at your meeting and action taken.)

# AFTERMATH

**Mississippi State Dental Examinations.**—Fifty applicants—twenty-eight passed.

**Dental Board Appointment.**—Dr. T. B. Moore, of Rising Sun, Md., has been appointed a member of the Maryland State Dental Board by Governor Crothers.

**First District (Mich.) Dental Society** elected the following officers: President, George F. Burke; vice-president, E. M. Graham; secretary, J. A. Walker; treasurer, R. M. Muir.

**Reappointed a Member of State Board of Examiners.**—Gov. Patterson has appointed Dr. B. D. Brabson, of Knoxville, a member of the State Board of Dental Examiners to succeed himself.

**Robberies.**—Dr. A. A. Marsteller, Washington, D. C., May 1, gold valued at $30. Drs. J. T. Crews, J. A. Arrington and J. A. Newman, of Jackson, Tenn., May 17, gold material and other valuables aggregating more than $200.

**Polish Dental Society Formed.**—The Polish Dental Society of America; promote knowledge in the scope of dentistry; Dr. K. B. Zielitski, Dr. W. L. Rystat, Dr. W. A. Gorney.

**Vermont Seeking Legislation to Permit Examination of Teeth of School Children.**—At the annual meeting of the Vermont Dental Society, President E. H. Kent, of Barre, urged the passage of a new law to permit the examination of pupils in the public schools as to the state of their teeth in much the same manner as ears and eyes are now examined.

**Dr. S. W. Hussey, Dental Surgeon, Ordered to Ft. Snelling.**—Dental Surgeon Samuel W. Hussey, U. S. A., who has been making an extended tour of the department of Dakota, performing dental work for the officers and enlisted men, has been ordered to return to his station at Ft. Snelling upon the completion of his work at Ft. Assiniboine, where the members of the Third Battalion of the Second Regiment, recently returned from the Philippines, are now quartered.

**Iowa Dental Society** elected the following officers: C. W. Bruner, of Waterloo, president; Dr. F. M. Hunt, of Des Moines, vice-president. The other officers, who were re-elected, are: G. W. Singluff, of Burlington, treasurer; T. F. Cooke, of Burlington, secretary; H. H. Volland, of Iowa City, superintendent of district societies.

**Nebraska State Dental Society** elected the following officers: President, Dr. E. A Meservey, of Kearney; vice-president, Dr. J. M. Prime, of Oxford; secretary, Dr. E. H. Breuning, of Omaha; treasurer, Dr. H. T. King, of Fremont; members of executive council for three years, Dr. W. R. Smith, of Pawnee City, Dr. C. C. Farrell, of Cozad and Dr. John J. Foster, of Omaha.

**Tennessee State Dental Society** elected the following officers: President, Dr. John R. Beach, of Clarksville; first vice-president, Dr. C. H. Taylor, of Memphis; second vice-president, Dr. Stanley L. Rich, of Nashville; recording secretary, Dr. Charles A. Tavel, of Memphis; corresponding secretary, Dr. Delan Kinney, of Nashville, and treasurer, Dr. F. W. Meacham, of Chattanooga.

**Arkansas State Dental Society** elected the following officers: Dr. R. B. Saddler, of Paris, was elected president for the ensuing year, Dr. J. E. Andres, of Harrison, first vice-president; Dr. A. G. Ragland, of Ft. Smith, second vice-president; Dr. L. K. Charles, of Eureka Springs, secretary; Dr. I. M. Sternburg, of Ft. Smith, corresponding secretary, and Dr. W. T. Rowland, of Bentonville, treasurer.

**Large Dental Fees.**—Edwin J. Richardson, the dentist of Brook street, Grosvenor square, London, Eng., is claiming from Mr. Fremlin, a brewer of Maidstone, £570 for dental services rendered to his wife. The claim is contested on the ground that the charges were not fair and reasonable. Cross-examined, Mr. Richardson admitted that he had charged as much as £3,000 for putting a mouth in order.—London Chronicle.

**National Dental Association (Southern Branch)** elected the following officers: J. E. Chase, Ocala, Fla., president; H. Clay Hassell, Tuskaloosa, first vice-president; William W. Westmoreland, Columbus, Miss., second vice-president; Charles L. Gunn, Gadsden, Ala., third vice-president; C. H. Frink, Fernandina, Fla., recording secretary; W. G. Mason, Tampa, corresponding secretary, and B. D. Brobson, Knoxville, Tenn., treasurer.

**Association of State University Dental Schools.**—State universities which have dental colleges are to form a new national dental association to raise the standard of the dental colleges of the United States. The new association will include only the four colleges connected with state universities and two private schools. The present association, which will be dissolved, includes fifty-four colleges, of which fifty are private institutions.—Minneapolis Journal.

**Dr. V. E. Turner Honor Guest at Banquet.**—May 22 the members of the Raleigh, N. C., Dental Society and distinguished guests from various parts of the state, participated in delightful ceremonies in honor of the fiftieth anniversary of the professional career of Dr. V. E. Turner, who has practiced dentistry with success for the past half-century—1858 to 1908—in Raleigh. The hosts were the Raleigh Dental Society, Dr. Turner, who is the president of the society, being the guest of honor.

**Wood County (Ohio) Dental Society.**—This society meets monthly. At their meeting in May Dr. Thomas Lea read a paper on prophylaxis that was helpful and brought out much discussion, and Dr. Grapper read a paper on "Treatments of Infected Teeth." A social and dinner was not a small part of the evening's enjoyment. During the months of June, July and August the members of the society will close their respective offices at noon on Wednesday of each week and use the afternoon for an outing and recreation.

**Deaths.**—Dr. H. P. Peterson, Owosso, Mich., aged 63 years. Dr. Frank H. Lambert, aged 35 years, drowned at Lubec Narrows, Me., May 13. Dr. John J. O'Connell, of Danville, Ill., at Derry, N. H., aged 36 years. Dr. Warren E. Rose, Okawville, Ill., aged 35 years. Dr. Hiram L. Woodburn, of San Francisco, at Berkeley, Cal., May 17, of heart failure. Dr. W. F. Stansbury, of Lexington, Miss., May 23, of heart failure. Dr. R. E. Galvin, Louisville, Ky., May 25, of asthma. Dr. T. D. Leonard, Reidville, S. C., drowned at Greer, S. C., May 25.

**Set of Teeth Made Patient Whistle.**—A young lady of Missouri was recently sued by a dentist for a bill of $46. She declined to pay it because her teeth made her whistle when she talked. The dentist in vain tried to show that she was a cold proposition; that in one of the department stores she had a dress made over seven times and then it didn't suit her; that he had done a workmanlike job, but when she stood up and whistled to the jury the dentist didn't have a leg to stand on, and the fair defendant was given a verdict.

**Memorial to Dr. Horace Wells from Spanish Odontological Society.**—The tablet in honor of Dr. Horace Wells, discoverer of anesthesia, which was sent to this country from Madrid by the Spanish Odontological Society, has reached Hartford by way of the Spanish minister at Washington. The memorial is composed of a silver plate surrounded by a wreath of white metal showing laurel leaves on one side and the oak on the other, with laurel berries in white and acorns in gilt. Above the plate is an ancient lamp with its light burning. The tablet is thirty-three inches by two feet. It bears the following inscription: "The Spanish Odontological Society to Horace Wells. Madrid, January 14, 1907."—Science.

**Dental Office in New Italian Liner.**—The competition among steamship companies for novelties on board new steamships, by which the impressionable passenger may be captured, has led to all sorts of innovations on the transatlantic liners launched in the past few years.

It remained, however, for the Principe Di Udine of the Lloyd Sabaudo Fast Italian Mail Line, to include a dentist's office among her attractions. Florists' booths, massage rooms, elevators, palm gardens, candy stores, Turkish parlors, and the like have become an old story, and have been accepted by ocean travelers as things to be expected. How the dentist will be received is problematical.

**Northern Ohio Dental Society** elected the following officers: President, Dr. D. H. Ziegler, of Cleveland; vice-president, Dr. W. A. Siddal, of Cleveland; members of executive committee, Dr. F. M. Casto, of Cleveland, chairman, one year, Dr, G. F. Woodbury, of Cleveland, two years, Dr. J. H. Wible, of Canton, three years; recording secretary, L. G. Vinez, of Louisville; treasurer, Dr. S. B. Dewey, of Cleveland. In his address to the association, President D. A. Allen, of Toledo advocated laws to prevent charlatans from practicing dentistry in Ohio, and asked that the teeth of school children be examined. His sentiments were endorsed by the convention. A contribution of $100 was made by the association to the memorial fund for the late Dr. W. D. Miller.

**Dental Board Enforcing the Law.**—Dr. C. H. Bartlett, president of the State Board of Dental Examiners, addressed a communication to parties contemplating practice in West Virginia, enclosing a copy of the state law bearing on the practice of dentistry in the state, and requested that they carefully consider the provisions of the law before they attempted to engage in business here.

The law provides that dentists shall be registered in the state, and also dentists advertising under a business name shall also publish the names of all persons who are connected with the firm, which had not been done on the part of those who were to operate the dental parlors. It was evidently clear that the parties realized that they had encountered a strong obstacle, and decided not to take the chance.

**Dental Inspector for Schools in New Jersey.**—The appointment of a dental inspector for the schools was decided upon at a meeting of the Board of Education, in Elizabeth, New Jersey. He will get $250 a year for his services. The action was taken in the adoption of the following committee report:

Your special committee, appointed to investigate the question of dental inspection for children in public schools, respectfully reports that the matter has had careful consideration; that your committee is convinced that all children should be taught to care for their teeth, and that it is the duty of the school authorities to take such action as will result in affording all necessary information to the children under their charge.

Your committee therefore recommends that one dental inspector be appointed and his duties defined by rules to be adopted by the Board of Education; that the salary of the inspector be $250 per annum; that his term be for one year; that he act under the supervision of a member of the New Jersey State Dental Society to be appointed by the Board of Education, such supervisor to serve without compensation and during the pleasure of the Board of Education.

### BEWARE OF SUBSCRIPTION SOLICITORS.

Since our warning to subscribers a month or two ago, a number of complaints have been sent the publishers of Dental Summary, about solicitors taking subscriptions for The Summary and some other dental journals at a reduced price of $1.00 for the two journals. They demand pay in advance, and, of course, not being authorized agents, they pocket the money and the subscriber is out the amount he pays. Do not subscribe of any soliciting agent for The Summary. Send Subscription direct to the publishers, or through some other reliable dental depot.

**An Interesting Circular.**—The following is a copy of a circular distributed in Boston, Mass., in 1800:

## Mr. DUBUISSON,

## DENTIST, FROM PHILADELPHIA,

Respectfully informs the public that he will reside a few days ~~at the house of Mrs Kimball~~ at the house of Mrs Bulkeley Street where he will be happy to receive the commands of those who may please to favor him with their patronage.

He cleans, separates, files, plugs, and extracts teeth; sets straight those inclined in any direction, makes and places artificial ones, whole set or sets with such care and attention, that they seem natural—he transplants natural teeth, and likewise cures all diseases of the gums, even the fistula, and restores them to their wonted elasticity.

He will, if desired, attend the commands of ladies and gentlemen at their houses.

He Keeps opiat for cleaning the teeth likewise Elexir for preserving the gums.

# REGULAR CONTRIBUTIONS

## THE ELIMINATION OF ALL CONSPICUOUS CAVITIES AND FILLINGS IN THE ANTERIOR TEETH.*

By C. H. Land, L. D. S., Detroit, Mich.

It is a great pleasure for me to meet with you again and endeavor to introduce some advances in dental art. I have realized for a great many years the difficulty of bringing before dental associations technical and complicated operations. In some instances it may require from three to ten days to prepare the clinic. And then you are able to see but part of the work within the short time provided at dental meetings. Consequently, whenever I do accept an invitation to a meeting I make it a point to arrive sufficiently in advance to make the clinic worth while, or I do not go. For this reason I am able to attend but few of the meetings. After I have presented this paper and my clinic, you will realize how many obstacles are encountered in bringing about a proper representation.

I have chosen for my subject: "The Elimination of all Conspicuous Cavities and Fillings in the Anterior Teeth." I do not assert this without pause nor without absolute proof of its results. I come to you with 23 years of practical experience in this specialty. It is more than 22 years since I gave a clinic before the Michigan State Dental Society, and this same mouth is preserved up to the present time without the loss of any tooth structure.

*Read before the Southwestern Michigan Dental Society, April, 1908.

## GROUP X

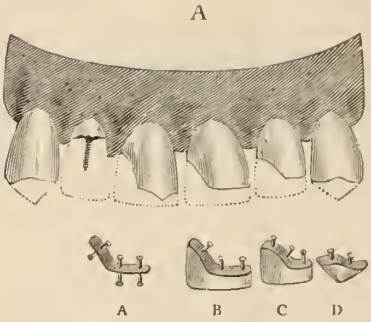



Fig. 1.

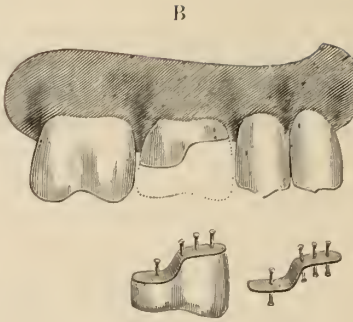
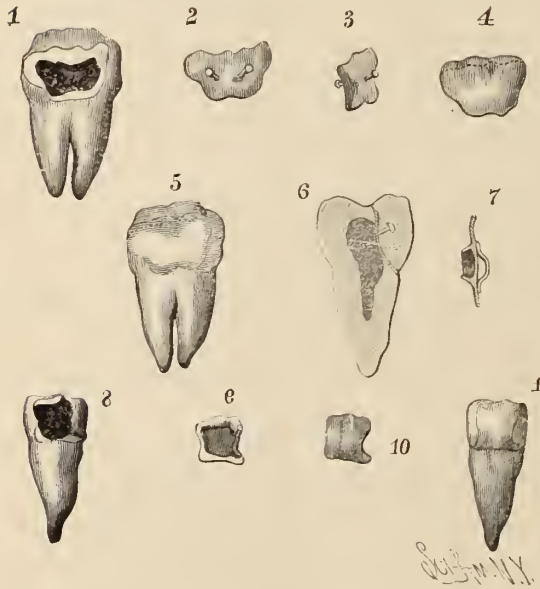



Fig. 2

### GLASS, PORCELAIN AND GOLD INLAY SYSTEM.

Patented December 20, 1887.—No. 375,167.

Patented June 23, 1891.—No. 454,566.*




Figs. 1 and 8 – Cavity in tooth.

Figs. 2 and 9—Metal matrix or impression.

Figs. 3 and 10—Side view of the matrix or mould.

Fig. 4—*Section* or *Plug* completed.

Figs. 5 and 11—Sections or stopper cemented or amalgamated in the cavity.

Figs. 6 and 7—Modifications of the work; also see illustrations A and B.

*These patents were presented to the dental profession free from royalties. See published declaration in Independent Practitioner, February and August numbers, 1887. Also see August issue of 1886, and patent No. 454,566, which include the general claims for both the gold matrices and cast gold inlays.—C. H. L.

In illustration D, Fig. 1 represents classes of defective teeth suitable to be restored by means of the metallic enamel jackets. Figs. from 2 to 10 illustrate progressive stages of the work. Fig. 11, teeth as they appear when completed. No pulps destroyed.

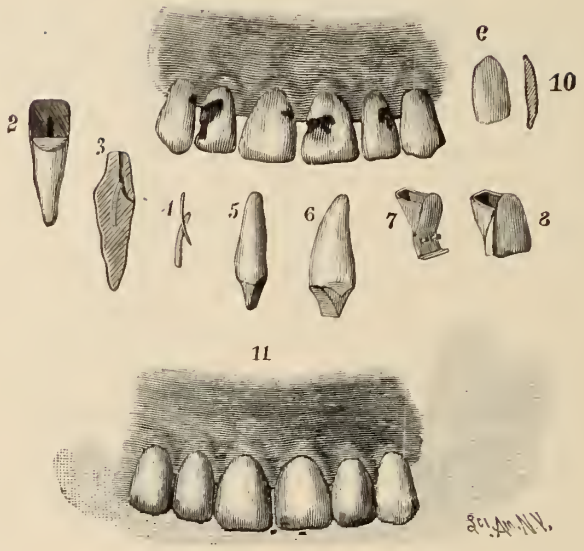
When I first started in porcelain dental art it was designated as: "Enameled Metallic Coatings and Fillings, a New Method of Filling Teeth." See illustrations A-B-C-E-F which were published in the Independent Practitioner, in August, 1886-87, and also in the Scientific American. The 1886 article was read before the Central Dental Association of northern New Jersey, in October, 1886. Group X illustrates the various methods of that period which were exhibited to numerous members of the American Dental Association in that year. Illustrations D were my old jacket crowns. Two of them were adjusted for the wife of a prominent Buffalo dentist just previous to the meeting at Niagara Falls. This was the older method that I used to eliminate all cavities about 18 or even 22 years ago. I followed that until within the last seven years, when, by means of a new cement, I found that the metal could, to a large extent, be eliminated. This cement also produced better color, contour and strength, and enables me to almost dispense with the 60 modifications of restorations, as shown in group X. There is scarcely one of them that I would practice now after the plan of the older methods.

The illustrations in group XX are the modern veneers or hoods. Perceiving how much more could be accomplished with the all-porcelain hoods, I immediately sent for some of the earlier cases of jacket crowns, and for one patient removed five in which the pulps were as sound as when the caps were adjusted 15 years before. In all except the devitalized teeth the cement adhered to the tooth structure so firmly that I was obliged to chisel it off, and invariably the tooth structure was perfectly sound and wholesome beneath the caps. Since that time I have made it a regular business, as fast as my old patients come in, to take off the old metal caps and replace them with the new form of hoods.

What I mean by the elimination of fillings for teeth is simply a substitution of the enameling process for filling with inlays. I call the inlay work patch-work because it is impossible to gain sufficient depth in the anterior parts and between the teeth without having the opacity of the cement show through. Therefore not only are the irritating metal bands done away with, but greater translucency is secured, and this by the use of the minimum quantity of cement.

## GROUP X

D




E

F

Before Completion

After Completion

Engraving XVIII, group XX represents both decay and irregularity. Every one of these teeth can be made to appear normal, both as to the art of orthodontia and prosthodontia, without destruction of the pulp and with very little pain. In the operation that I shall present tomorrow, eight teeth will be coated with porcelain. The defects are similar to those in engravings E and F, group X.

I have recently returned from giving a clinic before the Montreal Dental Club where four teeth were treated in which were eight cavities, all extremely sensitive, the patient experiencing but little pain. Take the most sensitive tooth you can find, and I shall agree to remove all the enamel without causing as much pain as in the adjustment of a good-sized gold filling. In these two cases the total number of teeth re-enameled was twelve, the operation requiring seven days. This convinced those who witnessed the manipulation that it is comparatively easy to remove, if necessary, all that remains of the normal enamel.

Artificial enamel composed of high-grade porcelain will in the majority of cases prove superior to nature. You may find some teeth like those shown in engravings VII-VIII, group XX. It will be observed that the crown portion in VIII is longer than in illustration VII. One represents youth, the other old age. In the young teeth the pulp has not receded, the dentin is more sensitive. However, reduce all as nearly as possible to the proportions in engraving VII. The greater the bulk of the porcelain, the greater the translucency in the mass, the greater the consequent strength and durability. Cut away enough of the natural enamel and dentin and the new form of cement will do the rest.

I have a case, demonstrated in Chicago during the World's Columbian Exposition (I know that there are men present who are thoroughly familiar with it), in which there were 31 teeth covered with porcelain jacket crowns and gold caps. Within the last four years I have removed eight of them, also two of the gold caps and replaced them with the improved all-porcelain hoods or veneers. The stubs were not more than one-sixteenth inch above the gum and yet no decay had occurred during the 15 years. The history of the enameled metallic jacket crown has never been published properly. For when I applied for a patent and secured it, the only

## GROUP X

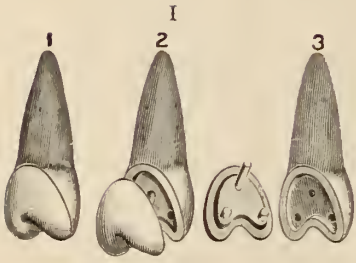



Plate V

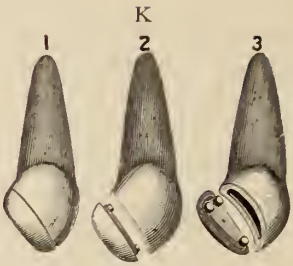



Plate IV

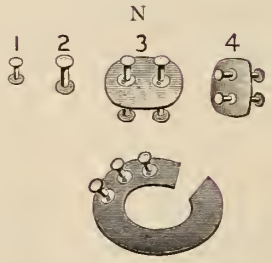



Plate X

improvement consisted in adding the veneer, because Dr. Charles Blake, of San Francisco, had antedated my patent a year or two. His idea was to perforate the platinum hood and fire on the body. He wrote a letter, which I have with me for your inspection, and in which he acknowledged the difference; I think that his patent was issued in 1883. At any rate it antedated mine.

You will notice that I gave demonstrations of these jacket or metallic enamel crowns in 1885, and you will find the fact recorded in the Dental Register, in February, 1886. The process was reduced to practice in June, 1885, in the treatment of the undeveloped teeth, shown in group X, engravings V-W. The patient was then a girl of 15 years. She is now living in Chicago and the caps at the present time are thoroughly useful. In this instance I left the platinum beneath the porcelain.

When the little patient returned to school the day after the operation, her companion asked: "What have you been doing with your teeth?" She answered, "Can't you see?" "No," replied her friend, "you look so funny." "Well," said the little girl, "they have overcoats on." She gave them a very good name.

Today the new enamel hood, as shown in engravings IV-VI-VIII-XIV, are just one or two hundred per cent better than the old jacket crown. And when you take into consideration that you have only to remove a small amount of dentin along the gum and a small portion of the enamel in order to restore defective teeth to their normal condition, and at the same time preserving the pulp, it is an achievement worthy the art.

The ancients did make bridge work and there is evidence that they filled teeth with gold and performed an amount of extraction that is wholly unnecessary today.

When the eroded teeth, shown in engravings XA-XII-III-II-IV-VI-VIII, group XX, are restored, and in addition the cavities shown in engravings XV-XVI-XVII-XVIII-XIX are considered together with the illustrations in group X, alphabetically arranged from A to Y, is not the title of my paper justified?

Dating as far back as 400 or 600 years before the Christian era, the process of decay in perfectly sound and normal

## GROUP X

O

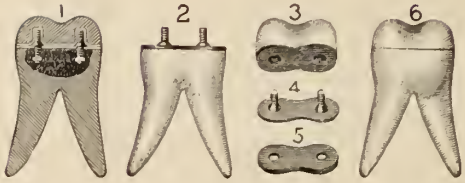
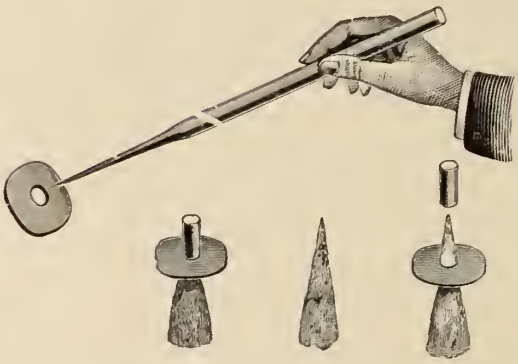


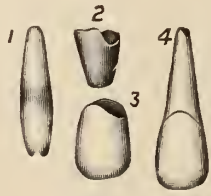

Plate XI

T



IX

V




(A)

W

(B)

tooth structure has caused earnest effort to alleviate distress and restrict decay; and at the present time brings us to the question, "How much have we accomplished in appliances or systems of practice that will palliate or cure conditions?" At first the heroic method of extraction was resorted to. This was barbaric and permissible merely because ignorance and poverty provided nothing better. The remedy loses none of its barbarism because continued by too many respectable practitioners of the present time.

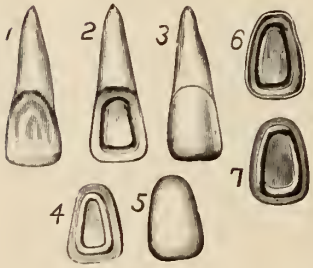
Hence the discovery of methods of filling teeth.

However, though these methods have accomplished great good, yet in view of more recent scientific achievements, much harm has been done, and like the evil of tooth pulling, through the false practice of exaggerated ideals, many comparatively valuable processes are exploited to such an extent as to become injurious to health. Consequently, each class of materials, such as amalgam, cement, gutta-percha, gold, porcelain, etc., is, or has been, under the ban of overestimation; witness the present craze for cast gold inlays and appliances too numerous for consideration.

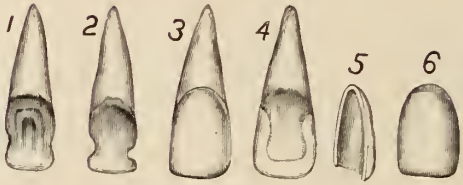
I offer the following quotations as an aid to the better comprehension of my contentions:

**By G. S. Perry, D. D. S., New York, N. Y.**—(Extract from Dental Cosmos.) You remember that for a great many years I have missed no opportunity to protest against the displays of gold in our work upon the teeth. And for still many years I have pleaded for the restoration of their shapes in filling; in season and out this plea dates back over a quarter of a century. All these years I have met with discouragement all along the line, but I have never for a moment lost hope. I have never doubted that in time our profession would be aroused to a fuller realization of the marvelous beauty, as well as utility, of the human teeth, and in its work upon them be filled with more of the spirit of reverence that the true artist always feels when face to face with nature, the great source of all inspiration. In the early days the great sin of our profession was the disregard of the shape of the teeth. The separating file and the Arthur disk wrought ruin wherever the pseudo-science—not the art—of dentistry prevailed. Then came the gold crown with its vulgar bid for practice; then, as if to show to what depths of bad tastes some people can fall, came the diamond flashing in the human mouth like the headlight of an engine. Fortunately this was a freak of eccentricity and was not practiced by any respectable practitioner. Shades of the great departed in art—what must you

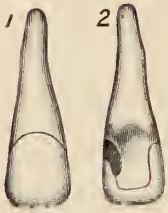
## GROUP XX



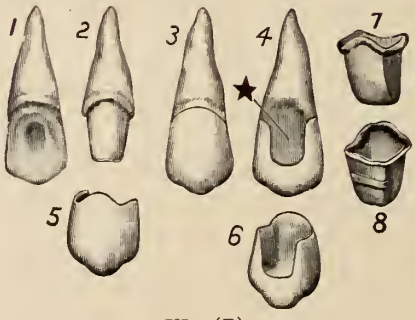

C– II



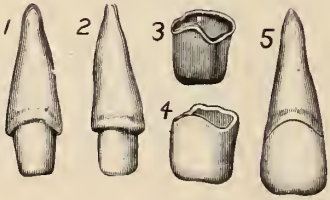

III




IV—8 B




VI—(P)




VII—7 B


VIII—(S)

think of us if you are given the power to see us when we do such things?

But the hour of delivery is near at hand. The introduction of porcelain restorations is bringing about a rapid change. It is no longer necessary to use gold in the front of the mouth, and the glittering display of that inharmonious material is a thing of the past in the best practice of today. The demonstration of the possibility of such practices insures its adoption, for our patients after seeing it will have nothing else. Most of them are sure to have the artistic instinct, if we have not, and we are compelled to fall in and march with the procession, or be left behind.

I did not suppose that I should live to see the time when such a rapid development of the artistic side of our profession could occur. A very great many years ago, before this society, I predicted that the time would come when the display of gold in the human mouth would be considered barbarous. That time has come.—Read before the New York Odontological Society, February 17, 1903.

**"Gold not the Ideal Filling." By Norman W. Kingsley, D. D. S., New York, N. Y.**—(Extract from Items of Interest, Sept., 1898.)

Gold fillings in teeth are unsightly and savor only of barbaric splendor. It is the savage alone who would decorate his teeth with gold. Such conspicuous exhibitions of the jeweler's art violate esthetic taste and would not be tolerated by any refined person were it not that in this country people have become so accustomed to these expositions, and with it possessed of the idea that in this way only can they have their teeth preserved, that they submit to that which would otherwise be grossly offensive.

It is bad enough when gold becomes a necessity for the preservation of the teeth from further decay, but when the employment of gold is sought for the purpose of display and to attract attention, it is an offense against all refinement and culture.

I once saw a passenger, dressed like a lady, on board an Atlantic steamer, whose upper teeth were nearly all gold. It was subsequently learned that she was of the demi-monde and used this means to attract attention. While small pieces of gold in teeth that are exposed to observation are unsightly enough, the introducing of entire gold crowns is an offense that only a savage would take pride in.

**Dr. W. T. Reeves, Chicago.**—(Extract.)

Again, there are those patients for whom you have prepared a cavity after a fashion, and have put in a gold filling, knowing all the time that you have not done justice to yourself and that sooner or later the operation fails and that the second condition will be worse than the first. You excuse yourself on the ground that you did the best that you could, under the circumstances.

All know how short-lived the average gold filling of today is; it is placed at from three to five years. Why this lamentable

## GROUP XX

IX—Fig. 1

IX—Fig 2

condition? Imperfect conception of cavity formation, imperfect condensation of gold and imperfect finishing of the filling—any one of these three will result in failure.

It is this condition that has brought out so much in writings and discussions in the past few years on "extension for prevention" and "contour." We all know how few operators there are who are putting in ideal gold fillings, as to cavity formation, contour, condensation and finish, and in making comparison I will only cite these operations and will exclude the medium and poor gold fillings.

In view of such deliberations, coming as they do from eminent members of the profession, I ask, shall they be accepted as literally true? If so, then it will be in order to fix some rule as a principle by which measurements can be made more concise. I offer the following definition for the Ideal Filling Material, and from this estimate the relative value of all filling material:

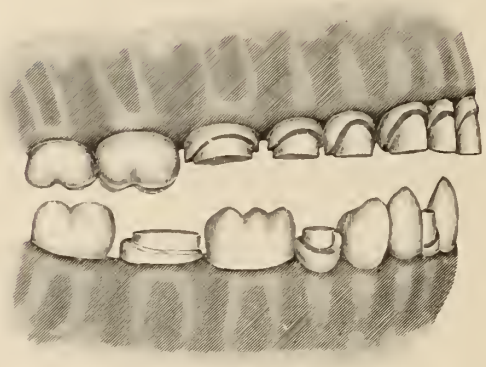
Let this theoretical standard represent in all features of utility the fixed scale of a hundred points, thus:

| | | |
|---|---|---|
| 1st. | It must be plastic and easy to mold into any form, equal in value to .. .. .. .. .. .. .. | 100% |
| 2d. | It must be translucent, equal in value to .. .. | 100% |
| 3d. | It must combine to carry color to any extent, value | 100% |
| 4th. | It must set while cold, value .. .. .. | 100% |
| 5th. | It must resist the fluids of the mouth, value .. | 100% |
| 6th. | It must resist the force of mastication, value .. | 100% |
| 7th. | It must adhere as cement to bone, value .. | 100% |
| | Total .. .. .. .. .. .. | 700% |

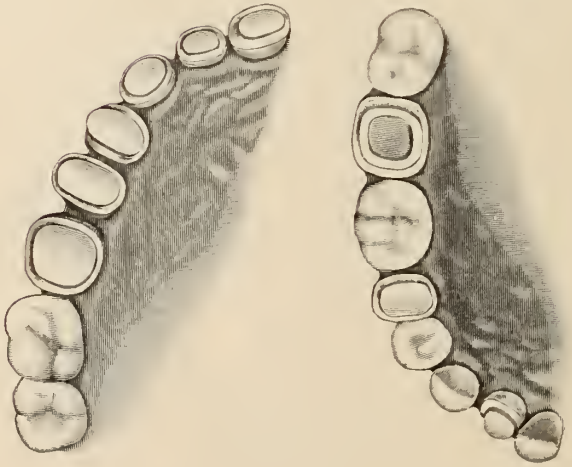
With respect to this criticism of all filling materials, gold will represent the following equation in per cent of values:

| | | |
|---|---|---|
| 1st. | As to plasticity, moldability and pliability .. | 75% |
| 2d. | Translucency .. .. .. .. .. | 00% |
| 3d. | Combining to carry color .. .. .. .. | 00% |
| 4th. | Set while cold .. .. .. .. .. | 00% |
| 5th. | Resist the fluids of the mouth .. .. .. | 100% |
| 6th. | Resist force of mastication .. .. .. | 80% |
| 7th. | Adhesive or cement properties .. .. .. | 00% |
| 8th. | Combined with cement .. .. .. .. | 50% |
| | Total .. .. .. .. .. .. | 305% |

## GROUP XX



IX Fig. 3



IX Fig. 4

### CEMENTS.

| | | |
|---|---|---|
| 1st. | As to plasticity and moldability | 80% |
| 2d. | As to translucency | 00% |
| 3d. | As to combining to carry color | 10% |
| 4th. | As to setting while cold | 80% |
| 5th. | As to resisting the fluids of the mouth | 75% |
| 6th. | As to resisting the force of mastication | 75% |
| 7th. | As to adhesive properties | 10% |
| 8th. | As to cement to bone | 50% |
| | Per cent in relative values | 380% |

### AMALGAM.

| | | |
|---|---|---|
| 1st. | As to plasticity and moldability | 75% |
| 2d. | As to translucency | 00% |
| 3d. | As to combining to carry color | 00% |
| 4th. | As to setting while cold | 80% |
| 5th. | As to resisting the fluids of the mouth | 75% |
| 6th. | As to resisting the force of mastication | 75% |
| 7th. | As to adhesive properties | 10% |
| 8th. | As to cement added | 50% |
| | Per cent in relative values | 365% |

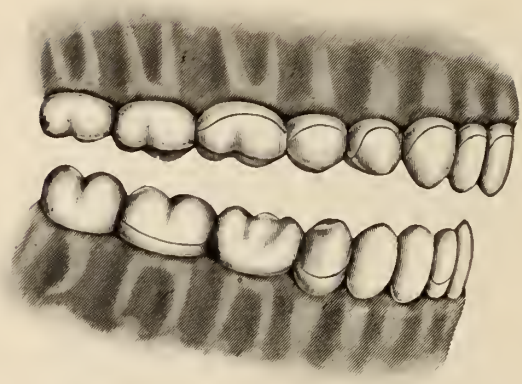
### GUTTA-PERCHA.

| | | |
|---|---|---|
| 1st. | It must be plastic, easy to mold into any form | 75% |
| 2d. | It must be translucent | 00% |
| 3d. | It must combine to carry color | 25% |
| 4th. | It must set while cold | 25% |
| 5th. | It must resist the fluids of the mouth | 75% |
| 6th. | It must resist the force of mastication | 10% |
| 7th. | It must be combined with cement | 10% |
| | Total relative value | 220% |

### PORCELAIN AND CEMENT.

| | | |
|---|---|---|
| 1st. | It must be plastic, easy to mold into any form | 75% |
| 2d. | It must be translucent | 100% |
| 3d. | It must combine to carry color | 100% |
| 4th. | It must set while cold (by transfer system) | 50% |
| 5th. | It must resist the fluids of the mouth | 90% |
| 6th. | It must resist the force of mastication | 90% |
| 7th. | It must be (indirectly) adhesive to bone | 90% |
| | Total in relative value | 595% |

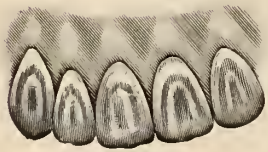
## GROUP XX



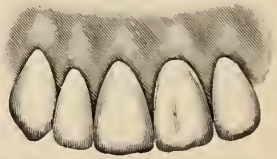
IX—Fig. 5

X-A

XI



XII—(M)



XIII—(N)

From this analysis I expect to do no more than reasonably approximate the values of all filling materials; nor do I argue that any one of the selected substances will surpass all the others. On the contrary, I expect to see each one fulfill its mission as a valuable aid in the alleviation of dental defects. And I still hope for the time when a single substance will combine the seven prime qualities sought in The Ideal Dental Filling Material.

Porcelain combined with cements reaches near to the goal, lacking but 105 of the 700 points of perfection, while gold in combination with cement can claim only 360 points lacking still 405 points, or without cement properties falls as low as 355.

Gold fillings, gold caps and gold bridge work, etc., especially when adjusted to the anterior teeth, illuminate diseased dental organs, and are an indication how little dentistry has advanced in efforts to imitate nature. The height of art is to conceal nature's defects by having the color, shape, size and regularity reproduced satisfactorily.

It is upon this basis that I have earnestly promoted and practiced the art of applying porcelain, both in the mechanical and operative field of dentistry. During this period of over thirty years my work has evoluted from very crude products in this line to a remarkably well-defined art.

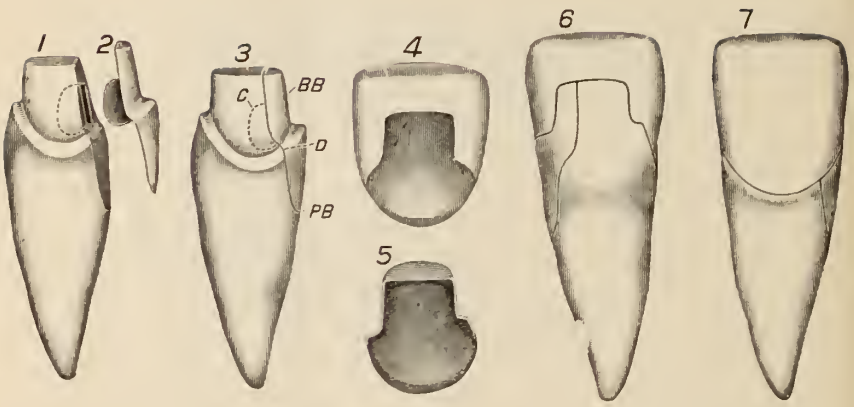
By referring to the series of charts from No. 1 on, I shall be able to make the subject more comprehensive.

## METAL MATRICES AND VARIOUS METHODS OF FORMING THEM.

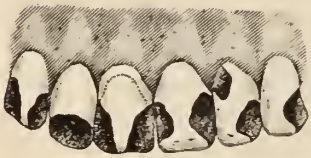
These have been in practical use about twenty-three years and were formed of 1,000 foil, made on a steel die by means of a set of counter dies, in my patent filed June 20, 1887, and issued December 20, of the same year. Paragraph 65 reads that the various matrices may be made by a series of dies which will approximate variously shaped contours in different kinds of teeth. Matrices so formed may be put on the market as articles of manufacture, etc.

In my exhibit shown at the World's Columbian Exposition, six varieties of matrices were shown, including entire enamel hoods, both with the matrix intact, as well as removed and then cemented to the prepared tooth, so that in both my

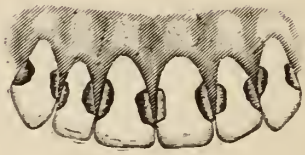
## GROUP XX




XIV



XV



XVI

XVII

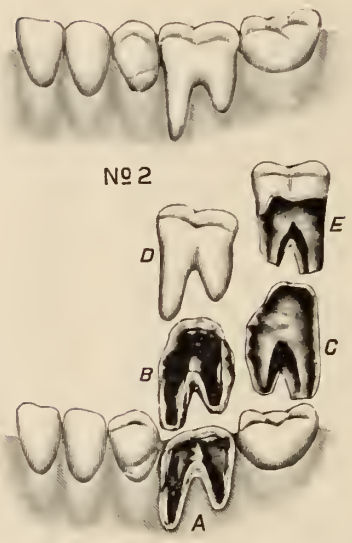
XVIII

recent publications, in place of giving importance to the particular method of forming the matrix, my efforts were devoted to features that were really new and designated on page 440, June Cosmos, substantially covering the particular method of forming a shoulder, or circumscribed ledge; the matrix to correspond. And in the August issue, pages 615 to 620. See the illustration "C," 1, 2, 3, 4, 5. However, the real merits of recent methods consist of the improved forms of cement and the process of manipulating the two combined; for example, in the illustration III, Figs. 4, 5, 6, a thin veneer of porcelain is cemented to a perfectly flat surface (see Figs. 2, 3, 5, engraving II-III), a lateral incisor assisted by a groove in the natural tooth, not more than a twentieth part of an inch in diameter. This combined with the new forms of cements have been doing good service for more than six years in this particular instance. Add to this numerous others that have been in practical use for upwards of six and three-fourths years.

By means of this new process of cementation it can be shown by careful tests that two vitreous surfaces can be cemented so that they will indefinitely resist the action of boiling water; also that after this apparently severe test they may be placed in a muffle of a furnace and submitted to a temperature beyond the melting point of pure gold, then in place of injuring the joint it becomes homogeneous with the porcelain by vitrification. Therefore one of the most essential factors as a means for substantial advancement of porcelain in operative dentistry.

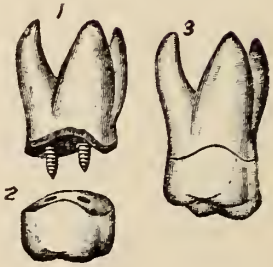
To adjust a veneer on an incisor when the defective tooth may have both right and left approximal sides badly decayed (see illustration III, Figs. 1, 2), grind off one-fifth of the anterior surface, then select a porcelain tooth of the proper size and color, grind it down to a very thin veneer (Figs. 5, 6), then paint over the ground surface this new compound. The veneer is then placed on a thin piece of firebrick and slowly heated until all the oil in the paint is evaporated. It is then either heated in the muffle furnace, or by means of a blowpipe, and gradually brought to a temperature sufficient to homogeneously establish a prepared surface that has in it the same properties as found in the usual oxyphosphate cements. Consequently, when the usual cements are added, a veneer

## GROUP XX

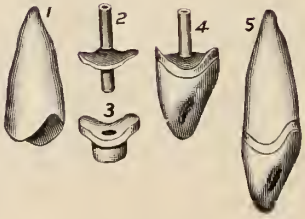



XIX


X




Y




Z

of this description may be permanently established on frail teeth in a comparatively easy and simple manner without the necessity of pulp-devitalization.

In the engraving No. 8 B, Fig. 2 is designed for the purpose of showing how to overcome subsequent decay or any imperfections in the joint between the vitrified veneer and the wall of the tooth. The darker outlines indicate a gold filling on the lingual surface or it might in some instances be gutta-percha or amalgam cemented; in fact, any suitable substance for the purpose of arresting partial decay.

In engraving P, as also in III-II, the Fig. 1 illustrates the eroded portions, while 2 in each case shows the appearance of the tooth when prepared and ready to have the platinum matrix formed over it. 7 gives the anterior view of the metal matrix, and 8 illustrates the posterior surface of the same, while 5 and 6 show the porcelain veneer or overlap facing that has been formed from the matrix and illustrate both the posterior and anterior appearance after the matrix has been removed; 3 shows the restored tooth when the veneer is cemented in place, 4 the posterior aspect.

Looking again at 4, engraving P, I would call particular attention to the region or natural tooth-structure, and its form, indicated by a star and corresponding to the same region as seen on the matrix 8, and indicated by a small platino-iridium bar or wire that has been soldered to the platinum hood or matrix merely as a means to stiffen the thin matrix and thus prevent its warping out of shape when exposed to high temperatures. Notice that where this bar is located no porcelain body is applied, that the thin platinum foil is merely permitted to temporarily cross this portion of the natural tooth, and the small bar of platino-iridium wire is soldered across as a means to tie the joint as well as to serve the purpose of a rib to prevent warping of the porcelain joint. The outlines of the veneer are seen in 6.

Particular attention is called to the fact that the platinum matrix, 8, has been removed from this porcelain veneer by very carefully tearing the matrix out in small sections.

See the illustrations Nos. 1 and 2, group IX, showing a series of fillings involving various forms of cavities in all classes of teeth as they would appear when restored with gold. Nos.

3 and 4 as they would appear when prepared for the reception of porcelain restorations, and Fig. 5 is an approximation of the completed work.

The engravings Nos. 3 and 4 also represent the same varieties of teeth as they would appear in several stages of manipulation. The Figs. 1, 2, 7 B showing approximate lengths of the abutments, which, when prepared, are examples of the relative proportions wherein it might be possible to retain the pulps or nerves in their normal condition; this being more or less variable according to the age of the patient.

7 B.—3, 4, 5; progressive stages; 3 is the platinum matrix; 4 porcelain shell or veneer; 5 indicates No. 4 cemented in place. By reference to the engraving No. 3-4, this also locates either the right or left superior or inferior incisors, or any one of the twelve anterior teeth could be conveniently manipulated in exactly the same manner; in fact in any case where the entire 32 teeth were defective or denuded of their enamel, this one simple device is remarkably efficient. So that in showing the method in detail a description of the one will be sufficient to all. See August Cosmos, pages 618 to 619, and the June issue, page 444. Therefore by selecting either the inferior lateral incisors, the superior cuspids, inferior second bicuspid and the inferior molars, as shown in the engravings Nos. 3 and 4, will be seen the approximate designs from which to form the platinum matrix as shown in No. 7 B, Fig. 3.

The accompanying engravings, illustration A, group X, Figs. 1 and 2, are taken from a practical case; the patient was about sixty years of age.

The right lateral incisor was prepared with a How post, shown in its relative position. The five remaining teeth, after the cavities were prepared, contained tooth substance as represented by the dark surfaces, the white representing the lost portion of each tooth, restored with sections of porcelain. The cavities are prepared as for gold filling, when a thin piece of annealed platinum is placed over the tooth, and by means of burnishers made to take a perfect impression of the cavity. The object of the pins is to serve as a fastening, both for the porcelain paste or body and as retainers to hold the completed section in the cavity of the tooth. Modifications

for the other teeth, as shown in illustration B and Fig 2, illustrate porcelain contour for molars; also refer to group X, illustration C.

The engraving E, group X, shows various modifications of porcelain restorations, and illustrates a series of possible conditions of decay in its most aggravated form, the teeth having been prepared to receive the porcelain sections, partial and entire crowns.

The manner of securing a practical and durable fastening device is shown in Fig. 1, Plate V. The cavity is prepared as seen in Fig. 3. A thin piece of platinum is burnished into the cavity and then holes are drilled through this matrix, through which platinum pins are passed. A piece of wax is then pressed onto the pins and the matrix. This holds both into position until investment. When the wax is removed and porcelain body put in its place, and when completed, would appear as seen below.

Fig. 3, K, Plate IV, illustrates the appearance of the prepared cavity and the completed section ready for adjustment. It will be observed that in the preparation of the cavity it is cut abrupt in order to avoid any thin edges of the porcelain. See Figs. 2 and 3 in Plate V.

The investment is composed of two parts white sand to one of plaster of paris. This will hold the pins in place during the baking.

Engraving X, N, group X, illustrates a new form of double-headed platinum pins especially designed for the new process, and other applications, as an important aid to dental operations. In the engraving they are shown soldered to a gold clasp which is intended for rubber work. Also they are shown attached to both sides of a metallic matrix. They are a very useful device for attaching rubber to gold plates, etc. Both heads are perfectly flat, and are designed to stand on end without danger of falling during the process of soldering.

Engraving XI, O, group X, illustrates anchoring device. By reference to Fig. 1 it will be observed that gold nuts have been previously imbedded in the body of the cement. The screws are shown as being engaged with them and into the tubes provided for their reception, in the body of the crown. Notice that the screw posts are provided with a shoulder. This is intended to force the metallic plate, Fig. 5, onto a

surface of indestructible material. The platinum matrix, 4, is designated to fit over the posts, as seen in Fig. 2, and when the porcelain is added, will resemble Fig. 3. Fig 6 is the completed tooth crown.

### SEE THE ILLUSTRATION T.—A METHOD OF FORMING THE TUBE MATRIX FOR FIG. 2, AND AS SHOWN IN FOUR ENGRAVINGS.

A piece of platinum, No. 60 foil, is prepared as seen at A. The hole in the center is somewhat smaller than the tube, E. By means of the small pointed instrument, asbestos fibre is made into a rope as shown at B. The tube, E, is then passed over the fibre as indicated at C, and when packed by means of the instrument it will appear as seen at D. This will be found a very convenient and rapid method of holding the platinum tube firmly in position while soldering it to the base.

### ENAMELED METALLIC COATING.—ILLUSTRATION V, GROUP X.

My first conception was reduced to practice in 1885. The illustration A is a facsimile of the operation; the patient is now residing in Chicago, and the teeth are still doing first class service after 23 years of usefulness. Fig. 1 represents the undeveloped tooth; Fig. 2 the metal matrix composed of platinum foil (the 1,000); Fig. 3 the porcelain hood; Fig. 4 the hood of porcelain cemented to Fig. 1. The operation involved both the right and left lateral incisors.

The illustration B shows the relative appearance of the defects and restorations. The pulps are still in their normal condition.

Referring to illustrations X and Y, these represent a double matrix system, see X, Fig. 1. Observe that the gold matrix which is composed of pure gold, B. & S., gauge 36, that this has been swedged and burnished to conform to the exact outlines of the cavity in the tooth and to overlap the edge. Also realize that it practically amounts to a gold lining that has been cemented in place, and at this stage of the operation a cavity is drilled through the matrix and a gold screw cemented in the center of the cavity, as shown in Y, Fig. 1. Also see Fig. 2, a porcelain section which corresponds in

form to the missing portion of Fig. 1, practically the restored portion of lost tooth structure. The countersink shown in this section is formed after the directions as illustrated in Fig. IX, and indicated at T and O and X. In the illustration Z, Figs. 1, 2, 4, 5, represent a tubular post and matrix combined; this is a system that I have been practicing in various modifications for upwards of 35 years. In this particular instance it describes a means to provide ready accessibility to old and diseased roots that have been treated and at least temporarily cured of chronic abscess. The tubular portions as shown in Fig. 2 may be composed 18k gold, or an alloy of platinum and iridium, the matrix of either pure gold foil or pure platinum foil, B. & S., guage 36, or gold foil No. 60. Selecting the materials according to whether the porcelain is to be fired on the base or a facing soldered with gold solder. It will be observed in Fig. 4 that porcelain has been carved into the form of a cuspid tooth and fired or baked to the tube-matrix, Fig. 2, and then adjusted as shown in Fig. 5. Also that the tube is open and exposed on the posterior portion of the crown. The tube is filled with gutta-percha so that this can be readily removed in case of recurrence of abscessed condition, and the root successfully treated without removal of the permanent work.

## DISCUSSION.

**Dr. E. H. Coller:** It seems to me that Dr. Land adopts an air of criticism of the general practitioner in his presentation of his subject, because the general practitioner meets with conditions or patients under conditions with which it is practically an impossibility for him to cope, under any such principles of modes of practice as Dr. Land has spoken. I don't consider for a moment that all the general practitioners throughout Michigan are in a mummified form or state of existence, or that the methods that we have used to carry on our work the best we can under the existing conditions as we have them, the conditions of our patients, physically, mentally and financially. It occurs to me that there is no question but what this work is good and artistic to the limit perhaps, but it seems to me that he throws it into us with a lavish hand. The general practitioner is practically criticised for methods of practice that are almost universal and for the practice of dental art as we have been able to get it at the present day. Most practitioners

of the profession today have done something in the porcelain art, but not many to the same extent that the essayist would have us. Of course there are some that do this work successfully as he represents it here, and I don't doubt for a moment but the work is made just as artistic by using the prepared crowns as we buy them, and by enlarging the orifice of such a crown, and cutting down the tooth on the same principles, and applying the crown under the margins of the gum, producing just as artistic a result as he can with the laborous work he does in producing this work. I don't intend to criticise this work, because I cannot; the essayist is an adept at this kind of work. I don't like the idea that we are practicing only what the ancients used to do, and all that sort of thing. I don't believe that the average general practitioner of today is the same as he of the past.

**Dr. J. H. Palin:** The work that Dr. Land has been doing in my office during the last two or three days has converted me to his kind of work; it is really the highest pinnacle of dental art. He restores the crowns of the teeth and he does not destroy the nerves; he restores the enamel artificially and prevents further decay for a great many years, as no other means of dentistry does, and while all country dentists could not be expected to meet with those requirements, because people cannot pay for it, we must accept that Dr. Land has reached the highest pinnacle of restoring natural function in the front teeth, especially.

**Dr. C. H. Land:** If you will notice, my paper gives every man a chance. I have never read a paper but what I always say, as I said in this paper, that all methods should be practical. Now, so far as the poor not getting this, there are thousands of young men who have just come out of the dental college who will do such work for almost nothing. When I first started making enamel jacket crowns I was afraid to charge more than $8.00 a crown. A dentist told me if I were to come out to the town where he was and ask a certain farmer $6.00 for a crown, he would drop dead of heart failure. I said I would like to see such a man. He said his daughter was a girl of 14 years, and had come to see him about a condition he hardly knew how to handle. He got me to go out there, and I saw the little girl who was determined to have her teeth extracted. They were the four anterior teeth, one was abscessed and the other three had very bad cavities in them. The teeth certainly were in a very bad state. I told the dentist to relieve the little girl by reducing the pain, which he did. I said to the father and mother: "Do you know what you are going to do with this little girl? You will make an old woman out of her in 15 minutes. If you cannot afford to pay for proper treatment, let her come down to my office and work for me for six months. She can save her teeth, and I will guarantee that they will be there for years; or let her work it out on the farm, and I will take it in produce." I finally

convinced the farmer that it was worth $48.00. The local dentist finally did the work and got $48.00 in two weeks' time. In all the small towns and villages there are many such cases. This work is much easier to do than gold work, and it is easier for your patients, and easier for the operator, and you save far more of the tooth structure. We cannot all work for millionaires, and fortunately we don't need to do so to be useful and live tolerably well, too.

## SUCCESSFUL PRACTICE BUILDING.

By Otto U. King, D. D. S., Huntington, Ind.

(Continued from page 528, July Summary.)

### HOW TO GET THE MOST OUT OF A CONVENTION.

Go to a dental convention, not for half a day, but for the entire session. These half-day and one-day fellows are those who are standing around complaining that they do not receive any good from dental meetings. Make a memorandum before you go of those subjects you are most interested in. Dr. C. E. Redmon, of Peru, gets more out of a dental meeting than any dentist I know of. He is there from beginning of the program until the close of the clinic, and it is interesting to see how he takes a clinic. He takes a chair, if possible, and sits right down in front of the clinician and never leaves until he has a thorough knowledge and a definite idea of how to perform the operation or construct the piece of prosthetic work, and if he fails to get a clear idea he goes to dinner with the clinician or to his room and never leaves until everything is made clear, even if it takes half the night. Too many of us wander around in a dental clinic in an indifferent, careless way, glancing at the different clinicians and returning home with scarcely one new idea, and then saying, "These dental meetings are a waste of time," and to such a dentist it may be almost true.

### SECURING PATIENTS.

"What is the secret of your life?" asked Elizabeth Barrett Browning of Charles Kingsley. "Tell me that I may have mine beautiful too."

"I had a friend," was the reply.

President Roosevelt could never have accomplished anything equal to what he has but for the powerful, persistent, enthusiastic assistance of his friends.

Every successful dentist owes his success largely to his friends. Just think what it means for a dentist to have enthusiastic friends always looking out for his interests, saying a good word for him at every opportunity, supporting him, speaking for him in his absence, when so many times a dentist needs a friend, stopping slanders, killing lies which might injure him, correcting false impressions about his work, overcoming the prejudices created by some accident or mishap or possibly some mistake or slip or a bad impression made at some silly moment; friends who are always doing something to give us a lift or help us along.

Dr. Marden, Editor of Success, gave to every dentist the key to advertising and building up a practice when he said: "If you are starting out in a profession and wanting patients, what more profitable way of occupying your spare time than in cultivating friendships?" The reputation of having a lot of staunch friends will give you backing and bring to you patients. It has been said, "Destiny is determined by friendships."

Make friends, but he who secures friends must show himself friendly. A host of true, loyal friends will multiply your natural ability many times. But listen, too often we fail to appreciate this true loyalty of our friends and instead of giving them credit and thanking them for their kindness to us we give ourselves credit for our great ability, smartness and shrewdness. Many older men have, I believe for this very reason, begun to lose their hold on a community simply because they have ceased to make new friends and failed to appreciate their old friends.

## RETAINING PATIENTS.

It is one thing to secure patients but it may be an entirely different thing to hold them. The permanency of a dental practice depends upon a dentist's ability to hold his patients.

One of the most important factors toward retaining patients is to take a personal interest in each case; let every pa-

tient be impressed that you are taking the same interest in their work that you would want taken in your own. Show a spirit of thoroughness and faithfulness in every little detail. Keep as much as possible the dollar sign out of your own mind and permit only a spirit of helpfulness to prevail in all your work. Let the patient be impressed with the nobility of your profession and what it is doing for mankind. People love to meet a dentist who is bubbling over with enthusiasm for his calling.

Many patients leave a dentist because they think he is not clean. He should be careful about his hands, nails, linens and especially careful about keeping his instruments in an antiseptic condition. In this day of antiseptic surgery the public is very wise on this subject, and the dentist who is careless in this matter will fail to hold the most desirable class of patients.

There are many other factors that might be mentioned if time permitted, in helping to hold patients, such as personal appearance, standing by work, also stagnation, manners, actions, walk, speech, conversation and habits.

## INVESTMENTS.

The subject of investments is of vital importance to every dentist, for too many are putting their money into getting-rich-quick schemes. An agent for one of these informed me the other day that the dentists were his best customers. When an agent enters your office with a proposition to make you rich in a few days by selling you ten-cent oil or mining shares with the statement that it will increase in value on a certain date or in a short time so that you will make an extraordinary rate of interest, show him the door, he has insulted your intelligence. When you want to invest your money in such stocks, or in any stocks or bonds, go to your banker and advise with him.

I believe that the very best investment for a dentist who has money to invest is in real estate. That is tangible and will give you a reasonable rate of interest on your investment. Remember that the good old slow way after all is the best method to pursue in saving your money for the proverbial rainy day.

## KEEP SMILING.

The successful dentist must not get discouraged, but just keep smiling, and then when Mrs. A steps into your office, which is crowded with patients and announces that those teeth you made for her will not stay up, and Mrs. B calls a little later with a long story of how she broke that lower partial plate while drinking water, or Mr. C, the tobacco chewer, arrives with his tale of woe as to how two of his front teeth broke off while eating a crust of bread, and possibly before the close of the day Mrs. D calls to inform you that all her neighbors think that piece of bridge work is just horrid, she wanted small white teeth instead of such large dark ones, then it will be time for you to turn on a little more of the sand of cheerfulness, tactfulness and patience. Remember that this is only a little upgrade on the high road of success in dental practice building. Steam yourself up to the boiling point with enthusiasm and in spite of mistakes and blunder, errors and ignorance and buffeting keep on moving.

If you strike a thorn or rose,
Keep a-goin'.
If it hails, or if it snows,
Keep a-goin'.
'Taint no use to sit and whine
When the fish ain't on your line,
Bait your hook and keep on tryin'.
Keep a-goin'.

When the weather kills your crop,
Keep a-goin'.
When you tumble from the top,
Keep a-goin'.
S'pose you're out of every dime,
Gittin' broke ain't any crime,
Tell the world you're feelin' prime.
Keep a-goin'.

When it looks like all is up,
Keep a-goin'.
Drain the sweetness from the cup,
Keep a-goin'.
See the wild birds on the wing,
Hear the bells that sweetly ring,
When you feel like singin'—sing.
Keep a-goin'.

## DISCUSSION.

**Dr. W. H. Shaffer, North Manchester:** Dr. King is certainly to be commended for his very excellent paper and the members of this association are to be congratulated on hearing a paper containing so many practical facts and so much good advice. It is so complete that it seems as though it is useless to attempt to say anything further. Dr. King evidently anticipated any objections that might be raised to his paper by saying that some might say this was too much red tape; too much system. Too much system is as bad as not enough and a bad system where it has everlastingly to be attended to is infinitely worse than no system at all, so I expect I might just as well start and object to his system.

I do object to his system of keeping books. He says he has an accurate system, a day book, a cash book, a journal and a ledger, and he has double entry. Now double entry is a science and has no place whatever in a simple business and has no place in the business of a professional man. Large manufacturing concerns that employ a great many men, and help has to handle the money, bills of exchange, bills of lading, checks, etc., and need a check so that the business can be watched, need a good system of double entry and it was only so that dishonest employes might be found out that this system was originated, and even then some of them succeed in steeling sums of money. I would take out the day book, cash book or journal. It takes too much time to keep up such a set of books and it is unnecessary.

To what Dr. King said about meeting your bills promptly I might add as a suggestion, pay your bills by bank check. It don't cost a cent and you always have a receipt. Pay your grocer by bank check or never have your name on his book. Paying by bank check gives the impression to those with whom you do business that you are not broke, you have an account at the bank and it gives you a better standing.

### Retaining Patients.

Here I want to add a suggestion to Dr. King's, which were excellent, and that is the establishing of office hours. Establish office hours that suit the convenience of your class of patients and that will suit your convenience and when you once establish office hours you be there, and it is your business to be there. It goes against a professional man if he does not keep his office hours. Giving an illustration that happened this morning in Peru: I went to the office of an attorney this morning. His office girl was there. His office hour was at nine o'clock but he was not there and they called him up by 'phone. He said he would be down in about twenty minutes. With the people was an old gentleman from the

country. They walked down the stairs and the younger man asked the old man what he would do. "Well," he says, "he is not there and I guess we better see another attorney. They walked to the other office, and by being half an hour late the attorney lost a client.

Another thing, keep appointments. I have no respect for a man who, when he makes an appointment, does not keep it. If you have a piece of work promised it is your business to have that piece of work done on the hour and on the minute when you told that patient to come back if you have to stay up all night. Don't get in the habit of breaking promises. There is no use for it and it gives one the impression that you have no regard for your word.

Make friends. Keep your office hours and you will have time for pleasure, as it is right and proper that you should. A man that mixes up with other fellows is a much better fellow than the man who keeps his nose to the grind stone all the time. I believe in the old adage, "All work and no play makes Jack a dull boy."

By mixing with the other men the dentist finds out about good investments. When a dentist gets one or three dollars ahead he doesn't know what to do with it. The man in business will put it back into his business. He will buy a couple of extra yards of calico, but the dentist can't put it back into business in this way and he is looking for a place to invest it. If you get around with the fellows you hear of good investments and you get a general knowledge of other things besides the profession of dentistry. I believe Carlisle, whom Dr. King quoted in speaking of an educated man, said: "An educated man is a man who knows a little bit about everything and everything about some one thing." Now that is the idea of a well rounded man.

Dr. King suggests an hour's study every morning. Well, that is all right. I never did it in my life. If I am gloomy in the morning to get in tune I would get out of town. Go out into the fresh air, would take a drive or ride, or if I lived in town and couldn't do that, I would jump on a street car and spend ten cents to go way out in the country and back and get back to the office in time and I believe in better tune than if I had spent an hour in reading. I would not want to be understood as saying that it is wrong to devote this hour to study. That is all right. This trip in the country makes you more cheerful, you come back refreshed and feel more fitted for work, make more friends and go through life all the better for your relaxation.

Dr. King, in his paper, spoke about giving a patient a definite idea of what his work would cost. I find that is all right with some patients but it is not always possible to do this, at least I have not found it so. Perhaps it may be possible to do this.

**Dr. Nellie Babcock, Rochester:** I know you won't expect very much from me after this paper has been so thoroughly reviewed as it has been.

Dr. King spoke of his bookkeeping. We do not keep books

that way, perhaps there is too much work about it. I don't believe in working all the time. I like to rest and it would take all the time if we kept our books that way.

Dr. King spoke of the first ideal being a noble character. I think we too often confuse the two words "character" and "reputation". Reputation is what men and women think of us. Character is what God and the angels know of us. I think if we would have a noble character it is well to keep in mind the benefit of mankind and not always the dollar.

Speaking of purchasing supplies in large quantities and paying cash and receiving the discount. I can not exactly agree with Dr. King. It is all right to purchase in large quantities and pay cash but in my opinion it is more advisable to buy only what you need and have your money to invest in something that will bring in returns such as real estate and not have so much tied up in supplies you will not use for a long time. Buy what you need and pay cash for it.

"Honesty is the best policy." This is very true, but no one should be honest simply because it will better him financially but be honest for right's sake. Success does not consist in making money alone.

Dr. King advised taking four or five dental magazines. I think that is too many. I would limit them to three anyway and use what spare time I had in reading some other good literature and keep posted on all of the topics of the day and become broader.

As to the lady assistant being so necessary and so helpful: I think the Doctor must have been thinking of how nice it was to have someone to blame things on when everything goes wrong. Men get so in the habit of blaming women with their troubles. A lady friend of mine who was in California during the recent earthquake said she never enjoyed anything so much in her life. She was asked how she could say that, what she meant. She replied that it was the only thing that ever happened in her life that her husband did not blame her with. They seem to get in the habit of blaming people and anyone who happens to be around is responsible.

He spoke of personal interest, that we should impress our patients with the fact that we would take the same interest with their work as our own. If we have the class of patients we all so much desire they will all understand this is not human nature.

He spoke of investment and I think he gave very good advice, but if the average dentist, as I understand it, is making money as fast as he made it he does not care for this advice, he surely ought to have enough good sense to keep from investing in mining shares or he would not succeed in his work.

I wish to say again that I thoroughly enjoyed Dr. King's paper and if it was not for my spirit of contrariness, being a woman I naturally want to talk back you know, I would not have said anything.

# TEMPERAMENTS.

By Gustavus North, A. M., D. D. S., Cedar Rapids, Iowa.

CHAPTER III (Continued).

## NERVO-SANGUINE TEMPERAMENT.

Persons above average size; well built, broad shoulders; high and broad forehead; cheeks full; fair complexion; hair red or sandy; eyes blue or light hazel; lips red, mouth medium size; arch rounded; teeth light cream color, shaded with a bluish tinge, average size and well developed with shapely cusps, similar in shape to the sanguine, except a little narrower at the neck.

Gold and alloy are good filling materials, also permanent cements and inlays; deep sensitive cavities should be protected by cement, gutta-percha, etc., to avoid thermal changes. The jaw slightly rotates in masticating which should be considered in arranging artificial teeth; occlusion moderately firm. The vital and recuperative force good. General and oral disturbances are favorably treated as represented in Class II.

## BILIO-NERVOUS TEMPERAMENT.

Person below average size; fair complexion, inclined to freckles, etc.; cheeks prominent; nose thin with an upturned point; hair varies in color from dark brown to red; eyes small, generally dark brown, sometimes almost black, twinkle when pleased or snap when angry; teeth bluish gray in color with a yellowish tinge at the neck, they are generally long with narrow necks, similar in shape to the nervous, except a little broader; enamel only fair in structure; dentin soft and generally sensitive. Gold and alloy are fair filling materials, permanent cements and inlays are often advisable. In masticating the jaw has principally an up and down motion; the occlusion is close with deep fissures.

The vital and recuperative force only medium, the person is very susceptible to pain. General and oral diseases are only fair in treatment, as represented in Class III.

### SANGUO-NERVOUS TEMPERAMENT.

Person below average size; fair complexion; cheeks high and prominent; forehead high and broad; chin small; nose thin and shapely; hair light and curly; lips full, mouth average size; arch narrow; teeth bluish cream color, similar in shape to the nervous, except a little broader, fair in structure. Gold and alloy are medium filling materials; cements and inlays are commendable. The jaw slightly rotates in masticating, occlusion moderately firm. The vital and recuperative force medium. General and oral disturbances only fair in treatment, as represented in Class III.

### LYMPHATICO-NERVOUS TEMPERAMENT.

Person average size; complexion generally light, but void of freshness; forehead broad and high; chin shapely; hair generally light, thin and straight, scattering beard; eyes gray; mouth large, lips full but lack firmness; teeth grayish color with a clouded bluish tinge, similar in shape to the nervous, except a little broader and generally well proportioned, they are below average in structure, quite sensitive and decay rapidly, very liable to irritation of the pulp. There is but little lateral motion of the jaw in masticating; occlusion firm. Gold and alloy are fair filling materials, permanent cements and inlays are advisable. The vital and recuperative force generally poor, and gives but little assistance in the treatment of general and oral disturbances as represented in Class III.

### SANGUO-LYMPHATIC TEMPERAMENT.

Person average size, full development; fair complexion, skin soft and smooth; cheeks large and full; forehead broad, only medium in height; hair dark, sometimes almost a chestnut color; eyes generally light, large and full of expression; teeth clouded cream color, large and broad, medium in structure, decay rapidly and very sensitive, similar in shape to the lymphatic, with shapely edges and cusps. Gold and alloy are only fair filling materials, permanent cements and inlays are advisable. The jaw rotates in masticating, artificial

teeth should be arranged to allow a free lateral movement of the jaw without the cusps interfering; occlusion loose and flat. The vital and recuperative force fair in youth but poor in old age. Treatment of general and oral disturbances is not very favorable, as represented in Class IV.

### BILIO-LYMPHATIC TEMPERAMENT.

Person decidedly above average size, bulky development; awkward and generally void of beauty; dark or pallid complexion; high forehead but not intellectual; hair dark and straight; eyes dark; mouth large with broad and flat arch; teeth yellowish clouded color, large and bulky, poor in structure, not very sensitive but decay rapidly, similar in shape to the lymphatic; occlusion moderately firm. The jaw has a tendency to rotate in masticating, which should be considered in arranging artificial teeth. Cements and inlays are advisable for fillings, gold and alloy are only medium filling materials for this class of teeth. The vital and recuperative force below average, weak pulse and feeble circulation. General and oral disturbances are not favorable in treatment, as represented in Class IV.

### NERVO-LYMPHATIC TEMPERAMENT.

Person average size and development; void of beauty in general form; forehead high but not intellectual; fair complexion; hair straight and generally light color; eyes medium light; mouth average size; arch rounded; teeth bluish gray to a clouded color, average size and well proportioned, but soft in structure and decay rapidly, similar in shape to the lymphatic, only not so broad. Gold and alloy are only fair filling materials, permanent cements and inlays are good materials for this class of teeth. The jaw has a tendency to rotate in masticating which should not be overlooked in arranging artificial teeth; occlusion moderately firm. The vital and recuperative force below average, person is very susceptible to pain. General and oral disturbances are not favorably treated, as represented in Class IV.

(To be continued.)

## SILK AND CALICO IN DENTAL PRACTICE.*

By C. M. Wright, D. D. S., Cincinnati, Ohio.

When your honorable committee asked me to read a paper at this meeting it expressly defined the part I was expected to play. I was told that a number of valuable scientific papers of heavy weight had been secured, and that to keep the members from feeling the oppressive influence of ponderosity, I was asked to supply something "light and airy". I know that the average member of the society can stand the science of his profession in pretty large chunks. Rapidly increasing proportions of men practicing the art of dentistry everywhere are reaching out for principles which underlie their practice. Every year shows progress in the appreciation of the labors of the investigator, and every year increases the eagerness to widen research into adjacent fields of medical science. Dentistry is keeping up with the procession in fine shape. She is marching right up in line with etiology, bacteriology, prophylaxis, serum therapeutics, and the biology which has immunity from disease as its object. As an example of the latter, see how promptly the dentists grasped the phagocyte of Metchnikoff and the opinions of Wright and Douglass.

With this high regard for the scientific eagerness of my fellow members of this society, what sort of a vaudeville stunt can I offer in accordance with the expressed wish of your committee? What sort of a song and dance will be acceptable to these earnest seekers after Truth? When your committee asked me for the "light and airy" style I felt as I once did many years ago in dear old Oxford. A little company of college boys and village girls had gathered for some evening entertainment at the house of one of the sweetest little lisping beauties in the town. When I entered the parlor I found the company sitting around the room in happy but solemn contemplation. The little hostess was in despair. There was no jollity, no enthusiasm, no fun. In despair she came to me and said: "I'm so glad you have come; now won't you please say something funny and make us all laugh?"

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*Read before the Ohio State Dental Society, Dec., 1907.

You can imagine my feelings—for there was a suggestion that I was in the habit of lowering my youthful dignity to play the buffoon, or that I had gained the reputation of a trick mule in the circus. That was nearly half a century ago, and now I am called to the ring again like old Dan Rice, and in the same old character of clown. Well, I'll forgive you if you'll forgive me.

Last June, at the meeting of the Northern Ohio Dental Society, Dr. C. N. Johnson read a great paper. He always presents fine papers. In it he condemned extraction for the purpose of regulating the teeth, and advocated the later and better ways of expanding the dental arch and drawing the teeth into line by our well known modern methods.

Dr. H. A. Smith in the opening speech in the discussion of the paper, while not dissenting from Dr. Johnson's opinion, hinted at exceptional cases in which extraction might be justifiably proper and suggested that every one could not afford the expense of the tedious and costly operation of expansion and alignment. Then he quoted a remark of the great Atkinson, about "silk and calico" in dentistry. The remark indeed has reference to the use of gold—a costly material for filling teeth, and amalgam—a cheap material for the same purpose. The poor could be served with calico and the rich with silk.

I had supposed that everybody recognized this fact and practiced on this principle. I believed that when we gave our services to orphan asylums and other eleemosynary institutions, or to slum children and Bethel Sunday school scholars, that we were doing noble work when we used amalgam for fillings, or vulcanite for plates, and extractions for regulating.

If a patient should tell me that he could not afford the fee for silk (continuous gum, porcelain inlay, gold inlay), I should dress him as tastily as I could afford in calico, and between you and me (I shouldn't want it to go any farther, you know), if a patient had chronic interstitial gingivitis and no money to pay for long continued and patient treatment, I should recommend extraction and plates. Yet I have plumed myself on being a fine ethical dentist.

You should have heard Dr. Johnson's reply to Dr. Smith on this subject.

With his splendid personality and scintillating and overwhelming oratory, qualities which always awaken a quivering enthusiasm in my breast, he denounced the silk and calico idea. From his standpoint it is a base and unprofessional doctrine, one which tends to cast our beloved profession and individual into the slough of 'commercialism" too vile to view or even to think of without horror.

As I listened with wrapt attention to the fluent and fervid eloquence my heart throbbed with conviction. I was filled with bromidic platitudes about self-sacrifice, all for art, love of God and fellow man—promissory notes maturing in another world—the youth who went up a hill crying "Excelsior", and all such pretty things, and I scorned commercialism. I said to myself: "Who would practice dentistry for money? Who would be so base? Who so vile as to accept fees from people who want silk and will have silk when calico will cover their bodies with modesty and keep them just as warm?" Alas! This was the response of my tender and susceptible old heart to the brilliant orator's magnetic personality and inspiring enthusiasm. As soon as the silvery voice had ceased to vibrate, my old head which must have kept cool while my heart was hot exclaimed, "Tommyrot!"

Wasn't my head right after all? Think of Chicago condemning commercialism! Isn't there a lot of tommyrot about commercialism in our societies, in our journals, and in our colleges? It is true that we regard ourselves and are regarded by others as members of a profession. We are not traders or manufacturers, and are governed in our transactions with the world by modifications of the rules that govern the trader. But we are daily supplying a luxurious demand of civilized society when we employ silk. The principles of political economy are applicable to us, in this question of supply and demand. Our methods of doing business would be taken account of by a modern Adam Smith in a new edition of "Wealth of Nations". We ourselves are citizens with cultivated tastes for every sort of modern luxury offered, and we expect to pay for our wants by what we supply in exchange.

This is an age of commercialism. Utilitarianism and commercialism never had the universal sway they have today.

The commercial age is necessary for the great age of art. "Under the urge of commercial activity those conditions are produced which provide the inspiration for a great, vital and abiding art." In the commercial age, as at no other period in the world, science performs splendid and stupendous miracles, and with magic touch enlarges man's kingdom in the universe. As the general store of human possession, intellectual as well as physical, becomes larger and larger, the demand for the appraisement of each individual share becomes stronger and stronger. In the field of research and discovery it is applied science that carries off the palm, and what people want to know about Hertzian waves and radio-activity is for what useful or money-making purpose they can be employed.

This may all be wrong, but if we become disciples and followers of our meek and lowly and altogether lovely friend, Dr. Johnson, we must beg him to clothe himself in goat skin and sandals, after the manner of St. John in the picture, and instead of the staff, to take in his hand a plugger, and wander about giving silk to all the world, scorning pay and never prostituting his principles by offering calico.

He must give up his Prince Albert, his patent leathers, his silk hat, his pictures and oriental rugs, until he has by precept and example convinced his tailor, his hat and his boot makers, and the artists, that it is commercialism of a very low order to demand pay for these luxuries of modern life, or merely to offer a warm coat, brogans and a cap in lieu of a la mode clothing. He prefers silk, and he is able to pay for silk because he does not carry his notions about commercialism into his daily practice. He uses these notions for pyrotechnic purposes at dental societies, and they do good. They stimulate his speech centers and cause streams of pure oratory to flow into the surrounding air and warm it. I do not criticise this and I shall never complain of it. I like warm air, especially in the cockles of my heart. I like to sit at the feet of Dr. Johnson and listen and listen and listen. Then when I go away I agree with Atkinson. Silk is a luxury. I also subscribe to Black's epigram: "A professional man doesn't sell; he serves." But this costly service is what

he, in a commercial sense, supplies as the demand of cultured society. Nevertheless he employs silk for the rich and calico for the poor.

## DISCUSSION.

**Dr. Frank Hunter, Cincinnati, Ohio:** Your committee has placed me in a worse predicament than it has Dr. Wright for he has gotten out of his with flying colors and I am still in the hole.

I have two almost insurmountable obstacles to overcome.

One is, that Dr. Wright has the happy faculty of saying so much in a few words and presenting his subject so convincingly that if you agree with him he leaves you very little to say.

The other is, that he is generally on the right side.

As I found nothing in his paper with which I am not in sympathy, all argument on my part fails, and I can do nothing but commend and add a few words in the same strain as the paper.

There was once a visitor in a household who asked the young hopeful of the family what he intended to be when he grew to be a man. He answered, "A philanthropist." "That is very commendable," said the visitor, "but why a philanthropist?" "Because all philanthropists are rich." Now all dentists are not rich, and I never heard of one who was a philanthropist. Even our great and wealthy confrere, Dr. Thomas W. Evans, of Paris, who made his fortune, not in dentistry, but through "inside" information in the advance of price in real estate during the improvement of Paris under Napoleon the Third. Even he with an income that he could not spend, continued to practice dentistry for the rich and at high fees.

It is the custom of the medical men, especially the surgeons, to speak of the service and time they give to the poor in their hospital practice as an excuse for the high fees they charge those that they think can stand it. But I have noticed that they are all very anxious for a hospital appointment, and fight hard to get it. Why? For income and advertisement. Is that philanthropy? We as dentists do the same thing. But all professional men give more in charity than the commercial world is willing to believe, but we select our own cases. There are none of us but what have given silk for the price of calico, or a good grade of calico for the price of a poor one, or even given silk for nothing, when we are interested in the welfare of the patient and know of their inability to pay the price. And I believe it is fair to assume that those that prate the loudest about their philanthropic proclivities are the ones that do the least for their fellow men in charity.

**Dr. W. A. Barber, Springfield, Ohio:** Our genial doctor has endeavored to convey the impression that this matter was to be

considered light and airy, and if we have the right Dr. Wright where was Mrs. Wright when he wrote that he felt like he did many, many years ago in dear old Oxford, when a company of college boys and village maidens had gathered together for an evening's entertainment at the home, mind you, of one of the sweetest, most royal, clear-eyed, lisping beauties in the town? Had Mrs. Wright been there when he penned those lines it certainly would have been airy enough to suit the doctor.

The doctor has been accused of being the jester, the trick mule, and even the clown of the circus, but I find he possesses another attainment—as a dreamer he is in a class by himself.

It appeals to me that this is a very ancient gathering of professional men. Every other speaker carries us back to his boyhood days, to dear old Oxford, and the essayist says, "a half-century ago", a statement which I am a little inclined to doubt. He doesn't look it. To the members of the Ohio State Dental Society he is one of the boys. Yet he carries us back to the cheery, jolly days of long ago. And, undoubtedly, memory was his sweet-voiced guest, and her eye to him must have been brimming with understanding, her voice caressing and tender, her touch magnetic with sympathy; she, no doubt, sat at his side, looked into those dimming eyes, perhaps sang a few of the old college songs that the doctor loved so well, recalled the friends of his youth, all those who had assisted him in decking with abandon the hours of recreation, and all in all it made the old world and the doctor seem bright, if only for a little while.

And does it not appeal to you that the cockles of the doctor's heart did contain something more of a sentimental character than the warm air diffused by the eloquence of that eminent speaker, Dr. Johnson, when the ghost of youth flitted across his heart strings? But blame him not, for, according to his own statement, he is old, but rather let us grieve with him that the fires of youth do not forever burn. But his pipe went out and he awoke facing the world of commercialism, where life is a servitude and where we, as dentists, must have our wants supplied, and justly so, by the recompensation we should receive from those we serve.

To live we must labor, and the labor crushes us with its inertia. And the garlands that we might win as disciples of the meek and lowly, but beloved, Dr. Johnson do but deck tombs, and that so long only as the daylight lingers, such garlands dissolve in the shadows of the first night and the mists of morning fall on the bare grave that they for the moment adorned.

Dr. Johnson has undoubtedly been misquoted, or his sayings misunderstood, and I will venture that he will air the matter to the entire satisfaction of our essayist.

Silk and calico I would consider absolutely essential in the practices of the vast majority of our profession, and the elimination of the calico by the rank and file would only come to us when

in the same frame of mind that our essayist was when he dreamed of that lisping beauty of his pleasant and youthful days.

It seems to me no argument is needed to prove the necessity of the financial side of our profession among a learned gathering of professional ladies and gentlemen as we have before us, but let me venture the assertion that you take away that unexplainable feeling that exists between the patient and the operator, from the sweet-faced, innocent, toddling child to the gray-haired, toothless grandparent, and you would find a large number of our profession seeking other callings and making a greater success in a financial way with the same amount of energy and nerve force expended.

The treatment that we are accorded by our grateful and intelligent patients, that warmth of affection that flows so freely from their hearts, so fills the cockles of our hearts that the warm air caused by a stream of pure oratory from the lips of a silver-tongued orator could never dispel it.

**Dr. W. G. Hamm, Chillicothe, Ohio:** It is a well known fact that occasionally a man's estimate of himself is found to be quite inaccurate; some compile their estimate after comparison with a lofty ideal; others take themselves as a standard and judge accordingly. I don't propose to enter into a discussion here as to which class will make the best silk or the best calico; after I get through I will leave it for each one to decide for himself. What I want to impress upon you is to endeavor to be of some value in dentistry and not to be a mere cipher. The profession is too full of ciphers already; they are the ones who have no aims or ambitions in life, who have no confidence in themselves, who are willing to follow wherever they may be led, who have no opinions of their own, who are ready at all times to say "yes", but have not the courage to say "no"; men of action have no time for them except to use them as a means to their own ends. Even the women don't like that kind of silk. The cipher, too, to the class who take a narrow-minded view of life, who think they were put into this world to take all and give nothing, to stand by and let their fellows provide the ways and means while they share in the credit and pleasure. We find just such men in our profession, and they sometimes dress in silk, who are against associations and exchange of ideas, and do absolutely nothing for themselves, but are all their time criticising the efforts of those who do. Why grumble at the organizations in their midst and about those who are at the head of them? They complain of the incivility of those around them, they find fault with the conditions before they ever find the truth of them, and in summing it up they sour all things they come in contact with. How can such human beings justify their existence? This is one yard of silk and two of calico on the bargain counter. I am not decrying our common faults alone as a calling but I am here responding to the beckoning of a higher ideal with the material we have at hand today, which we consider

scientific knowledge; then why should we allow commercialism to take such an octopus hold on us? Predisposition, environment and preparation will develop and bring our calling to a standard instead of playing tennis with commerce and profession.

A wide variation of methods and materials brings a wide variation in results: therefore, concentration must be essential, in one clientele, especially the silken kind, and repulsive to the calico kind. Human nature does not like humiliation for it is not our "crowning virtue", and very few like to accept the truth when it is presented. This "silk and calico" is becoming a serious matter in our ethical domain. The getting down to a sound sense basis of a real ethical science is going to break down this illicit practice of the half-way dentist, something is coming, and that very fast, that we must co-operate more and elevate our standard; and until we do that we will remain in the eyes of the laity as tradesmen doing a commercial business instead of professional. This may be acute to some of you, but allow me to explain and see "if my old head is right".

The world is tumbling at a rapid rate into dark uncertainty on every hand with the problem of this dressing the rich with silk dentistry or the poor with calico. It stares us in the face more and more and makes you either have the look of "Quaker Oats", or the smile of "Cream of Wheat", and in the end we are "forced" to get our old "Jim Dumps".

A bushel basket of extracted teeth is a degrading endorsement for any modern dentist. We must listen to the spirit of our inspired Dr. Atkinson, who joined hands with the microscoper, Dr. Heitzman, who instilled the minds of Williams, Boedecker, Miller and many others of distinction, until now we are viewing the human tooth as an object of worship rather than a trophy of an avaricious practitioner.

With those great pioneers' hard labors we are today reaping the benefits from them, and many the silken share, while others are straggling along with calico wrappers.

I am quite sure that some of us have conscience enough to perform our share of charity in the poverty pew when such cases are worthy and evident, and aside from this we must use a moral atmosphere and hold ourselves as professional men, we must maintain the standard of ethics, otherwise we drift into commercialism, and there is much danger in overlooking this point when we play the act of the "Good Samaritan" that we may be treating a "Judas" and that our profession may be publicly crucified for our good deed.

Then we must adhere to our standard and obey the laws. Our bosoms swell to their utmost capacity when we have placed in a good porcelain or gold inlay, or some fine continuous gum and have a "fat pocket book" to pull from. How big we feel; on the other hand, how we frown, mutter and often swear when we have an amalgam filling to insert and another "big fat pocket

book" in the waiting room anxious and in a hurry for next seat in the chair. My! how we wish we had never known amalgam or cement. But, my dear Christian friends, is it right? Is this proper ethics? Is it not the motive that prompts this commercialism? And how often does it occur? Some of us have stipulated fees, others have variations, and a great majority the latter; what can be done? Elevate our standard and co-operate, stand by the unwritten law of faithfulness, and then with our ambition and industry compensation is bound to come, and that will be the calico road to a silk success.

We naturally have desires for every sort of modern luxury offered and it is common sense that we expect to pay for our wants by what we supply in exchange. Fees are commercial, one value for another. Why of course we want pay and a good share for our services rendered, outside of material; a small per cent. added to material only would indeed be your modern "Chicagoism"; but we aim higher and are entitled to all we can get. Even the theologian has awakened to the ideal, and he now wants all he can get, and he usually gets it. So does the physician, the lawyer, equal to this great necessity.

I do believe that our ethics are misunderstood by many of our young practitioners in this respect; when they launch their ship they are eager to start in life to make a success and the first thing they do they make a startling "cut" to stimulate practice, and by so doing undermine their neighbor dentist. This is what I would term commercialism. But many fall hopelessly by the wayside and remain in the same old rut; young men should be careful with their starting point. I cannot help but agree with the essayist that our colleges, societies and until recently our journals, have been lame upon this subject.

It is a recognized fact that some men who wear the ethical plume are not friendly to the societies. Some time ago I had the pleasure of soliciting a gentleman whom I had considered an ethical gentleman in all respects, to join our state society. I made the approach that I had always considered him an ethical dentist and urged him to join us. He only spoke three words, "Damn your ethics". Of course that was not the answer to my question, and I cleared out.

Some two or three years ago, Dr. W. T. Jackman, of Cleveland, read a very able paper before this society and he advanced a plan whereby the calico patients could receive free treatment and I would suggest that this society at least make an attempt to secure such legislation by which the worthy poor may receive free dental treatment; in this manner silk would be obliged to take care of the calico.

**Dr. H. A. Smith, Cincinnati, Ohio:** Dr. Wright has given us an entertaining and instructive paper. The title, "Silk and Calico in Dental Practice", is certainly unique.

Since Dr. Wright has mentioned my name in connection with the choosing of a title for his paper it may be interesting to call attention to the origin of the phrase he uses. It is my recollection that Dr. W. H. Atkinson used a similar phrase in epigrammatical form at a meeting of the National Dental Association, at Saratoga, a good many years ago. He was on the floor discussing the economics of the practice of dentistry, when he said, "Not every woman can afford a silk gown, some women must of necessity wear calico", meaning, as I then took it, that as practitioners of dentistry we must of necessity be governed somewhat by the ability of the patient to pay for the more expensive and protracted operations.

These words of Dr. Atkinson were recalled and used by me in discussion of the modern methods in orthodontia at the recent meeting of the Northern Ohio Dental Association. Exceptions were taken by Dr. Wright, myself and others to the very radical statement now being made by some of our orthodontists, that in nearly all cases of regulating, the normal occlusion should be restored without resorting to extraction. The fact that teeth in many cases may be well regulated by resorting to judicious extraction is fully established. We have the authority for this practice of such specialists as Professor Guilford, Dr. Case and many other practitioners of orthodontia. Dr. Case has said: "In the practice of orthodontia it is quite as much mal-practice to avoid extracting teeth when demanded as to extract teeth when not demanded."

The matter of the time necessary and the great cost incident to these protracted operations often prevent their undertaking. If this dictum was carried to the extreme, precious few of the 17,000,000 children of our population who need treatment would ever know of the delights of having regular teeth.

This extreme doctrine of the non-extraction of teeth for regulating purposes is in line with the dictum of Marshall H. Webb, promulgated some years ago, when he said: "If a tooth needs filling at all, it is worth filling with gold."

All these extreme statements regarding methods of practice have, or soon will be, relegated to the past.

True eclecticism in the choice of methods and means is fast becoming the test of a safe and intelligent practice of dentistry.

Our essayist has spoken of commercialism in dental practice. Instead of referring to this subject at any length permit me to quote from a recent paper of Dr. C. N. Johnson, editor of the Dental Review, entitled: "Discrimination in the Selection of Filling Materials."—It is usually not customary to discuss the question of expense in a paper upon any scientific subject, and yet in the practical application of this consideration to every-day experience it is impossible to entirely ignore it. It is the Banquo's ghost of dental practice, and will not down, no matter how hard we try to suppress it."

This statement by Dr. Johnson seems to me to be a very common-

sense view of the trade element that prevails in the practice of our profession. Commercialism is the "bete noire" of dental practice and it is safe to assume that it will always be.

**Dr. C. N. Johnson, Chicago, Ill.:** Dr. Wright has very kindly permitted me to read his paper in advance of the meeting, for which courtesy he has my sincere thanks. This gives me the opportunity, not only of writing a brief discussion, but of paying my personal tribute to the manliness, the professional worth, and the scholarly attainments of the essayist.

Dr. Wright dearly loves to joke, and I for one dearly love to listen to and read his jokes, but in this instance it seems to me that he has selected a topic which is, after all, a really serious matter. As I view it the question is one of professional integrity.

First let me call attention to the fact that Dr. Wright has changed the basis of his argument entirely from that which gave rise to my remarks at Cleveland. In his paper he speaks of "continuous gum", "porcelain inlay", "gold inlay", "gold", "amalgam", "vulcanite plates", etc. Of not one of these did I make the slightest mention in my discussion. The argument was altogether a different one and related to the extraction of teeth for poor children for the purpose of regulating teeth in contra-distinction to other and more modern methods for rich children. The insertion of an amalgam filling, or a cement, or a gutta-percha, may, from my point of view, be a perfectly legitimate procedure. We may, justifiably, up to a certain point, let the purse of the patient dictate the character of the service, but beyond that point we have no moral or professional right to go. We have no right to work a permanent injury to our patient with the dollar mark as a basis of our action. To insert a temporary filling material and check decay till something more permanent can be employed, or to continue using the less expensive materials through motives of economy, is an entirely different matter from extracting a tooth for regulating where it is not indicated. A filled tooth may be refilled if the first filling fails, and at worst it may be crowned and remain a useful organ, but a tooth once extracted is irretrievably lost. And if, as is so often the case, it is extracted merely through expediency, the result may be a disastrous wrong to the child from whose mouth it is taken. There are too many individuals going through the world today with their mouths maimed for life by the thoughtless extraction of teeth. In this view of the case, I said at Cleveland that if it is wrong to extract the tooth of a rich child it is wrong to extract the tooth of a poor child, and I still contend to that principle. Should this contention be classed as "tommyrot"? Nor am I able to see where such a doctrine would involve me in the necessity of grotesquely clothing myself in goat skin and sandals and wandering about the country filling teeth with gold for nothing.

After all it is a question of human duty, and it is just as much a duty for us to demand, from those who can well afford to pay, a just recompense for our services, as it is to see that the poor are not wrought a professional injustice simply because of their poverty.

And in this connection I am impelled to reiterate a statement I have frequently made regarding the ability of the average citizen to pay for dental service. I hold to the theory that there are not very many people in this America of ours who are really too poverty stricken to pay dental bills. Most of them buy other things which cost more than fillings or inlays, and which are of no greater benefit. In fact some of them wear silk and yet consider it a hardship to pay their dentist. It is largely a matter of education. We should teach the people the value to health and happiness of properly performed dental operations, and when they have learned this lesson they will readily find the means to save their teeth.

Does this sound as if it were said for "pyrotechnic effect"? I hope not, and if I were inclined to take any personal exception to what Dr. Wright has written (which, in view of the high regard I have for him, I am not), it would be the intimation which crept into his paper that I was perhaps talking for effect and failed to carry out in daily practice the ideas I advocated in dental societies. Did this not imply—probably unintentionally—a suggestion of insincerity on my part I should make no reference to it, but I think I might be permitted to say that I have had my full share of backache inserting gold fillings for people who felt they could not afford high fees for gold, and my full share of heartache trying to regulate teeth without extraction. In other words, I have tried to do my duty as I saw it, and I have yet to be convinced that I am thereby any poorer, either in spirit or in purse.

My sole reason for entering this discussion at this time is to impress upon your society the seriousness of the question, and to make a plea against the idea of lowering the character of dental service on account of financial considerations. Dr. Wright and Dr. Smith, I am sure, will both agree with me that such a practice carried to its ultimate conclusion would be disastrous to our professional growth, and would even involve our professional honor.

## PRESIDENT'S ADDRESS.*

By D. A. Allen, D. D. S., Toledo, Ohio.

At the semi-centennial meeting of the Northern Ohio Dental Association we had a very interesting session. It was devoted chiefly to the history of dentistry during the past fifty years, together with interesting, instructive and amusing reminiscences pertaining to that period of our existence.

Today this body starts on the second half century of its career.

At the last session we were told of what had been accomplished by this society, as a whole, and by the members as individuals, and what wonderful strides and advancement the profession of dentistry had made for the betterment of the art and welfare of suffering humanity.

Now what will be achieved by the society and by individual members during the next fifty years?

After hearing the enumeration of all that had been wrought to uplift dentistry from the position of a mere trade in the hands of the barber, the blacksmith and the charlatan to an honored place among the learned professions, we are awed, and wonder what there is left for us to accomplish to still more enlarge and expand this, one of the most useful specialties of the healing art.

Is there anything remaining for us to do to put dentistry on a higher plane, and make it more honored, more useful and more beneficial to mankind? Yes, there is certainly more to do, and we need have no fear that there are no more laurels to be won, and that the highest goal of usefulness and proficiency has been reached. There is still plenty to be accomplished to fully justify the exertion of our best energies, and in the assurance that we will be fully rewarded for our good deeds.

Among the multitude of ways in which dentistry may be benefited, and in which its efficiency may be enhanced, may be enumerated:

The enactment of better laws governing the practice of dentistry.

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*Read before the Northern Ohio Dental Association, May, 1908.

Reorganization and increased membership of dental societies.

The elimination of the charlatan.

Encouragement and co-operation in anything which will tend to bring about better preparation and training; together with improved and more systematic college courses.

Universal, systematic and unselfish examination and instruction in the care of the teeth of school children.

The discouragement of incompetent, clumsy and unskillful dental students.

Training the hands in the more skillful use of simple and more improved instruments and tools, thereby preserving the individuality and discarding stereotyped methods.

Doing away with a multitude of complicated and comparatively useless instruments and appliances.

Encouraging the making and adoption of such apparatus, instruments, appliances and methods as will tend toward simplifying and systematizing our art.

Avoidance of all extremes in practice. Using good judgment and discretion in each and every case.

Do not be carried away with new, untried and unproven theories, practices or modes of procedure. Neither should you be too conservative, always remembering that we cannot stand still; we must either progress or retrograde.

We should investigate all new theories, instruments, appliances, modes of treatment, etc., being ever ready and willing to adopt those which prove good and useful in the rational and scientific practice of our calling. Experiments, however, should never be carried on at the expense of our patient.

We should be on the alert, and each and every one use his best thought and action to bring out something for the benefit of the profession at large.

If you have an original idea or theory, work it out to a solution. Do not "hide your light under a bushel." Remember that much history has been made by men of one idea.

Nearly every one of us can do something a little superior to our fellows. Demonstrate it to them. Add your share to the common stock.

Do not be narrow and think there is no more for you to

learn, or no new thing worth trying, or you will soon find yourself in the rear ranks of your profession, and an object of ridicule or pity.

We should encourage specializing, and thereby make the so-called dental laboratory an impossibility. These tend to cheapen and lessen the usefulness of dentistry.

All work or operations which you cannot skillfully do, or which you do not care to do, should be referred to the proper specialist. It is no longer considered an evidence of incompetency to acknowledge that some one else knows more than yourself about certain operations, properly belonging to the field of the specialist. On the other hand no one has a moral right to attempt any operation or treatment for which he has not acquired the proper knowledge and training. It is no credit for any dentist today to attempt, for instance, orthodontia, by the old "cut and dried" methods of the past. Neither is it good practice to send models to a dental laboratory, thereby discrediting your own good work by its association with the bad.

Always bear in mind that "a chain is no stronger than its weakest link."

Do everything in your power to encourage the upbuilding and discourage any and everything which tends in any way to bring disrepute on our specialty.

Be especially careful and guarded in giving opinions on the work of others.

Treat your professional brother and your patient according to the golden rule. Be honorable and unswerving in all things. Think for yourself. Know the why and the wherefore. Be scientific. Then can we expect to receive the full respect and appreciation of our efforts from our brother dentist and our patients, and be entitled to full recognition as professional men.

The Northern Ohio Dental Association numbers among its members, past and present, many whose names will long be remembered for what they have done to uplift our profession. A large number of these have gone to their reward. Many more are still among the living, and several of these are with us today; some of whom are bowed by the load of many years of hard and unselfish labor for their fellow men;

while others are still in the fullness of strength and usefulness. It is not necessary to enumerate these. They are known and honored by you all. Each one has done something to help his fellow practitioner and the profession in general; some more, some less, but each has added his mite to swell the grand total. An instrument or an appliance brought out and proven; some new theory or treatment introduced; some improved or original operation; or in other words, has done something a little bit better than his fellows had been able to do. And in the fulness of his heart, and brotherly love, has freely given the results of his thought and labor to his profession.

Each of us should strive to add something to the common stock of knowledge. In this way, and in no other, can we expect that the next fifty years will bring forth the solving of many, if not all, of the knotty problems which now confront us, or which may present, and that where we are now groping in the dark, it will be light as day.

There are many of these problems to be solved. Which of us will be he who will deliver the answers?

Who will solve the problem of a simpler orthodontia?

Who will discover the true cause and cure of that dread malady, alveolar pyorrhea?

Who will bring about the truly painless excavation and preparation of cavities?

Who the ideal plastic?

Who will invent a life-like vulcanizable gum?

Who, my brethren, will introduce the real prophylaxis and preventative of dental caries?

These and many other problems remain to be solved and are worthy our best efforts, making a broad field which will give ample food for thought and research, a solution of any of which will bring a rich reward of honor from our profession and gratitude from suffering humanity. There is plenty to do. Let us put our shoulder to the wheel and push.

Many of us, aye, perhaps most of us, shall have passed to the great unknown beyond when the full century of the Northern Ohio Dental Association shall have rolled away. Let us, therefore, be earnest and enthusiastic, each striving to attain excellency in whatever he undertakes. Let there be no drones in the hive of this society. Each one should do

his part with a will, and the consciousness of having done what his hands and brain found to do, to the best of his ability, will bring him happiness and contentment, and he need have no fear but that when the centennial of this, then venerable, body is celebrated, he will be remembered, and his name inscribed on the roll of honor with those who have made the world better by having lived in it, contributed to the uplifting and advancement of his calling, and aided in the amelioration of the sufferings of mankind.

The trust that's given, guard, and to thyself be just,
For live we how we may, yet die we must;
How long we live, not years, but actions tell
That man lives twice, who lives the first life well.

## DISCUSSION.

**Dr. Wm. Megginson, Toledo, Ohio:** Reminiscences are things with which we all have to do, and the more we have stored up in our memory the more congenial we may become in our declining years—in the time when we are forced on the shelf and exhibited as one of the antiquities. Those are the years when we feel a thoughtless snub or indifference of those around us. A congenial old age, a mind stored with reminiscences, a sweet disposition and companionship of the young, make us forget the unpleasantries of the present—we live in the past. Sweet old age, the crowning glory of the past.

The accomplishment of purpose—we are living under the law of cause and effect. Wherever you find effect there is cause for it. The banding together of a number of people into a body called a society or association is an incentive to make the individuals of that body work the harder, to exert themselves more diligently that they may excel in the question involved. By the excellence of their work or thought, and the flattering of their vanity by their co-workers, a stimulus is given to all to tackle knotty problems that they may be rewarded likewise. Vanity and man's love of flattery are a goad of the most potent kind. What will a man not do if some one pats him on the back and says: "What a smart man you are; wish I were as talented as you." Thus we go at it with renewed energy, giving and taking ideas and suggestions with the result that our society, our profession and the world at large profits by the achievement of things and conditions that would remain a secret, or the benefit of which would be enjoyed by but few.

Society or association, the great educator, foundry of ideas, and fraternizer of humanity. Our societies furnish us with a post-

graduate course of the finest kind, with a curriculum which is unlimited, and suitable for men of many kinds and minds of all kinds.

The dental law in the state of Ohio is, I believe, the best we have ever had; at the same time it is not far-reaching enough, and it is only by education of the children of today that there is hope for the future in this respect. Our law mentions the things for which a license may be revoked: Obtaining license by fraud or misrepresentation; use of intoxicants or drugs to such a degree as to render one unfit to practice dentistry; guilty of immoral conduct and conviction of a felony. How about the fraud, misrepresentation, and absolute stealing one enjoys when a visit to the quack dental office or parlor is made? A law requiring every one to do exactly as they agree seems to be what is required.

Greed and hoggishness are today the curse of our country; one's respectability nowadays is measured by the reputed size of his pocket book. This being the model used, it is little wonder the quack or charlatan flourish, getting fat and saucy for by their methods of dishonesty they make dollars to our cents, and the dear public commends them in the policy of "get the money."

Education only will pave the way for good honest work, driving home to us all that "honesty is the best policy," when you are going to be found out.

I do not think increased membership in our societies, in its general sense, the right thing, for it should be a kind of reward or merit, and unless one can come up to a certain standard or proficiency, he should not be acceptable to a reputable dental society. This applies in the co-operation to bring about better preparation and training. There are already too many bunglers in our societies; patients come to you with a rotten piece of work and say, "Doctor, what kind of a job is this?" If one is honest, he is forced to say, "Rotten." Patient says, "Doctor So-and-So did it, and he is reputable, is he not?" This kind of business makes you sick and gives one that tired feeling; also the patient perhaps has some feeling of his own, as he is the sufferer, both physically and financially. This is the very thing that is doing most to help the quack. Eliminate this bum work from the ranks of our reputable men and the education of the public will be a comparatively simple thing. We have men, members of our societies, who are counted reputable, whose work is no better than that done by quacks. We all know some weak brother who cannot do a decent piece of work to save his life, and yet he is taken in by the society and branded O. K.

Attention to school children; examination of the children is one of the most sensible questions ever brought before our profession. Children today, and tomorrow the fathers and mothers of the next generation. Teachings received by little ones will follow them as long as they live, and it is impossible to determine how far-reaching our efforts will be toward the betterment of the physical being of humanity. The habit of cleanly teeth and mouths

taught to children makes an indelible mark which will materially assist our work in after years. A word here, a suggestion there, by one who has the confidence of children, and results are bound to happen.

Discourage incompetents. It is too bad to spoil a good farmer to make a poor dentist. It is the duty of our colleges not to graduate a student until he is fitted to begin practice. A man having no mechanical ability, no artistic sense of the fitness of things, how is he to recognize and take into consideration the application of force, the greatest of all questions which must be solved in each and every piece of work known to dental science? A mechanic of the highest order only has any right in the practice of dentistry—we must be not only mechanics but artists, sculptors, surgeons, financiers, diplomats and gentlemen.

Simplicity is the mark of a mechanic. He will first reduce a thing to its simplest possible form, then go ahead and do it.

Individuality can always be seen. Wherever you see a piece of work, there is an individuality about it, and the better the mechanic the more simple the methods of working out that individuality. He of solid, substantial makeup, his work is of that kind. Force of character stands out in glaring headlines on the monuments of our energy and creation.

Complication, the trade mark of mediocrity. Complicated methods and instruments do not stand the test of time and use. Simplicity is the great law of nature, and is the established law of God. We, as men, may depart from that law to a certain extent, but within certain bounds we must stop.

One way to encourage the making or adoption of more simple instruments and appliances is to use that kind of tools, and if you can't buy them, make them.

Extremes rest with individuality and have proven both a curse and a blessing to mankind.

Judgment and discretion are the safeguards and guide-posts to success. When either one is forgotten, what a pickle we are in. Forget judgment or forget discretion for only a few moments in a single operation and you will gain more gray hairs than you can get in a month at some summer resort with the wife at home and the limit removed.

Investigation; our curiosity being well developed by that cultivation spoken of, remember judgment and discretion when you get tangled up with theories, instruments, appliances, etc., don't forget "the limit."

If you can do anything better than some one else, as Sam Jones says, "Quit your meanness" and show us how, we want to know.

The person who thinks there is no more for him to learn has a swelled head, which is an infectious disease—very virulent in its nature, and for treatment would recommend the ax.

A specialist; one who makes a specialty of a certain thing

or operation. Why wouldn't he be better fitted for that one thing than the general practitioner? What excuse can we offer for not doing our duty to those who come to us in confidence? It is only common honesty to consult one of special knowledge. We must be honest with ourselves before we can be honest with others, and it goes a long way toward the upbuilding of our profession, for nothing ever fell into disrepute when honesty stood behind and gave to it a foundation solid as rock.

Giving opinions on work is a delicate matter, requiring the care of an experienced diplomat, and a blunder may take a fall out of one's vanity, and make a decided dent in one's pocket book.

A little piece of the golden rule taken in allopathic doses seems the indicated remedy.

# EXCHANGE OF PRACTICAL IDEAS

[This department being an exchange of practical ideas, it depends upon our readers furnishing material to keep it going. Just a few practical ideas from each subscriber will make it of mutual benefit and practical worth. Are you willing to do your share? Help the good cause along by sending the editor a few practical suggestions. Send something today. Address Dr. L. P. Bethel, 1255 Neil Ave., Columbus, Ohio].

## HOW TO MAKE A GOLD-CASTING MACHINE.

**By Dr. W. H. Reaben, McComb, Miss.**

I wish to say at the outset that this machine will not do what the Taggart machine will do, and if you contemplate buying a Taggart machine, go ahead, for the Taggart will do the work—cast anything in gold for use in the mouth.

While at the Jamestown Dental Convention, I had the pleasure of meeting Dr. Taggart and of seeing him demonstrate the use of his casting machine. To know Dr. Taggart is to wish him all prosperity, and to see him cast gold into any form imaginable is to sit entranced; so you will readily understand my reticence in explaining my simple device at an earlier date. But of late there have been so many outfits described and put on the market that I suppose it is about time I were describing my little "foundry."

My instrument works by suction. The idea is not new, but the details vary from those of anything I have ever seen. It is well known that when the air is exhausted from one side of an object the atmospheric pressure can reach as high a point as 15 pounds per square inch. The human mouth can suck with much greater force than it can blow. One can blow with a force of only about 5 pounds per square inch, but he can suck with sufficient force to cause twice the above pressure upon the other side of an object.

Notwithstanding the fact that I have compressed air in my office at a pressure of 20 pounds, I found that the exhaust method of casting would be the most convenient.

To make the machine, first procure a small-sized bicycle pump and remove valve from stem, reverse it and replace same. This makes the pump suck instead of blow. Next, get from the hardware store several separable hose couplings. Take one apart and to the end that has the knurl or sleeve attached, solder the bicycle pump stem. Reducers can be interposed between end of tube and this half of the hose coupling to facilitate soldering. The other half of the hose coupling forms your flask. Make any kind of an old stand for same, just so it stands about 12 or 13 inches above the table. Through a hole in top of stand you drop pump, which rests upon sleeve or coupling proper, heretofore described. Get some rubber gaskets and use one new one at each casting, thus insuring a perfectly air-tight joint.

Another important element is the carbon crucible. This can be made from an old dry battery carbon. It can be filed or turned to fit in upper end of flask. It must have a shoulder, and when finished it will resemble somewhat the lid of an old-fashioned churn. Bore a hole in center, through which pass the sprue wire. With the sprue wire extending through crucible, it is an easy matter to impale wax model of inlay upon same. I invest with just enough material to cover wax about a quarter of an inch. When set, pull out your sprue wire, leaving carbon crucible in situ; melt out wax over denatured alcohol flame and screw flask into sleeve of pump previously described. Screw as tight as you can, using a pair of old gloves to hold sleeve, and pliers to hold flask. When gold is melted, give one pull upon pump and down goes your gold, under a pressure of say something less than 15 pounds per square inch. The air is exhausted through pores of investment material.

The outfit herein described has served me for seven months or more, and with it I have cast many an inlay, gold crown—open-faced and solid—and also dummies for bridge work. I will describe in another issue of Summary how to make an electric air warmer.

## A NEW CROWN.

By Wm. C. Dalbey, D. D. S., DuQuoin, Illinois.

At least I call it new. I have never seen it mentioned in any of the dental journals. In making this crown in its simplest form, prepare the root as you would for a Davis or Logan crown with root well under gum labially. Then take a Steele facing without backing, no Steele backing is used, grind gingivally to shape. Now take a square platinum pin, 16 or 18 gauge, and fit in root, bringing the pin a little toward the lingual side of root and allowing the pin to protrude about three-sixteenths of an inch from the root. The protruding end should be slightly flattened or notched. Now take inlay wax, after warming and kneading carefully, and press firmly over pin and down on root. Then take your prepared facing and press it to position, and with a warm spatula shape the wax in the mouth, approximately as you wish your backing to be. Cool with ice or cold water and remove; the pin should come away with your wax and facing. Then finish your waxing; if you wish, you may allow wax to extend slightly over incisal edge for protection. Replace on root to see that all is correct. Remove, invest and cast as you would an inlay. Heat your flask pretty well when casting. Twenty-karat solder may be used, or even platino-silver casting metal if you desire, which does not oxidize and casts at the same temperature as 22k gold.

This will make a pretty crown and a strong one, and can be made almost as quickly as one can tell about it.

If you desire a banded root crown, proceed with cap and pin as you would for a Richmond crown, only allow pin to protrude as in plain crown.

I have never had a facing break on one of these crowns, but if one does it can be easily and quickly replaced.

## REPAIRING A BROKEN BRIDGE.

By F. B. Spooner, D. D. S., Brooklyn, N. Y.

So many ways have been told of repairing a broken bridge that possibly this method may have been made known although it is new to me. Nervous man presented in a hurry.

One facing was lost, and the sharp edge of gold was cutting his lip. Wanted it done at once, so I dried with alcohol, and built the tooth with Ascher's enamel. Six months later tooth and man were doing well. Do not wish to say this is as good as other ways that have been set forth, but it has the merit of quickness, not to say no cost to speak about.

## CROWN HELPS.

By W. G. Hamm, D. D. S., Chillicothe, Ohio.

After setting a crown of any kind, ofttimes pain follows, contrary to all care exercised in preparation, due to two distinct causes.

First, the contraction of cement, more especially the rapid setting, and the cases where the pulp is alive and dentin exposed. In those cases I find 25 per cent solution of silver nitrate treatment very good. Caution must be given to thoroughly dry the tooth before a gold crown is set to avoid discoloration.

Second, an abrasion or laceration of the soft tissues around the gingival border when preparing for crown, allowing an excess of acid from cement to penetrate the contused surface to the nerve terminals, causing pain. This pain can be controlled by taking saturated solution of bicarbonate of soda and immediately following with wine of opium over the gum. Cases of pericemental tenderness, usually following crowning of teeth, can be promptly relieved with Dr. Buckley's liniment, applied locally over affected gum area. The formula is:

| | |
|---|---|
| ℞ Menthol - - - | grs. XX |
| Chloroform - - - | dr II |
| 10% Tinc. Aconite - - - | dr VI |

# SUGGESTIONS

## GOLD INLAYS FOR INCISORS AND CUSPIDS—A NEW METHOD.

**J. Allen Johnson, Middletown, Del.**

In many of the cases of badly broken down cuspids and incisors coming under our observation, the bite is such that the use of porcelain for the restoration of corners is contraindicated; not that we do not possess adequate skill, but the limitation of the tensile strength of porcelain is such that we feel that such a restoration will ultimately result in a failure. This is especially true where the patient is of a vigorous temperament and a pipe-smoker.

It is the purpose of this article to deal with those cases wherein the process of decay has gone to the point where devitalization is indicated as a conservative operation, although the inlay method herein described may as readily be applied where the pulp is vital, retention being attained, as with the porcelain filling, without the screw-post.

We will take as our first illustration a superior central incisor having a very large mesio-incisal cavity, pulp removed and apical foramen scaled.

After reaming out root canal to readily take a platinous gold post, gauge 14 to 16, prepare the cavity as you would for a porcelain filling except that the mesio-incisal corner should be slightly beveled to afford extra protection to the enamel edge. You will now take an impression of the cavity with dental lac and obtain a die or cast of the cavity in the inlay metal, (S. S. W.) This die or cast in the swaging ring is placed in the inlay swager and 36 gauge pure gold is swaged over it. The inlay matrix thus obtained should be returned to the tooth cavity and burnished to an exact fit.

Having the matrix in place the platinous gold post is pushed through to a position in the root canal and hard (or sticky) wax flowed around post on floor of matrix to unite them in order to facilitate their withdrawal without change of position. After investing the canal portion of post and the under side of the matrix, flow 22k. solder around post to replace the wax on the floor of the matrix. Replace matrix in tooth cavity and cut off excess of post.

With hard wax now restore the tooth to full contour (less the thickness of 36 gauge plate), giving the wax a glazed surface by means of hot air.

From 36 gauge 24k. plate, cut an oblong strip, sufficiently long to cover cervical margin of cavity and extend one-eighth of an inch below the incisal edge, and wide enough to extend from the labial margin and cover the mesial surface of wax.

This strip is now placed between the wax filling and adjoining tooth, and with the fingers and double end burnisher is brought smoothly over the wax, cutting the lower edge to facilitate the restoration of the contour. The assembled parts are carefully removed from cavity and lightly invested, so that the heat directed from below will flow the 22k. solder dropped through the opening on lingual surface.

After trimming the inlay with curved shears it should be cemented in cavity where with stones and disks the operation is concluded. The total time consumed should not exceed one and a half hours, regardless of the size of the cavity.

The very secure anchorage of an inlay or filling having a post makes it an ideal abutment in the centrals and cuspids for the support of a lateral incisor.—Dental Practice.

## FINISHING GOLD FILLINGS.

**Arthur D. Black, Chicago, Ill.**

There is no particular difficulty in finishing fillings in occlusal cavities, and we will not consider them. In finishing fillings in gingival third cavities in the labial and buccal surfaces the only difficult margin is the gingival and it is too often left with a considerable overlap. This can generally be

easily and properly trimmed with a sharp finishing file or knife. There is room for the blade of either between the free margin of the gum and the tooth, and the filling may be trimmed without injury to the gum. The proximal cavities are the most difficult to trim and polish, and I wish to present a simple and systematic plan for them. First of all, a separator should be in place (very preferably a Perry Separator, which does not injure the gums and gives room for operating). In placing the filling, enough separation should have been secured to allow for the necessary trimming of the proximal surface and yet restore the proper contact. After the filling is finished, the separator should be tightened just enough to make a slight space between the filling and the proximating tooth. A cut should then be made with a saw held against the surface of the proximating tooth, thus smoothing the surface of the gold. Another saw, with the blade upside down in the frame, should then be carried through the previous cut and down between the free margin of the gum and the tooth until its upper toothed edge is to the gingival of the gold that overlaps the gingival margin. By sawing in the occlusal direction, this overlap is quickly removed. Then with finishing knives and files the gingival portion of the filling, as well as the buccal and lingual margins, may be trimmed smooth. With a file the occlusal portion of the proximal surface may be rounded. Then disks may be used on the buccal and lingual, but these should not reach into the embrasure as far as the position of the contact point. Narrow strips, coarse, medium and fine, may be used to polish the gingival portion and finally a wide medium, followed by a wide fine strip, should be cast over the contact. If this is done after the trimming and polishing of the remainder of the filling, these strips will leave the contact properly rounded.

In cases where the filling extends so far to the gingival that it is impossible to saw off the excess of gold at the gingival with the reverse saw, this excess may be removed with the finishing files and knives either before or after the separator is removed. It is sometimes easiest to finish all of the proximal portion of the filling except the gingival while the separator is in place and the gingival portion after the separator is removed.—Dental Brief.

## THE ASSISTANT IN GOLD FILLINGS.

**Arthur D. Black, Chicago, Ill.**

I can not emphasize too strongly the value of a well-trained assistant in gold filling operations. There are almost innumerable difficulties that are made easy by the assistant. There is no operation in which an operator oftener wishes for three hands, and with a good assistant he has four. I think most fillings can be put in better and in at least a third less time. It takes but a few weeks to train a young lady of average intelligence and ability to mallet, pass gold from the annealer into the cavity, to hold a mirror or an instrument, and many other little things, and it is a continual surprise to me that so few men employ assistants. If I used an assistant for no other purpose than her help in placing gold fillings, I am sure her services would be worth while in making these operations easier for my patients, in making them easier for me, and at the same time enable me to make better fillings; in fact enable me to make many fillings that I would not attempt without an assistant; and not only to make better fillings, but save much time in doing so. Time is money to every busy man.—Dental Brief.

## SINGLE MOLAR BRIDGE.

**W. A. Giffen.**

The loss of a single molar forms a class of cases which I think is sadly neglected. The patient is apt to feel that the loss of one tooth is not of much importance, and many dentists treat the condition in the same way. If we would just stop and consider how many deformed jaws, and how many cases of mal-occlusion result from the loss of a single first molar or even a bicuspid in young patients, we should do better work.

I have bridged in a few single molars which are very satisfactory, in the following way: Select suitable tooth to fill space, make groove on approximal surfaces of the teeth approximating the space to carry eighteen gauge iridio-platinum wire. Now make a hood for base of crown and short

saddle for alveolar ridge and wax them together in proper positions. Cut the wire support long enough to reach from saddle through the groove and form a lug or spur to rest in the slot in the fillings or inlay of approximating teeth, and wax the ends to saddle, remove porcelain dummy tooth, invest and solder. When they are fitted properly they go to place with a click and are surprisingly solid. If the ridge is flat and you are afraid the dummy will rock, solder a clasp to the wire on distal surface long enough to clutch the mesio-buccal and mesio-lingual angles of the approximating molar. —Dental Register.

## HOODS FOR BICUSPIDS.

**Thomas P. Hinman, Atlanta, Ga.**

Where the second bicuspid and the first molar have been lost and it is desired to replace them with a bridge, a convenient hood may be constructed somewhat after the Alexander method, but in my method I use no staple. Grind away the lingual cusp of the bicuspid sufficiently to allow for its replacement with gold. Cut cavities on the distal and mesial surfaces of the teeth of sufficient depth to have their cervical borders under the gum line. These cavities should be cut with a square-end fissure bur, and should form an arc of a circle bucco-lingually of sufficient breadth to reach as far as the buccal and lingual angles in both cavities. The lingual enamel is now trimmed away in order to secure slight bevel from the gum line to where the cusp has been ground off—this bevel leaning bucally. The matrix is made of inlay gold after the usual method (impression and amalgam model is of great value in these cases) and is carried well over the cervical border of the cavities as well as under the gum margin on a lingual side. It should then be burnished and malleted in the cavity to close adaptation by means of an orange wood plugger, as previously described.

The matrix is now removed, thickened with 22k. solder, returned to the cavity and the margins reburnished. Remove it once more in a modeling compound impression and bite,

place it in an articulator and adapt to it a form swaged of No. 36-gauge pure gold to restore the lingual cusp. The latter is waxed in position and the lost parts are restored in wax. Cut the tooth from the model, and invest it with the buccal side downward, heaping up the investment so as to protect the cusp and to just cover the lappings of the matrix. Boil out the wax and fill with 22k or 20k. solder. The hood when finished will withstand the necessary stress of mastication, and will support a bridge of ordinary dimensions. This hood has all advantages of a gold crown without the disadvantage resulting from the display of gold.—Pacific Dental Gazette.

## LINING BADLY FITTING VULCANITE DENTURES.

**G. W. Staples.**

Take for instance a full upper case: Use the plate as impression tray and modeling compound for taking the impression. Heat the plate in water to a temperature as high as the patient can tolerate, place in it a thin layer of soft compound and introduce it into the mouth; take particular care to press it well back in order to keep it from protruding. When the case is well up and back, have the patient close the jaws and hold them firmly together while you chill the case thoroughly with ice water. Remove from the mouth, and with a warm knife or file trim the rims just as you want them to be in the finished case, and try in the mouth to see if the contour of the lip and articulation are right. Next run the cast into the impression thus obtained, and when the plaster sets invest high in the lower half of the flask, letting the plaster come just to the line of your compound, so that when you run the upper half the plate will come away entirely within it. But before running the upper half, remove the entire palatal portion or "roof" of the plate with a bur, trimming close up to the teeth. With a warm knife remove the same portion of the modeling compound underlying it. Now place a piece of wax the thickness you want the palatal portion to be, wax up around the edge, and flow the upper half of the flask. When the plaster sets, place the flask in water

and heat until the compound is sufficiently softened to separate. Remove the compound and wax, and then go over the gum surface of the old rubber carefully with a large bur and freshen it up completely. Paint with a solution of rubber in chloroform, pack and vulcanize, and when you take the case out of the flask you will find that you have a very easy one to finish and an excellent piece, at an expenditure of a minimum amount of time and labor.—Dental Cosmos.

## THE SPRAY IN PROPHYLAXIS OF THE ORAL CAVITY.

**H. C. Register, Philadelphia, Pa.**

In prophylaxis of the oral cavity, I find from clinical observation much benefit is derived from using antiseptic sprays in an atomizer under different degrees of pressure, as indicated by the case in hand. The chemical and mechanical action and reaction obtained is far reaching. Germicidal stains in connection with sprays enable us to detect plaques upon the surfaces of the teeth that otherwise would escape notice, as they are in most cases colorless. Iodin tincture alone, or in combination with potassium, gives us a sedative, alkaline, germicidal paint that stains the plaques, enters into their albuminous organisms and destroys their life force, in other words, renders them inoperative as tooth destroyers. In this condition the gelatinous mass is easily removed. Simple spraying with the atomizer with heavy pressure, 50 to 60 pounds, used after a few minutes' action of the iodin solution will remove about all of the cheesy environment, taking with it thousands of bacterial growths. The after spraying should be with an antacid, such as starch solution or ammonia water. The starch solution is made by mixing starch with water, two ounces of starch with a quart of water; allow this to stand for a few hours, then boil for a few minutes, and when cold add any essential oil preferred as a flavoring, and it is ready for use. It can be used full strength or diluted. The ammonia water is made by adding one ounce of commercial ammonia to a quart of water. These solutions may be

sprayed over the teeth after using the germicidal paint. They assist very materially in thoroughly cleansing the teeth.

The removal of the calcic matter must be done by instrumentation, but it is much more easily removed after the germicidal treatment. The efficiency of the brush and port polisher in the engine is enhanced by combining starch with the pumice powder, and moistening the same with dioxogen instead of water.—Dental Brief.

## WIRE CONNECTION FOR LOWER PARTIAL DENTURES.

F. E. Roach, Chicago, Ill.

A plate of this kind is very much easier to make, less in the way of the tongue, stronger, and the life of the remaining teeth will be very much extended by virtue of its use. There can be no criticism made upon the ground of the lack of strength of this wire. The reason is that the wire is drawn through the plate and is of uniform strength throughout its length, whereas in a plate as commonly constructed the swedging or vulcanizing leaves some one point that is weaker than others. At the present time we are using 13-gauge wire for this purpose and in placing it my experience has been that it is better not to fit it too closely to the tissues. Fit it loosely so that it does not press into the tissues. You may lay it well down in the floor of the mouth, and it will be a great pleasure to those who have not had experience with this form of partial denture to see the results you will get.—Dental Review.

## A "READY-TO-WEAR" JACKET CROWN.

Prepare the tooth in a similar manner as for a porcelain jacket crown of the Spaulding variety, making it conically round and rather oval toward the cutting edge. Select a Davis or S. S. White detachable pin crown to suit the case, with a small corundum wheel as a vehicle for an abrasure, such as, for instance, the Graf abrasive paste; enlarge the depression for

the pin until it will pass over the conical end of the root, adjusting and fitting it carefully about the gingival margin. It may be cemented to place in the usual manner. A satisfactory method is to take an impression in modeling compound of the root after it has been prepared, including one or more teeth on either side, obtain the bite, and mount in a small articulator. The crown may then be accurately fitted to the cast without the presence of the patient. Usually a half-hour is sufficient time to do the work. If desired a shoulder may be left at the gum line, to which the crown is fitted. It is important to make the projecting part of the tooth as regularly conical as possible, and with a little experience a very perfect adjustment may be had. Of course this method is not intended to take the place of the made jacket crown, but it will be found useful by those who do not have the means of doing the work in the regular way. However, I have met with several cases in which I have adopted it from choice on account of color, strength and mold.—Dental Practice.

## INJUDICIOUS EXTRACTION.

**M. W. Olson, Galesburg, Ill.**

A great many times an upper molar whose lingual root has become exposed its whole length by absorption of the process and gum, is extracted. In these cases I have amputated the lingual root close to the bifurcation and filled the pulp canal, so saving the tooth that would otherwise have been extracted and thereby giving the patient a molar that will be useful for years to come. To extract such a tooth often deprives the patient of a very useful organ and one that they can not afford to lose.—Dental Review.

## AMPUTATING A ROOT.

**F. A. Ballachey, Buffalo, N. Y.**

If there is a fistula, there is not much difficulty in getting at the end of the root. Place in the fistula a tent of absorbent cotton dipped in aromatic sulphuric acid, and change every day or two, enlarging each time. Do not use much acid, as

it is very strong and quite irritating, and if the gum becomes very sore substitute glyco-thymoline for a few changes. In fact, it is not necessary to use the sulphuric acid more than two or three times in the course of the operation. When the opening is large enough to admit of operating a bur in the dental engine through it, first pass in an explorer to locate the size and position of the root, and then, with a sharp fissure or rose bur, smooth off the end or completely sever a section of it.—Dental Practice.

## THE USE OF PORCELAIN MIXED WITH ALCOHOL.

**J. Q. Byram, Indianapolis, Ind.**

It is probable that any porcelain that is to be applied to an invested matrix should be mixed with alcohol. It should be mixed to a cream-like consistency and flowed into position with the point of the carver or a small brush; it is not to be carved as the porcelain that is mixed with water. After moistening the matrix with alcohol, fill it almost to the margin with the paste that is to form the foundation of the inlay. The alcohol is then evaporated and the porcelain is fired to a high biscuit. After this firing the investment should be chilled by dipping the base of the cup in water, using care to prevent the investment from becoming moist. In case more foundation is required, a second application is made and biscuited.—Items of Interest.

## FILLING MESIAL AND DISTAL CAVITIES IN MOLARS.

**G. Walter Dittmar, Chicago, Ill.**

A gold foil filling is indicated only where it is possible to direct the force of the plugger in a direction to pack and condense the gold, by mallet force, against the walls and margins of the cavity, and therefore I believe it is possible to place an absolutely perfect gold foil filling in a mesio-occlusal cavity of a molar where it is practically impossible to do so in a disto-occlusal cavity, especially if much of the disto-lingual must be restored. Therefore, the gold inlay is especially indicated in a distal cavity.—Dental Review.

# SOCIETY

## AMERICAN SOCIETY OF ORTHODONTISTS.

The eighth annual meeting of the American Society of Orthodontists will be held in Washington, D. C., on Monday, Tuesday and Wednesday, November 2, 3 and 4, 1908.

FREDERICK C. KEMPLE, Sec'y,
43 West 48th street, New York City.

## THE CANADIAN DENTAL ASSOCIATION.

The Canadian Dental Association meets in Ottawa, August 4, 5, 6, 1908, and extends an invitation to the members of the National Dental Association of the United States to attend its meeting. Arrangements have been made with the Canadian Pacific railway company that all tickets from the West, over the Canadian route to Boston, will be honored via Ottawa on the return trip.

This will give those attending the National Dental Association an opportunity to visit the St. Lawrence Route, City of Montreal and the Capital city of Canada, and in this position be close to what has been termed the playground of America. No better hunting, fishing and camping can be found than what is within the reach of the city of Ottawa. Besides the Canadian Dental Association would feel it a great honor to have with them any of their conferers of the United States who choose to accept this invitation.

## INTERNATIONAL DENTAL FEDERATION.

### Program of the Meeting at Brussels, August 6, 7, 8 and 9, 1908.

Thursday, Aug. 6, 8 p. m. Reception by Belgian Dental Federation, Taverne de la Regence, Palace Royale, Brussels.

Friday, Aug. 7, 9 a. m. At the Academy of Medicine, opening general assembly, 1st meeting of executive council.

Friday, 2 to 6 p. m. Meetings of committees.

Friday, 8:30 p. m. Reception at Vaux Hall, Rue Royal. Concert.

Saturday, Aug. 8, 9 a. m. Demonstrations and presentations by M. M. Brophy (Chicago), Korbitz (Berlin), Iotwen (St. Petersburg), Solbrig and Platschick (Paris), etc.

Saturday, 2 to 4 p. m. Meetings of committees.

Saturday, 4 to 6 p. m. 2d meeting of executive council.

Saturday, 7 p. m. Banquet, Laverne, Royale Rue d'Arenderg.

Sunday, Aug. 9. Excursion to Foret de Soignes. Breakfast given by Belgian National Dental Federation. Visit to Iervueren Park and Congo Museum. Supper given by M. Bon, dentist of Iervueren.

The fellow members who take part in the meeting are requested to inform Dr. Rosenthal, president Belgian Dental Federation, 1 Place du Irone, Brussels.

Receptions and outings of Thursday, Friday and Sunday are offered gratuitously by members of I. D. F.

## ARMY LEGISLATION.

I take pleasure in informing you that at the recent national meeting of the American Medical Association, just held in Chicago, it was my pleasure, in the house of delegates, to introduce the following resolutions:

Whereas, the value of the services of the dental corps of the army is now thoroughly recognized,

Resolved, that the legislative committee be instructed to further such legislation as will place the dental corps in the army on a commissioned basis, such legislation to meet the approval of the war department.

They were referred to the reference committee on legislation, who brought in the following report, which was unanimously passed by the house of delegates:

The house of delegates last year endorsed a bill providing for the dental corps in the navy, and it seemed desirable to make the proposed resolution more general so as to embrace both branches of the science, and the committee recommends the adoption of the following resolutions:

The house of delegates of the American Medical Association, recognizing the great importance of the services of the dental corps of both navy and army, and appreciating the importance of placing both on a commissioned basis, authorizes the committeee on legislation to assist in securing the passage of such bills as meet the approval of the war department, or the chief of the bureau of medicine and surgery of the navy.

The work was made much easier by the magnificent amount of missionary work done by the dentists throughout the country, especially in the middle and far and southwest, as I found that the delegates from these sections appeared to be thoroughly posted by their local dentists as to the matter at issue. This, in no light measure, contributed to the result attained, which, I am confident, will lead to the placing of the army corps on a commissioned basis this coming winter. I have the personal assurance that the committee on legislation of the American Medical Association will use the same efforts to obtain successful legislation in this matter as they have used in obtaining the reorganization of the medical department of the army.—M. L. RHEIN, Delegate from the Stomatological Section.

# AFTERMATH

**Fire** destroyed the home and dental office of Dr. Harry Eckles, in Dallas, Texas, June 24. Loss $4,000, with some insurance.

**Deaths.**—Dr. Adolph Fruhauf, Brooklyn, N. Y., June 24, aged 63 years. Dr. James Edwin Kea,, Wilmington, N. C., June 25, aged 91 years.

**Colorado State Dental Association** elected the following officers: Dr. I. C. Brownley, Denver, president; Dr. Charles A. Monroe, Boulder, secretary; Dr. W. A. Brierley, Denver, treasurer.

**California State Dental Association** elected the following officers: President, O. P. Roller of Los Angeles; vice-president, H. L. Seager; secretary, C. E. Post; treasurer, T. N. Iglehart.

**Oregon State Dental Association** elected the following officers: Dr. A. L. Beatie, Oregon City, president; W. C. Harris, Eugene, vice-president; Millard C. Holbrooke, Portland, secretary-treasurer.

**Army Dentist Transferred.**—Dr. Hugh G. Voorhess, army dentist, located at Fort D. A. Russell, Wyo., has been ordered to Fort Crook, July 1, to do dental work among the troops stationed there.

**Dental Examinations.**—New Orleans, La., 38 applicants, 26 successful. Portland, Ore., 54 applicants, 37 successful. Hartford, Conn., 37 applicants, 21 successful. Tacoma, Wash., 80 applicants, 47 successful.

**Dentist's Body Recovered.**—The body of Dr. Charles C. Whisler, of Ashland, Neb., was found June 15, about four miles below the city. He was drowned June 8, by the overturning of his gasoline launch in Salt creek.

**Dentist Drowned.**—Dr. Herman F. Hormann, a dentist of Haddon Heights, N. J., was drowned in the Schuylkill river, near Phoenixville, June 18, when a canoe which he was paddling with James Clark, of Valley Forge, was overturned. The dentist, who was unable to swim, sank immediately.

**Minnesota State Dental Society** elected the following officers: President, H. B. Kramer, Minneapolis; vice-president, A. W. Gallagher, Winona; secretary, F. E. Cobb, Minneapolis; treasurer, C. H. Robinson, Wabasha.

**Connecticut Odontological Society** elected the following officers: President, L. D. Monkes of New Haven; vice-president, C. A. Ryder of Bridgeport; treasurer, F. L. Uhle of Bridgeport; secretary, George H. Neubauer of Bridgeport.

**Dentist Commits Suicide.**—A dentist of Shelbyville, Tenn., committed suicide by shooting himself with his revolver, May 31, at his home. He has been in bad health for some time, and this is presumed to have been the cause of his rash act.

**Appointed Dental Commissioner.**—Governor Woodrup, of Connecticut, on June 3, appointed Dr. Albert W. Crosby, of New London, a member of the state dental commission for five years, to take the place of Dr. A. B. Johnson, of New Britain, whose term will expire July 1.

**Utah State Dental Society** elected the following officers: President, Dr. H. K. Weber of Salt Lake City; vice-presidents, Dr. O. H. Budge, of Logan, and Dr. C. W. Gates of Salt Lake City; secretary-treasurer, Dr. H. T. Emise of Logan; executive committee, Drs. D. O. Budge, Logan, J. P. Stewart and J. B. Gordan, Salt Lake City.

**Mississippi Dental Association** elected the following officers: President, Dr. W. R. Wright of Jackson; 1st vice-president, Dr. Charles F. Boger, Natchez; 2d vice-president, Dr. W. H. Beaben, McComb City; secretary, Dr. L. B. Price; journalist, Dr. Eugene A. Johnson, Holly Springs; treasurer, Dr. C. C. Crowder, Kosciusko.

**Indiana State Dental Society** elected the following officers: Dr. D. A. House, Indianapolis, president; Dr. H. C. Sexton, Shelbyville, vice-president. The new board of trustees selects the secretary and treasurer. The trustees are: Dr. R. I. Blakeman, Indianapolis; Dr. R. S. Viberg, Ft. Wayne and Dr. P. H. Chadwick, of Rushville.

**Texas Dental Association** elected the following officers: Dr. J. W. Collier, San Antonio, president; Dr. Julian Smith, Austin, 1st vice-president; Dr. J. M. Nash, Brenham, 2d vice-president; Dr. J. F. Fyfe, Dallas, secretary-treasurer. Dr. H. N. Davidson of Hubbard City, was elected a member of the executive committee.

**Missouri State Dental Association** elected the following officers: President, Dr. J. B. McBride, Springfield; vice-president, Dr. R. E. Darby, Springfield; 2d vice-president, Dr. E. P. Dameron, St. Louis; recording secretary, H. H. Sullivan, Kansas City; corresponding secretary, Dr. J. F. Wallace, Canton; treasurer, Dr. J. F. Fry, Moberly.

**Georgia State Dental Society** elected the following officers: President, C. P. Davis, Americus, Ga.; 1st vise-president, Dr. W. C. Miller, Augusta; 2d vice-president, Dr. George S. Tigner, Atlanta; corresponding secretary, D. H. McNeil, Athens; recording secretary, DeLos L. Hill, Atlanta; treasurer, H. R. Jewett, D. D. S., Atlanta; journal editor, H. H. Johnston, D. D. S., Macon.

**Massachusetts State Dental Society** elected the following officers: N. A. Stanley of New Bedford, president; Cornelius S. Hurlburt of Springfield, 1st vice-president; Eugene H. Smith of Boston, 2d vice-president; Charles W. Rodgers of Dorchester, secretary; C. Edson Abbott of Franklin, assistant secretary; Dr. Joseph E. Paul of Boston, treasurer; Carl R. Lindstrom of Boston, editor.

**Police Charge Boston Dentists with Violating New Law.**—The police activity in the Back Bay, which has already resulted in the arrest of six prominent dentists, is now known to be for practicing under a corporation name, and not for failure in having their name registered before the State Board of Dentistry. The new law passed by the legislature forbids the practicing of dentistry under a corporation name by even registered dentists.

**Dentists Honor Dr. H. M. Reid.**—Members of the faculty of the college of dentistry at the university of Minnesota gave a dinner June 5, in honor of Dr. H. M. Reid. Dr. Reid has decided to give up his active practice, and he will take up his residence in New Jersey. Dr. Reid has been connected with the dental department of the university for several years. He has been secretary and treasurer of the Minnesota Dental Society for the last twenty-five years.

**Disappearance of Dr. W. S. Gloyd Solved.**—The body taken from the river in St. Paul, Minn., June 2, was positively identified as that of Dr. Wm. S. Gloyd, the former Minneapolis dentist who disappeared from his home October 29, shortly after he returned home from a hunting trip in which his brother-in-law had been accidentally killed. The identification of the body was made possible by the efforts of several dentists who had worked for Dr. Gloyd and who knew the condition of his teeth.

**Marriages.**—Dr. F. B. Damron, Lincoln, Neb., and Miss Sallie Agnew, Los Angeles, Cal., June 3. Dr. Norman T. Benz, Syracuse, N. Y., and Miss Eva M. Born, Syracuse, June 4. Dr. E. A. Kline, Napa, Cal., and Miss Julia Boyd, Napa, June 9. Dr. Daniel A. Shadrack, Danville, Va., and Miss Sallie R. Brown, Danville, June 9. Dr. Wm. T. Maynard, Milwaukee, Wis., and Miss Josephine F. Mertz, Milwaukee, June 10. Dr. Leo M. Linscott, Santa Cruz, Cal., and Miss Ruby M. Lewis, Santa Cruz, June 18. Dr. O. H. Myers, Ft. Wayne, Ind., and Miss Sadie Reiter, Ft. Wayne, June 18. Dr. Harris R. C. Wilson, Cleveland, Ohio, and Miss Clemie M. Rogers, Ravenna, Ohio, June 20.

**A Novel Dental Meeting.**—A novel feature of the Michigan State Dental Society meeting was the holding of its sessions aboard steamer and a trip from Detroit to Sault Ste. Marie and return. Four days of continuous enjoyment. There were more than two hundred aboard the chartered steamer, City of Mackinac, which left Detroit Wednesday, June 10, and returned Saturday, June 13. The papers presented were of a high order, the clinics were good and in general much enthusiasm for the upbuilding of the Michigan state society was manifested. The social features on board, and the day at the Soo and Mackinac Island were greatly enjoyed by all. This was one dental meeting where even a four days' session was too short.

**Twenty-four Thousand Dollars for New Harvard Dental School.**—Twenty-four thousand dollars was pledged for the new Harvard Dental School by the 150 members present at the dinner of the Harvard Dental Alumni Association, June 27. An appeal had been made by Dean Eugene H. Smith for funds with which to finish the new building. Dr. Charles S. Brackett, of Newport, for many years a professor at the school, arose and promised the sum of $10.000 on condition that a like sum be raised among the alumni present. The wildest kind of enthusiasm reigned following Dr. Bracket's remarks. Dr. William H. Potter at once pledged $2.000, Dean Smith $1,000, the class of 1898 $1,000, and many the sum of $500 and $250.

**Army Dental Legislation.**—Now that the medical bill has passed, says an army dental surgeon, I hope you will say a good word for the dental corps when their bill is brought up at next session of congress, the bill to commission the dental surgeons. The undesirable features of a contract status have been so often commented upon that further argument for the elimination of this position from the services seems almost unnecessary. The immense benefit of the dental corps to the army has been frequently commented upon in the annual reports of the surgeon general, and I hope that the fact that the dental surgeons are the only ones in the service not benefited by the pay bill, and that they are, with their families, at a great expense, continually changing stations, appeals to consideration.

**Robberies.**—Drs. S. C. Burgard and M. P. Merrill, Columbia, Tenn., loss in gold filling,$40 and $20 respectively. Drs. J. A. Myers and G. E. Cleophas, Beloit, Wis., $200 in platinum and gold fillings, June 6. Dr. M. J. Newman, Monroe, Wis., gold filling valued at $50, June 12. Dr. Geo. W. Mellor, Bayonne, N. J., jewelry and gold fillings valued at $200, June 13. Dr. Anna Cluthe, Evansville, Ind., gold valued at $150, June 14. Drs. R. J. Morris and S. B. Lewis, Evansville, Ind., gold bridges and crowns worth $100, June 14. Drs. Phillipy and Warvel, Anderson, Ind., gold leaf and fillings,

$25 and $50 respectively, June 21. Dr. A. B. McVay, Streator, Ill., gold and money to the value of $200, June 24. Dr. Dary, New Britain, Conn., $30 worth of gold fillings, June 25. Dr. L. T. Canfield, Toledo, Ohio, July 3, $40 worth of gold and other materials.

**Ohio State Dental Board Affairs.**—On June 16-19 the regular spring examinations by the Ohio State Dental Board were held in Columbus. 110 applicants, graduates of twelve different dental colleges, were examined. Of these, the large number of 106 received licenses. Ohio now has reciprocity agreements with Indiana, Iowa and Michigan, and in time will doubtless enter into agreements with other states. Under the terms of these agreements, persons holding licenses in one state and having been in legal and ethical practice for at least five years, may be licensed in the other after taking the clinical examination only and paying the required examination fee.

**Dentist Fined.**—A dentist in Missouri was recently fined $25 in police court for forcing a patient into a chair and drilling out gold crowns and fillings. He had contracted to fix her teeth for $30, the money to be paid in payments—the last one to be paid on the day the work was finished. When she went to the office to have a bridge set on two teeth, she paid the dentist $5, having previously paid $20. He demanded the other $5. As a crown was loose on one tooth and there was other work to be done, she hadn't considered the work on her teeth completed and did not bring the balance. She said the dentist insisted on having all of the money then and there. She told the doctor to call her husband, who was at the bottom of the stairs, and that he would settle the bill. He, however, called in another man, forced her to get into a chair and, with instruments and drills, took out most of the work which had been put in. She said the pain was excruciating.

**Semi-Centennial of the Indiana State Dental Association.**—This meeting of the Indiana State Dental Association assisted by the state dental societies from Michigan, Ohio, Kentucky and Illinois, and held in Indianapolis, June 4-5-6, 1908, will go down in history as one of the best dental meetings ever held. The papers were prepared by men of prominence and were of a high order. The clinics were numerous and covered almost every phase of dentistry. Drs. Kibler and Kahlo supervised the clinics and exhibits and deserve great credit. The entertainment and social features under the direction of Drs. J. Q. Byram, G. E. Hunt, E. R. Kibler, H. C. Kahlo, H. M. Thomson, Carl D. Lucas, D. A. House and others were par excellent, and these men sustained their reputations for being princes of

entertainers. Indianapolis for a good time always. The meetings were presided over by the presidents of the Indiana, Ohio, Michigan, Kentucky and Illinois State Dental Societies. Those who failed to attend missed one of the greatest meetings of their lives. The proceedings will appear in future issues of The Dental Summary.

**Honor Paid to Dr. A. F. Davenport.**—A testimonial banquet was paid, June 15, to the veteran dentist, Dr. A. F. Davenport, of North Adams, Mass. There were about thirty members of the profession present, representing every town in the county. A handsome gold-neaded cane was presented to Dr. Davenport by his fellow dentists. Dr. Davenport is still in active practice at 80 years of age and has been practicing for 53 years. He is the dean of the profession in Berkshire county if not in western Massachusetts. He was one of the charter members of the Valley Dental Association, which includes Springfield and Hartford. He came to North Adams in 1860 after taking a course of lectures in the medical college in Pittsburg, there being no dental college available at that time. Dr. Davenport has seen practically all of the modern advance made in dentistry. When he began his profession a little over half a century ago dentistry was in a crude state. The only dental literature he possessed was Harris' Principles and Practice of Dentistry. Oral (relating to the mouth) surgery was unknown. The doctor has seen all such improvements as the use of cohesive gold, the rubber dam, the dental engine, etc. His first month's cash income was only $4.50.

**National Dental Association Changes Needed.**—A movement to effect radical changes in the organization and general methods of the National Dental Association, when it meets in Boston, July 28-31, was inaugurated at the 44th annual meeting of the Massachusetts Dental Society, June 3, at the Boston medical library on the Fenway. The movement was started by the comment in the address of retiring President Geo. E. Savage, of Worcester, that the national organization would not be very important until reorganized. President Savage also advocated the establishment by the national body of a strictly professional dental journal. Dr. Waldo E. Boardman defended the national association against the charge that its membership was so restricted that it could not be beneficial to the profession generally. He said it had an active membership of 622, and a total membership of 643. One for every six members of the Massachusetts society might join the national organization if they chose, but not even so many had ever applied for membership. Dr. Horatio C. Merriam said the national organization must take on new life and enter actively into broad questions now before people or it would die. Dr. Andrew J. Flanagan said that the Massachusetts society was doing many more important things than the national association. Little Massachusetts had almost as many members in its state association, 553, as there were in the national body. He declared that the national body did not deserve its name,

because it did not in any adequate sense represent the profession of the country. He asserted that Massachusetts and New England were leading the country in dental matters. Secretary Charles W. Rodgers, of Boston, warmly defended the national body. He said he received more benefit from attending its meetings than from those of any other dental organization. He declared that if the critics of that body would go to its sessions and say what they had to say there it would do great good. But, he said, those who criticised it did not go to its meetings. Dr. Flanagan replied that he formerly went to the national conventions, but that he became disgusted with the way things were run and withdrew. A committee of three, consisting of Drs. Andrew J. Flanagan, Samuel A. Hopkins, of Boston and Frank T. Taylor, of Boston, was appointed to bring before the meeting of the national association the recommendations of the Massachusetts society, which are that a national journal be published, after the plan of the American Medical Association, that the national society take steps before congress to have removed the duty on surgical and dental instruments, and the reorganization of the national society. The committee on hygiene was voted $100 to carry on its work; $300 was voted toward the institution of an independent dental journal, and $500 for the entertainment of the delegates to the meeting of the National Dental Association in Boston in July.

**Recent Patents of Interest to Dentists:**

S89085—Dental swaging apparatus, H. W. Allwine, Omaha, Neb.

S88455—Dental plugger, A. Atkiss and D. C. Carson, Philadelphia, Pa.

S88484—Mouth prop, J. L. Gehorsam, New York, N. Y.

S89002—Dental cement and manufacturing the same, F. L. and G. L. Grier, Milford, Del.

S90143—Brush for cleaning artificial sets of teeth, E. Kuzzer, Dresden, Germany.

S90913—Amalgam press, A. J. Leveque, Lead, S. D.

Copies of above patents may be obtained for 15 cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

# REGULAR CONTRIBUTIONS

## ORAL PROPHYLAXIS.

By Grace Pearl Rogers, D. D. S., Detroit, Mich.

### PART I.

### SOME OF THE PRIMARY ESSENTIALS NECESSARY TO ITS SUCCESSFUL PRACTICE.

It may seem to the reader of this journal that the subject of "Oral Prophylaxis" has been exhausted, in fact many will pass by this article as one of no especial interest to them. For this reason the writer has spent much mental energy for a substitute of topic which would attract attention, but with no satisfaction. The phrase "Oral Prophylaxis," criticised and misused, is here to stay, at least until some brilliant mind evolves a more comprehensive and complete term.

Our dental literature the past six years has abounded with papers and discussions on this subject, but we question the value and helpfulness of them, for the authors have universally been criticised for their enthusiasm and hypercritical attitude toward the members of the profession who were antagonistic to the work. We ask you to pardon the workers in this new field in dentistry for their over-enthusiastic tendency, for each day brings to them most gratifying results, satisfied patients and such wholesome and beautiful mouth conditions as they had not thought possible. It requires more than the sarcasm and cynical smile of non-believers to dampen the fire of enthusiasm thus kindled. It is true that the prophylaxis advocates have criticised their opponents, but it was because they felt that a great cause was being hindered in its progress by those who had not looked into the work

sufficiently to be able judges. However, oral prophylaxis is now on a firm foundation, and the arguments are becoming less frequent, for nothing is gained by arguing on this subject; in this it is very much like religion.

The editor of The Dental Summary, realizing the need of helpful and instructive suggestions for beginners in this work, tried hard to find some one who was willing to write a short series of articles, containing the needed information. The author may fail to fill the need, but let it be understood that what is written is only for beginners and not for the experienced, because the latter have, without doubt, long since gained the knowledge brought out in the following pages.

As members of a profession whose foundation is essentially a mechanical one, we are always asking about and looking for the technic of any new method of treatment and are more than apt to ignore other necessary fundamentals. So it has been with oral prophylaxis, for the workers in this new field of dentistry are continually being asked about kinds of instruments used, medicaments, mouth washes, etc., but it is the exception when any one inquires about the education of patients, fields for work or requirements and training of the operator. This, more than any other branch of our profession, has many demands and needs outside of the purely mechanical. In order to succeed in this work, necessarily we must perfect our technic, but with this alone we would fall far short of the mark set for us. So that, in order to cover the ground in a few papers, it seems best to consider first of all "Some of the Primary Essentials Necessary to the Successful Practice of Oral Prophylaxis"; secondly "Technic" and lastly "The Education of Our Patients."

In order to be successful in this work one must have certain natural elements of character. First of all he must be conscientious. By being conscientious and thorough he will have a certain moral influence on his patients and they will take more pride in their part of the treatment, which, by the way, is quite as important as his part of it. If he is conscientious in his work he has every right to demand that they be. This trait of character is, of course, a necessary one to the successful practice of dentistry, but the foundation upon which oral prophylaxis is built is thoroughness, without which our work will be of little or no value. It is essential that every

part of the treatment be done in a very thorough manner, otherwise we would indeed be "hoodwinking our patients and working a graft."

Patience is next in importance. It requires patience to work for one hour, perhaps, on one tooth and have nothing to reward you at that sitting but a mental picture of a changed condition. It requires patience to often spend ten or fifteen minutes with different patients in instructing them on such a seemingly trivial subject as the care of the mouth and teeth. It is necessary to tell some patients the same thing over and over again, especially is this true when the latter are children. Patience is indispensable for any part of the work in this field, whether it be the treatment of pyorrhea or the general work of oral prophylaxis.

One must also be persistent, for it is quite necessary to impress upon our patients' minds that we mean what we say. If, for instance, we tell them once that they must use dental floss and never again mention the subject, the chances are that about five per cent of the number advised will use it. Any instruction we give must be brought up from time to time for discussion, until we know that they believe as sincerely as we, that our advice was absolutely necessary. It is quite wonderful what persistence in this line will accomplish, and without this trait of character it is quite impossible to manage the indifferent and busy ones in our practice.

One must be considerate of his patients, for this will win their confidence and loyalty. Consideration of other people is never wasted but is like bread cast upon the water returning to you in the form of eternal gratitude.

One must have too, a personality which commands confidence and respect, because the results of this treatment do not glitter like gold, and many times the change produced is only evident to the trained eye, so, unless our patients have confidence in us, very often they will question the benefits derived. If the diseased condition has advanced so that the patient is suffering, or if it is possible to call his attention to changes as they take place, all well and good, but we treat many cases where the trouble is in its incipiency and the patient is not or cannot be conscious of it. Then, too, some will not see why it is necessary for them to come for treatment after they are comfortable, so in order for us to complete

our work we must be able to impress them with our sincerity.

Executive ability is also an essential for the permanent results of our work depend upon the control of our patients, therefore we must be able to manage them and to gain their co-operation.

An idea has been prevalent among the members of our profession that any one can do this work who has a smattering of knowledge on the subject. No one has any right to pretend to practice in this field who has not been specially trained for it. This training does not consist in a D. D. S. degree alone, unless obtained from one of the few colleges where oral prophylaxis is taught, and a certain amount of credit in it required for graduation. Experience in this work is the only teacher of value, for watching another person operate and reading what little our dental literature contains, is by no means sufficient to prepare one for the work. The eye must be educated to see diseased tissue and abnormal mouth conditions, and the sense of touch must be trained to be delicate and to recognize many different substances. In what other way can we learn this except by practical experience?

The most satisfactory way for one to prepare himself is to personally treat a certain number of cases from the beginning to complete cure. He should select these cases from different classes of tooth and gum diseases, for there are many varieties and stages. He must also have his own mouth placed in a healthy condition, for he should practice what he preaches and be able to speak from personal experience of the benefits to be derived. After he has satisfied himself that there is something in oral prophylaxis for him and for his patients, and is convinced that he owes the latter some effort in this direction, then he is ready to tell them about it. The writer has yet to hear of any one who has conscientiously taken up this work, who has not become an ardent advocate of it.

The operator must be thoroughly convinced of the importance of the the work himself, otherwise he will not be able to convince his patients. The writer had occasion to meet a prominent dentist in a neighboring city, who, after greeting her said: "I understand you are specializing in oral prophylaxis. Do you find enough to do to keep you busy? Do you know I have been trying for a long time to get my patients

to come to have their teeth cleaned every month, but they don't take to it for some reason or other." This dentist was trying to make his patients do something, the necessity of which he was not himself convinced. Oral prophylaxis was put to them in the same light in which the dentist saw it, and the view was not sufficiently clear to satisfy them, for to him it meant no more than "cleaning teeth," and I am glad his patients were wiser than he had given them credit for being.

If any one is contemplating this work as a specialty, the choice of location is important. It is not a question in any way related to the need for this treatment, for that is anywhere and everywhere, but the specialist cannot live on charity. He must locate where he can soon create a demand for the work and an appreciation of its value, which would necessarily be among the better educated class of people. For a few years most of this work will be done in the larger cities, but the time is coming when the people will demand preventive dentistry as well as comfortable and healthy mouths, and then there will be no question as to location for the specialist in oral prophylaxis.

Last, but not least, of the primary essentials to success in this work is adequate fees. These should be commensurate with the time and energy spent, if the dentist understands the subject, and placed upon the same basis for charges as other work.

There are other primary essentials to success in oral prophylaxis, but according to the writer's experience, the most important ones have been here considered, excepting, of course, technic, and the education of patients, which will be taken up later.

To the beginner the author would say: You have entered a great field, one that is unlimited in its possibilities, and we who are already initiated welcome you, for our number is small and we have a great work to do.

(To be continued.)

# TEMPERAMENTS.

By Gustavus North, A. M., D. D. S., Cedar Rapids, Iowa.

## CHAPTER IV.

(Continued from page 598 August Dental Summary.)

We have divided the twelve dual temperaments into four groups, classing them according to the color of the hair and teeth. The color of the hair is a marked distinction and a guide in selecting the color of artificial teeth for this class of temperaments.

### GROUP I—DARK HAIR.

Bilio-sanguine, sanguo-bilious, lymphatico-bilious, sanguo-lymphatic, bilio-lymphatic. The teeth represented in this group are generally similar in shade, cream to a yellowish color.

### GROUP II—LIGHT HAIR.

Sanguo-nervous, lymphatico-nervous, nervo-lymphatic. The teeth represented in this group are generally similar in shade, grayish blue in color; the first mentioned has curly hair, the last two generally thin and straight hair.

### GROUP III—BROWN HAIR.

Lymphatico-sanguine, nervo-bilious. The first mentioned, the hair inclines to curl; teeth grayish to a clouded cream color. The last mentioned, the teeth are yellow at the neck, bluish at the cutting edge.

### GROUP IV—RED OR SANDY HAIR.

Nervo-sanguine, teeth light cream color with a bluish tinge. Bilio-nervous, teeth bluish gray with a yellowish tinge at neck.

In the practice of artistic dentistry the above four groups of the dual temperaments will be of great assistance.

Remember dark hair generally indicates cream to yellowish colored teeth. Light hair indicates teeth of a grayish blue in color. Brown hair indicates teeth grayish to a clouded cream color. Red or sandy colored hair indicates teeth light yellow shaded with a bluish tinge.

When one can read the different characteristics of individual temperaments, he will be able to describe a person by his teeth without knowledge of the individual, as follows:

If the teeth in question were long, decidedly narrower at the neck than at the cutting edge, pearl blue or gray in color, with long bite, occlusion close and well defined, they certainly would be from a person of the nervous class of temperaments.

If the teeth were of a yellowish color, rather narrow at the neck, long in proportion to the width, occlusion well defined, they would be from a person of the bilious class of temperaments.

If the teeth were cream color, average size, about the same width at the neck as at the cutting edge, occlusion moderately firm, they would be from a person of the sanguine class of temperaments.

If the teeth were dark, rather clouded in color, broad with thick cutting edge and rounded cusps, occlusion poorly defined, they would be from a person of the lymphatic class of temperaments.

Teeth of all classes of individual temperaments are liable to be affected by caries. Some teeth are more susceptible to the action of lactic acid than others. Dental caries is generally caused by the action of lactic acid imbedded with micro-organisms, which act more freely upon the teeth of some persons than others. Teeth of the nervous and lymphatic are more predisposed to caries than those of bilious and sanguine.

Dr. Black's system of cavity preparation has been mentioned. We were convinced many years ago, back in the early seventies (before the step cavity was advocated), that an anchorage was necessary in proximo-occlusal cavities in bicuspids and molars back in the body of the occlusal surface where strong anchorage could be made, and cut away the frail margins of the cavity, although not a direct step, but similar in form.

In our description of the various temperaments we have mentioned the different filling materials; we wish to bring this clearly before the mind of the reader so he will know what material is best for the different classes of teeth (although the author believes the skillful hand that holds the instrument,

and the properly balanced brain that guides and instructs the hand has fully as much to do with the success of fillings as the material employed).

Gold foil is an excellent filling material, especially for teeth mentioned in Classes I and II.

Gold inlays for bicuspids and molars are worthy of recommendation for all classes of teeth, especially for Classes III and IV.

Porcelain inlays are commendable for certain classes of anterior teeth where but little strain comes upon the inlay.

Permanent or silicate cements (known as chemical porcelain or artificial enamel), now before the profession (if they prove permanent), will be the ideal filling material for certain classes of anterior teeth, where but little strain or friction comes upon the filling, especially for Classes III and IV.

Alloy (or amalgam after it is prepared for fillings) is often commendable for the bicuspids and molars, and no doubt is used more than any other filling materials, although the author does not advocate amalgam for filling teeth to the extent of some writers.

The subject of temperaments presents itself to my mind as one of great importance; very little has been written on the subject except by the author. It is generally conceived to be a difficult study, but such is not the case, for it is easy to comprehend, and one can readily be taught to familiarize himself with the subject.

## SALIENT POINTS IN THE HISTOLOGY OF THE TOOTH.*

**By Russell W. Bunting, D. D. S., Ann Arbor, Mich.**

Just as the surgeon must know the minute anatomy of the parts upon which he works, the exact position and arrangement of the tissues beneath his knife, so must the dentist be thoroughly acquainted with the structural arrangement and position of the constituents of the tooth, to which he confines so much of his attention, and upon which he performs

*Read before the Southwestern Michigan and Fifth District Dental Societies, Grand Rapids, Mich., April 14 and 15, 1908.

so large a part of his operations. Every operation which a dentist makes upon a tooth is more or less dependent upon the histological structure of the parts involved, and whether he takes these into consideration or not, they determine, to a large

extent, the success or failure of the operation. It is very proper, therefore, to review the special anatomy and histology of the tooth from time to time, and we may apply this knowledge to the specific methods which we employ

in the treatment of the teeth, in order that our operations may be scientifically correct, and truly deserving of the claim that "Dentistry is an exact science."

Along this line I wish to present for your consideration a pair of charts representing an enlargement of an incisor and

a molar, with the aid of which I will call your attention to the salient points in the histology of the teeth represented, and their bearing upon a few of our dental operations.

The enamel is a protective casement for that portion of the tooth which projects above the gum. It is composed of

rods of calcific material joined together by thin layers of cement substance and so arranged as to give the greatest possible resistance to strain applied in the force of mastication. In general, the rods run radially from the dentin to the surface, so that any strain applied will be upon the ends of the enamel rods and in a direction parallel to their course. In the cusps of the molars and bicuspids, where the bulk of the strain in mastication is applied, the rods are very much twisted and interwoven, making them almost incapable of cleavage. As long as the enamel remains intact it is very resistant to forces of every kind, but, as pointed out by Dr. Noyes, when once a break has been made in its continuity and we attempt to repair that break, we must so prepare the edges of the enamel which border on the cavity that all exposed rods shall run uninterruptedly to the dentin. For that reason all cavities occurring upon the occlusal surface of the molars and bicuspids may be prepared with a very slight bevel to the enamel margins, inasmuch as the rods tend to run from the dentin toward the cavity, while in the case of cavities formed on the lateral surfaces of the teeth much more bevel must be made, as the rods tend to run away from the cavity.

In the preparation of all cavities the direction of the enamel rods must be taken into account. Something of their course may be ascertained by cleaving the enamel margin with a chisel, as the enamel will cleave more readily along the lines of cement which bind the rods together than in any other direction, if the rods are straight. In teeth which develop from a single centre—as the incisors and cuspids—the direction of the rods, is in general, perpendicular to the surface of the tooth. However, in the teeth which have two or more centers of calcification—as in the molars and bicuspids—the rods on the occlusal surface radiate from these centers. The areas in which the enamel from two or more centers unite are poorly calcified, and a cleft is often left forming what is perhaps the most vulnerable point in the tooth to the action of decay. As we have said, repair of this class of cavity is favored by the direction of the enamel rods, but if the cavity is extensive enough to encroach upon the centers of calcification, great care must be used in preparation of the enamel walls on account of the fact that

at this point the enamel rods are very gnarled and twisted, especially near the dentin, and it is therefore difficult to obtain rods for margins which run uninterruptedly to the dentin.

On the lateral surfaces of the tooth the enamel rods in the middle third run nearly horizontal, with a slightly occlusal inclination, especially near the junction of the occlusal and middle thirds. But in gingival third it is seen that the direction is markedly inclined toward the cervix, especially near the cementum-enamel junction. For this reason the gingival borders of all cavities which extend into this region, must have their enamel margins sloped away far enough to get beyond the plane of the rods. Furthermore, when approximal cavities extend very near to the cementum-enamel junction there will be left a triangular strip of enamel, composed of short rods, which will form the cervical margin of the cavity; this margin, because of its frailty and non-supports, will be very likely to be chipped off under the malleting, or so weakened that it will fall out of position at some later time in the life of the filling. It is not improbable that the failure of many of our approximal fillings at the cervical border may be due to the faulty preparation of the enamel margins at this point, rather than to any fault in the adaptation of the filling material.

The enamel, when fully formed, remains throughout life in the same density and degree of hardness, except as it may be weakened or disintegrated by a destructive force—in other words, the enamel has no means of throwing up a defense against an invading force, or of recuperating after the cessation of an injury. Injuries to the enamel are of three classes: (1) Wear, or abrasion. (2) Fractures. (3) Acid decalcification.

In the case of wear the enamel is wasted evenly and to an extent determined by the character of the antagonizing force. Fractures extend along the lines of cement between the rods and are determined in their course by the nature of the force applied. Decalcification of the enamel is of two kinds—erosion and decay. In each there is a solution, first of the cement substance between the rods and then of the rods themselves. As the cement substance is the most easily attacked, the decalcifications run much more readily toward the dentin between the rods which are affected, rather than

in a lateral direction; this is the reason why we find so many cavities of considerable extent in the dentin, which have but a pin-point aperture through the enamel.

The dentin is composed of a ground substance, through which run the dentinal tubules. The ground substance is of a calcific nature, but with a considerable amount of organic substance included in its formation. The tubules of the dentin are so numerous that they comprise something more than a tenth of the total bulk of the dentin. These tubules take their course, uninterruptedly, from the pulp chamber to the enamel in the coronal portion of the tooth, and from the pulp canals to the cementum in the root portion. Their course in the coronal portion is along two definite curves, so called "primary" and "secondary" curves, and the tubules in this region are the longest and most tortuous of any part of the tooth. Toward the middle of the tooth the tubules are less curved and take a nearly straight course from the pulp to the periphery of the dentin. In the root portion they run in very nearly straight lines, except at the apex, where they are seen to radiate.

In the injection of cocain into the pulp by means of a high-pressure syringe, it is necessary to bear in mind the exact direction of the tubules in the dentin to which the syringe is applied, inasmuch as better results will be obtained by bringing the point in direct contact with the ends of a few tubules, than at any angle to them. It will be noticed that in the anterior teeth any contact made upon the dentin will be upon tubules which angle off sharply toward the gingival, this angle being more pronounced toward the incisal end and less so toward the cervix. In the crowns of the molars and bicuspids the central tubules take a nearly straight course to the pulp, parallel to the long axis of the tooth, those under the cusps angle toward the center of the tooth, with little curve, while those on the lateral surfaces of the tooth have the primary and secondary curves similar to those in the anterior teeth. It will be seen from the drawings that in many teeth it would be more advantageous to make the contact point for a high pressure syringe at or near the cervix of the tooth than further up in the crown, for the reasons that the tubules are often shorter and straighter in this region and that solutions forced into the pulp from the cervix enter

it at a much lower level, which latter is a decided advantage in cases where the coronal portion of the pulp is diseased, or may have formed a layer of secondary dentine over itself.

The dentinal tubules are not empty, but contain, as long as the pulp is living and healthy, a living protoplasmic fibril, which is a process in direct connection with the odontoblasts which lie on the periphery of the pulp. These fibrils, contained in the tubules, have the property of communicating sensations of various kinds to the pulp, and of performing under certain conditions an eburnation or hardening of the dentin. They run continuously from the odontoblast at their pulpal end, to the periphery of the dentin where they branch and communicate one with the other. This intercommunication is very free, so that an irritating impulse applied at the junction of the dentin and the enamel is carried to the pulp not only by the fibrils which are immediately affected, but is also transferred to neighboring fibrils, in a manner like to messages sent out over wires running from a central telephonic switchboard. It is because of this very free communication that we often find that cavities are far more sensitive to the bur or excavator at the dento-enamel junction than at the bottom of the cavity, even though the decay is very much nearer to the pulp.

The process of eburnation of the dentin is accomplished in the dentinal fibrils by their deposition of lime salts in the tubules in which they lie and in their own substance, and when the lime salts become calcified the dentin contains in that area no tubules, but simply a solid homogeneous mass of calcific material. An area in the dentin which has undergone such a change as this is spoken of as the "Transparent Zone," and is produced in living teeth only, as a barricade against invading caries which threatens the life of the pulp and the destruction of the tooth. This hardening process takes place only in those tubules which are directly affected by the injury, and is in the form of a cone shaped area, with the base toward the enamel and the tapering to the pulp.

In the case of abrasion, when the enamel has been worn away, if a transparent zone has been formed in the dentin below, a homogeneous surface of dentin without any tubules will be presented to the invading action. This change must modify the rate of advance of the abrasion to a marked degree.

Acid decalcifications, when they reach the dentin, undoubtedly travel much more rapidly along the lumen of the tubules than in the substance between them, so that if the tubules become filled up with a material similar to the intertubular substance, the progress of the acid is seriously impeded. It is hard to estimate the protective influence which this calcification exerts in the tooth, especially in the cases of erosions and decays.

When caries has gained access through the enamel to the dentin, it progresses toward the pulp along the line of the tubules, even if there has been a calcification of the canals. There is also a considerable lateral spread of the carious process between the dentin and the enamel at their junction, which is due to the poor calcification of this region. In the lateral spread, caries may effect the enamel by undermining it, causing it to be weakened, or by initiating recurrent caries of the enamel. On the other hand, in the dentin, it may carry the infection to tubules lying outside of the affected zone, thus increasing the area of decay. It is in this dento-enamel junction, or interzonal layer, that many cases of recurrent caries, which have their infection coming in from the border of the filling, get their first foothold in the tooth. It is unfortunate that this very vulnerable part of the tooth should be so sensitive, for it is very likely that a good percentage of cases of recurrent caries are due to an incomplete removal of the decayed tooth substance just beneath the enamel, either from the extreme sensitivity of that part, or to a lack of care in the cavity preparation.

As the line of decay follows the course of the tubules, in some instances the carious process will narrow down to a small zone as it approaches the pulp. So that in the preparation of some cavities which penetrate into the dentin a considerable distance, we may have a solid cavity floor, in which there is but a small spot of decay continuing still deeper, and this spot of infection escaping the eye of the operator and being left under the filling, may give rise to a recurrence of the carious process.

In conclusion let me repeat the points of histological interest to be noted in the preparation of a cavity for filling: In the enamel, sound walls with margins composed of parallel rods which run continuously to the dentin; in the dentin,

a complete removal of all affected tooth substance, especial care being taken at the dento-enamel junction and in the base of the cavity in the direction which the main advance of the carious process entered and extended.

## DISCUSSION.

**Dr. Spalding:** One or two points occur to me in listening to Dr. Bunting's very excellent paper; and one is that if we could have a better understanding of our histology we should often explain some of our failures. For instance when we find a frail edge broken down, we don't stop to discover that there is a reason for that. We think we probably were not accountable for that, but if we would bear in mind the direct form of the enamel rods, the direction in which they run and especially in the cusps of the teeth, which I am sure I don't think of frequently enough, radiating from the dentin as they do there, I am sure that it will make me more mindful in my cavity preparation hereafter. Another thing, in the use of the high pressure syringe, we sometimes get rather warm under the collar when we cannot make it work and he explained it very easily by the deposition of the secondary dentin. It would seem as though it was desirable on many occasions to use something to desensitize, whereby we can more completely prepare the cavity. There can be little doubt in our minds that the infected area immediately under the enamel has been completely removed, and that all decay has been completely removed from every portion of the cavity, and that it is better even to make our opening for a high pressure syringe elsewhere. If we can make a separate cavity at the portion next to the gum line where Dr. Bunting has shown us, results would be very much more effective on account of the course of the tubulae.

**Dr. Bunting:** I am sorry that I had to do all the talking. I was in hopes that I could get some of the other members to say something upon this work. This is my line at college so that I could talk all the rest of the morning, but I presume I have said all that is necessary at this time. I only hope that some of you may get to thinking upon these things as I think of them all the while, and they help me in preparing cavities. I hoped this paper would stir up some of you to thinking more about the histology of the tooth. What I wanted to know more especially was whether or not some of you have noticed some of these things I have brought out in pyorrhea, with reference to the injection of cacain; or whether or not you can get much better results through the lower part of the tooth; whether or not you have seen cases that you felt the gingival borders of your cavities were dropping

out rather than decaying. I am also wondering whether experience will bear out these theories, or is it all hot air that I have been talking all this time?

**Dr. E. T. Loeffler:** The point that the doctor speaks of in regard to the use of the injection of cocain by means of a high-pressure syringe; I can say this much, that either at the cervical margin or in the direction of the axis of the tooth are altogether the best points to use. Very frequently using the cocain with high-pressure syringe along the axis of the tooth gives altogether the best results. It works fully as well, or in some cases, I think, perhaps better as you get results quicker than by using the cervical margin, although, as he stated, that means an extra cavity, an extra pit to fill, which is undesirable. In many cases the high-pressure syringe is used to remove the pulp, but we can, of course, remove the pulp to much better advantage by having an opening which will go directly into the pulp cavity. So that in a great majority of cases it is much better to make that opening along the axis of the tooth. Those of us who have had experience with high-pressure know that the point of contact means everything. The cup-shaped surface, to begin with, is all healthy enamel, this bit extending in the direction of the tubuli. There is one point, of course, where we have a good deal to contend with, that is one phase of this secondary dentin, but even in such cases I frequently succeed by having a good point of contact.

Now this paper in that sense is extremely interesting; it is in all phases that he spoke of, but particularly in this work of using cocain by means of the high-pressure syringe. To understand, or to review at times the histological structure of the tooth, should make it easier to do this work more readily, and we can often succeed where we have had failures before. Students, I find, time and again will fail in an operation, simply because they did not bear in mind their histology which they had a year or two before.

## THE TREATMENT AND FILLING OF CHILDREN'S TEETH IN EXTREME CASES.*

By T. H. Terry, D. D. S., Cleveland, Ohio.

I want to thank the program committee for assigning me this topic, because professional companionship with children is one of the greatest pleasures of my practice; and while I may not cite any new method for the actual filling process, if I can help to bring into more general favor the method leading

*Read before the Cleveland City Dental Society, 1907.

up to it, herein described, I shall feel satisfied. In the first place, I do not think it possible for the dentist to do his best work unless he has the co-operation of the patient, and it is in deed strange how few dentists deem it worth while to get the confidence of the child before they attempt difficult operations. I will never forget a scene I witnessed in a dental office. I was canvassing for a journal, and seeing a sign, I wended my way upstairs as directed by the wooden finger below. At each step my ears were assailed by such a medley of sounds that I was anxious and not a little fearful of what I would find in the office indicated. What I did find was a youngster about 8 huddled up in a chair, his hands crossed and firmly held by a burly man, who proved to be the boy's father. The assistant was holding his head back, and the operator (and he looked the part), with a scowl on his face, was trying, by alternate threats and promises, to induce the boy to let him continue some dental operation.

The situation was dramatic and brought to my mind that little poem about Johnny Smith:—

Four doctors tackled Johnny Smith;
They blistered and they bled him;
With squills and anti-bilious pills
And ipecac they fed him.

They stirred him up with calomel
And tried to move his liver,
But all in vain, his little soul
Was wafted o'er the river. * * *

And, gentlemen, if you had heard that boy plead with his father not to take him back there again, you would not be surprised that my estimation of operators was very much below par. Now, I want to go on record as saying that children should, and if properly handled do, go to the dental office willingly, and by treating them as little men and women, telling them the truth always, being very kind but firm, any necessary operation can be done, and done well. The first sitting I deem a most important one, because it establishes your relationship with the little patient, and you know at once whether the task is to be hard or easy. Now, assuming that the proper confidence has been established, I am going to select four cases, and I think you will admit they are the most difficult with which we have to deal:

First—Teeth that are broken off by direct violence.
Second—Abscessed teeth.
Third—Pulp exposure, where removal is necessary.
Fourth—Extractions.

The first I deem the most difficult, and as I was recently called upon in a case of this kind, I will cite this case, which will explain the method fully: A child of 11—a delicate boy—while playing, fell and struck his upper incisors on a tin can, splitting it in such a way as to nearly expose the pulp. The least hot or cold contact with any food caused great pain. To remove the nerve was the thing to do, and I wanted to do it in such a way that I would feel satisfied myself and win the confidence and friendship of the child. Now, the problem nearly always is how to manage the parent, and this case was no exception to the rule. The fond mother hovered over the chair, tears in her eyes—oh! what could I do with it so the dear child could stand the pain, and did I think he could stand having it drilled? I told the lady that I must have a prescription filled at once, and would it be too much trouble for her to step over to the drug store and get it for me, as I didn't want to trust a boy. She assented, and I sent her far enough to insure my having time enough to finish the operation. I then showed the boy pictures of several children that had had similar operations done by the same method I was going to use with him, and he was not a little curious to know what that was. I took the Teter nasal inhaler, put it on my own head and showed him exactly how it worked; after understanding, he took oxygen and gas willingly, and long before his mother returned I had the nerve out, a dressing in the tooth, and the boy was not sick a minute.

Now, there is a popular belief that it is necessary to produce complete anesthesia in order to perform dental operations painlessly; this is not so, as a number of members of this society who are using this method will testify. I have taken out six nerves at one sitting from the six anterior lower teeth in a case where the teeth were worn one-third away by attrition, and I could speak to the patient any time. From the time the patient begins to take the anesthetic, unless the case is an unusual one, from 15 to 20 seconds of natural breathing will insure you that the operating stage has been reached, and any of the four operations cited, which, I think you will agree, are

most difficult, can be done thoroughly, painlessly, and without after-sickness, once in 50 times.

I use a Teter inhaler and an ordinary S. S. White gas bag, with a simase, one end of which is attached to the gas cylinder, the other to the oxygen cylinder; to the latter is run a very small rubber hose. Now, I don't know just how much oxygen I am giving, and I don't care, for the reason that the amount all depends on the patient. I have had splendid results without any, while in others it is most essential. But the success of using any of these outfits lies, not so much in the equipment as in the ability of the operator who uses them, and uses them wisely.

Now, I hope there is no one here who will ask me if I give gas to all my patients, or if I profess to fill all children's teeth painlessly. I said at the beginning that with the proper handling, children will undergo any necessary operation and return willingly, but you must have that something in you that the child trusts. If you don't like children and are in the habit of leaving them to be taken care of late in the afternoon, when you are tired out from all other work and in no mood to be sweet, then, I say, do yourself, your fellow-practitioner, and the child the greatest kindness then possible: leave the child alone, for a child wrongly handled is like a balky horse, never the same.

I just want to mention one filling material, then I will let my discussers go into the filling process as deeply as they wish. It used to be a problem after the cavity was ready, if amalgam was to be used, how to prevent thermal changes in deep cavities. Cement and gutta-percha were good in some places, but I found that Crystallia, put up by the Ivory company par excellence.

It will prevent thermal changes entirely; gold or amalgam will adhere to it tenaciously.

It can be placed in a cavity securely where no undercuts are present and can be worked with hand-pressure instruments or mallet. I find that this is a new tin filling, and that makes it, in my eyes, all the better; and as I was thinking of the able advice so often given by my friend and teacher, Dr. Ambler, while in college, this little verse occurred to me:—

From all the things that were impressed
Upon my mind at school,
From being there at 8 a. m.
And learning all the rules,
There is one that stands out prominent,
And Dr. Ambler, here
Is just the man who taught me this—
Now doesn't that seem queer?
He said, remember there is one thing
That's always, always good:
When filling teeth you'll find that tin
The test of time has stood.
From the oldest to the youngest,
The rich, the poor as well,
Will pay their bills and come again,
And friends and neighbors tell.
So in your brain I'll plant this germ,
So sound an endless din,
From your waking to your sleeping
Be it Tin, Tin, Tin.

## PORCELAIN INLAYS IN ANTERIOR TEETH.*

By Edwin Hulley, D. D. S., Marion, Indiana.

The subject, "Porcelain Inlays in Anterior Teeth" must be divided and sub-divided so that we may have the patience and endurance to hear the one whose pleasure it is to present this one phase of modern dentistry. We do not saddle all the blame for this portion of such a broad subject, but humbly submit the few statements, hoping the facts through induction or statements may be sown in fertile soil, and that some one may have reason to remember this occasion of our coming together. When minds and lives of men whom we love and look up to are given over to research and much work in the desire to present the subjects nearest our hearts in such a plain and readily seen way, surely we, of possibly smaller dimensions, may devote an hour to the subject on which so much depends and on which so little thought is expended.

How many of us give over our time, thought and material that we may advance in this procession of porcelain workers?

*Read before the Eastern Indiana Dental Society, 1907.

Who of us take the time and occasion to place inlays in anterior teeth of the poorer and less fortunate clientele? Do we not cement and amalgam the laboring wage-earners and count our operations as nothing, taken from our narrow financial mind? Can we not devote some of our waking hours to beautify the lives of our less remunerative practive by our kindness and indulgence in giving over to them an extra hour or two in which we may both profit—the one in appearance, the other in skill? The replies to these vital questions are answered in some of our lives. We know those whose best efforts are given over to service for which the almighty dollar is least in evidence.

The complicated methods of cavity preparation, of manipulation of foil and porcelain, of furnace and blow-pipe. of failure and success in color and margin—these complications keep many of us from joining heartily in the porcelain workers' ranks and hold us back to amalgam and cement.

You will please notice gold is left out of our objectionable materials in the anterior fillings.

A gentleman solicited my opinion as to the advisability of the use of one of the alcohol-lamp-fusing porcelains. We unreservedly said, by all means use it and keep on using it, be it glass, putty or what not, we advise him to use it, and why? This man of 35 years' experience is an amalgam man and can not advance on account of his amalgam rut. It does not seem possible to many of us the wide use of porcelain, until we open our eyes to what we are doing.

Porcelain inlays and their range of uses, their color and fit, depend on the operator, in that each individual man is his own architect and designer, and forms his own pitfalls and snares and delusions.

The most common failure is the failure to cut away enamel and dentine; in other words, the failure to clear away the debris for fear our color and our margin may be far from perfect. The second mountain of cause for failure in this work is that so many of us hate to strain our backs and minds in cavity preparation. We should never go into a tooth without first having a clear vision of the completed operation. How is this possible?

First, by untiring work in our laboratories.

Second, by using our minds to guide our fingers. The

simplicity of cavity preparations, in our humble opinion, marks the volume of success in our finished work. Every time we avoid complicated angles and so-called methods of retention, just that many times we come up a step toward success. Our best friend is a chisel and our next best friend a round bur of goodly size. We open an approximal cavity in one second by taking away weakened and unsupported enamel rods. We then remove a few more rods to make sure we have removed enough; at this point failure stares us in the face. Time waits for no man, but we have always planned for the morrow and we will continue to plan till our lives are extinct. At this point where cavity walls are in plain view, separate till all the space required for impression and burnishing, and then some, is obtained. Every operator uses his own pet methods of separating. For mine a piece of compressed soft pine wedged tightly in position, and to which water is then added; the expansion thus obtained seems to cause the smallest fraction of pain, and as a time-saver is worth its weight in gold. The desired working space obtained and secured by wedge or separator, the round bur is now brought into action. after the application of our odontine, desensitizer, or whatever we are pleased to call it, the sole object being to reduce the jumping qualities of our patient to a minimum.

We are often reminded of the fact through some third person, that all Doctor So-and-So cares about is getting rid of you and separating you from your money. One brother practitioner, after sterilizing the forceps on his coat tail and working over a lower third molar with weight and muscle, on being solicited by the patient for sympathy, said, "No, I can see a 50-cent piece on the root of that tooth, so why should I care how much it hurts." If the tooth be so prepared that we may freely cut dentine, our mind is on our work undividedly, and the cavity preparation will receive more and better consideration.

A goodly-shaped cervical seat, roomy and deep, the axial wall prepared with much thought toward avoiding labial or lingual displacement and a perfect impression, in whatever we care to take the impression, brings us up to a point where we may consider matrix formation. We find swaging the matrix to save time, worry and words, after the swaging by any of the numerous methods, all governed by our ruts. A good, se-

vere and honest burnishing, annealing often and burnishing again, is another step nearer home.

We do not possess eyes which distinguish color and divided color, shade and divided shade, but we do possess eyes capable of approximating color and shade.

We use nearly all porcelain and some glass, as our hobby friends call them; but regardless of name, let us use that which in our hands proves satisfactory to eye, patient and dentist. Of course, we fall down time and time throughout eternity, but any one can fall down. It is the few who profit by these falls and build all the stronger stepping stones to success by getting up and going at it again with a clear eye and a determination to rise above these obstacles. The ease and satisfaction with which a porcelain body or enamel may be made to conform with the carefully-prepared matrix, the great inward pleasure when baked and tried for shade and margin, depends on cavity preparation, selection of color and shades, and skill in handling.

We place cavity preparation first. If there is any filling hideous and of harmonious contrast, we place all credit to that filling, be it gold, amalgam or porcelain or glass; the margins which are so hidden and so stingy to view, which just suggest a dark spot or more noticeable, a shadow for a marginal wall. Many eminent men have written miles of manuscript on this one subject of clear margins and extensions. We offer no apology for sentences pleading for clean, concise and clear walls. The illustration, which is based on facts, brings to our minds the narrowness of some who are over-developed in some lines and sadly deficient in others. A gentleman of the early schooling, whose work in contours with gold has been admired by many of us, consulted several representatives of supply houses as to the use and advisability of using porcelain in his practice. A complete outfit was purchased, amounting to quite a considerable financial outlay, three trials from practical cases made, and each case resulted in the same answers: condemnation of porcelain, its users, recommenders and discoverers.

The complete outfit was returned to dust and damnation, and foil and mallet again resumed after such a spirited step toward advancement. We realize every waking hour how narrow God has builded some domes of thought, and how fully

developed the bump of censure and condemnation may be. Personally, we have fallen down hundreds of times when failure meant more than ordinary failure, but through four years' earnest work we believe daylight is dawning. Were we so easily discouraged, many of us would at this hour be at the throne of some of our ambitions, watching some one else work.

As a summary we offer the following: The placing of porcelain fillings in anterior cavities is hard work. The proper fit and shade is very hard work; the determination to keep on with this beautiful work requires a will of steel and a clear brain. The cavity formation should be planned before the tooth is opened. We further find the color, or rather harmony of color, of tooth and inlay of satisfaction to patient and practitioner; of financial and professional aid and advancement to be of great enough importance to fully repay years of failure and hard work. We only hope to bring the general statements to the notice of those who do not use this form of filling and can only pray those who are not chained, buried and forgotten in ruts of gold, amalgam and cements to advance, as we believe the use of porcelain to be an advancement, through failure, loss of time and money.

Were we to ask for a rising vote of porcelain workers, the majority would never move a muscle. To this majority we plead to forsake the same three hundred and sixty-five days' line of work and take up this comparatively new and interesting line of thought and pleasurable work. The models which we present for your notice illustrate very pointedly our one idea of simplicity of cavity preparation and free and open field of manipulation.

We further hope that this feeble series of words may cause some one enough anxiety to care to take up this work along the line presented in this talk.

# AFTER-TREATMENT OF THE MOUTH AND GUMS FOLLOWING SURGICAL TREATMENT FOR PYORRHEA.*

By Mary Hartzell, D. D. S., Minneapolis, Minn.

The original research work done by Dr. T. B. Hartzell in the University of Minnesota proves the cemental surface of the roots of teeth to consist of three layers. The outer layer is composed of a series of small pits, almost like honeycomb in appearance. These indicate the points of attachments of the fibers of the peridental membrane; this surface is so rough that it is an irritant in itself and constitutes an almost ideal culture bed for bacteria. When this is planed away there is a layer about one one-hundredth of an inch thick, very dense, almost structureless, and capable of taking a high polish. In treating root surfaces this layer should be left smooth and glossy, for immediately underneath this is the layer we ordinarily think of as cementum which is very porous, being filled with lacunae and canaliculi, and if you cut into this you again have a surface that infects readily and defeats the very object you are working for.

The surgical treatment of the root surfaces, which results in the removal not only of accumulations of salivary or serumal calculus to the greatest depth of the pyorrhea pocket but also of the removal of the dead peridental membrane to the point of the extreme depth of the attachment of the stumps of the peridental fibers in the surface of the root, exposing the hard, glossy layer, does cure pyorrhea. But we cannot expect tissues that have been already weakened by a wasting disease to maintain a condition of health unless especial care be given them; and in our practice we have proven that when that care is given the condition of health is maintained.

In looking toward a condition of permanent comfort there are six points to keep always in mind.

## POINT ONE—THE EQUALIZATION OF STRAIN.

Almost invariably from the loosening and shifting about of the teeth when pyorrhea has occurred there are teeth that

*Read before the Northern Ohio Dental Association, May, 1908.

are taking a much greater portion of the strain of mastication than they should normally receive. If permanent comfort is to be obtained they must be brought to plane, either by grinding, or if the teeth have been lost, by the placing of bridges, splints or partial dentures to equalize the strain.

### POINT TWO—THE FITTING OF CROWNS AND BRIDGE ABUTMENTS.

This is a most important point, for a condition of health cannot be maintained in the gum tissue when constant irritation of any nature persists, and poorly fitted bands are a very fruitful source in the production of inflammation. In the surgical treatment of affected teeth it is necessary to remove all crowns, as it is not possible to successfully plane the root surfaces when such appliances are in position, so that in a properly treated mouth the field is yours in regard to restorations.

The inlay method of filling makes it possible to repair many teeth without resorting to crowns, that would formerly have been crowned. I have frequently placed inlays in teeth from which I have removed crowns, when the teeth have not been badly ground. Cast pin attachments for porcelain crowns give an ideal restoration, and when bands must be used they must never impinge on the gum and must be closely fitted.

Where bridges are advisable it is frequently of advantage to use the splint bridge. I have seen teeth that seemed hopelessly loose, when treated and splinted into an abutment become comfortably rigid and quite healthy after long use.

### POINT THREE—BRIDGING OR BRINGING INTO CLOSE CONTACT TOOTH SURFACES BETWEEN WHICH FOOD MIGHT WEDGE AND BRUISE GUMS.

In those cases where the shifting of the teeth has left wide interproximal spaces, or when the teeth never have been in close contact we must protect the gums from being bruised. Sometimes the space is so wide that short bridges must be used. When it is practical, contour fillings are a convenient method of bringing the teeth into close contact.

### POINT FOUR—THE PLACING AND RETENTION OF ARTIFICIAL SUBSTITUTES.

When a partial denture with attachments is indicated, the attachments should be of such a nature as to brace the remaining teeth and also retain the plate in position without subjecting the teeth to which the attachments are made to any side strain from pressure upon the plate. And, note, here is a place where some inventive mind could give us a great benefit. I know of but one such attachment, and it is very tedious to make. A strong, simple attachment, readily applied, adapted to any condition, would be most valuable.

In all of these restorations the plane of articulation should be studied carefully before planning any part of the work, and you will frequently find you will have to practically make the mouth over in regard to the grinding surfaces and plane of articulation of both upper and lower jaws to obtain a result that will give you any promise of permanency.

### POINT FIVE—FREQUENT REMOVAL OF ALL IRRITATING DEPOSITS.

Very often in mouths where there has been extensive pyorrhea there is a tendency to a rapid accumulation of salivary calculus; this should be frequently removed. I believe that these are among the cases that would receive the greatest benefit from the monthly prophylaxis treatment; where this is not practicable they should receive a cleansing at least every three months.

We have been considering the mechanical causes that might tend to re-establish pyorrhea in a mouth that has been rendered free by treatment, and this may all seem a great deal of labor, but they are all points that should receive careful attention in any case; they are points along the line of good, conservative dentistry and are only especially indicated here because the tissues supporting the teeth have been weakened and we wish to avoid all cases that would tend to re-establish the disease.

### POINT SIX—LOCAL TREATMENT OF THE GUMS.

With all possible mechanical causes eliminated there is one more very strong point to be considered, the local treatment of the gums. Regardless of the particular etiological

factor, the result of any disturbing cause is the wasting away of the tissues supporting the teeth. These tissues are not only end tissues, supplied only with minute terminal vessels, but they are also transitory tissues, built up with the teeth to support them and carried away by natural resorption when the teeth are lost, so that the object to strive for is to keep the circulation so good that there can be no accumulation of waste matter in the parts to produce an inflammation. For we know that a good normal circulation is essential to the health of any of the body's tissues.

Before treatment we usually find either a condition of chronic congestion or anemia of the gum tissue, and it requires constant stimulation to overcome either of these conditions and maintain the equilibrium of the circulation that is essential. We attain this condition through a daily massage, which not only stimulates the circulation but also toughens the surfaces of the gums. This means that you must have the continuous co-operation of your patient.

I never begin the treatment of such a case without first impressing on my patient the absolute necessity for his taking a large part of the responsibility of keeping the mouth healthy after my treatment has produced that desirable condition; and I do not care to take up the treatment of a case when the patient is not enough interested to give me earnest support, and I make it plain to them that that means a continued daily effort that should be quite as conscientiously performed as any other portion of the toilet while life lasts.

The most helpful massage is that given by a good stiff brush, and until the gums become toughened to it, some judgment must be used or your patient will give it up as an impossibility. If persisted in the tissues respond beautifully, and become tough enough to stand vigorous brushing with the stiffest brushes obtainable without laceration, and the cleanliness of a mouth receiving such treatment daily is something in which to rejoice.

It is very difficult to find just the right brush for the massage. The tufts of the bristles should stand wide apart, and the functional portion of the brush represent the arc of a circle in cross section; where you cannot find just what you want, a well-made, flat brush with the two margins sheared

down so that the bristles in the middle rows stand highest, answers very well.

The massage alone is frequently sufficient to maintain this condition of health, though we find a stimulating astringent mouth wash very helpful in many cases, and almost habitually prescribe one. One that gives us especially good results is composed largely of alcohol, glycerin and tannic acid.

It is essential to see these patients quite frequently, especially for the first few months, for their idea of vigorous massage and yours may be quite different; very often you will find certain portions of the mouth well cared for by the massage brush, while others are habitually neglected. I always teach them how to massage and then keep them under critical supervision until I know they are carrying out instructions.

We find that where the surgical treatment is well done, the mechanical factors cared for and the tonicity of the tissues maintained by the stimulation of the massage, that a large class of cases that have heretofore been classed as hopeless, are comfortably cared for, and that where you are on the alert for first indications and they are treated as soon as they appear, there will be fewer hopeless (?) cases.

## DISCUSSION.

**Dr. I. W. Brown, Cleveland, Ohio:** I am reminded of the lines of the New England poet, "As unto the bow the cord is, so unto man is woman; though she bends him she obeys him, though she draws him, yet she follows him, useless each without the other." I think your committee had in mind these lines when they asked Dr. Hartzell to prepare a paper for this society.

Pyorrhea is so misleading that I dislike to use the term. In the general way that it is used it means pus, but pus is not found around all of the teeth, nor around the majority, and the most obstinate and hardest cases that I have ever found to treat were ones that did not have pus so that I could discover it.

The doctor in her paper speaks of Dr. Hartzell's discovery of three cemental layers, and she says the outer layer is composed of a series of pits. I have noticed granular deposits on some teeth in the primary stages which are soft and easy to remove, but differing in consistency from the advanced stages of concretion, the latter being much harder and denser and more difficult to remove. In speaking of the surgical operation and treatment of the root surfaces and the after-care of the mouth and gums, which

is all right and proper, and right here, if you will pardon me for digressing from the paper, I will take occasion to say, would it not be better if the mouth was prepared for the surgical operation before operating? Why should we not, as dentists, use the same care in our operations as surgeons do in theirs? Surely ours is as delicate in nature as many of theirs, and quite as important, and after they have completed the operation they do not meddle with it, as a rule. As for cleansing, the surgeons of today use sterilized water, but in most instances their operations differ from ours, from the fact that their operations are not so exposed to dangerous influences as ours. Our patients are continually taking food digests mixed with the fluids of the mouth, and where the teeth are separated the food becomes impacted in the spaces, and if allowed to remain putrefactive fermentation will cause inflammation. The mouth should be carefully sprayed every day by the dentist for a time after operating, and cleansed thoroughly by the patient after each meal. If the teeth are loose, splints should be made to hold them firmly in position, and the teeth should be used moderately at first, but the use of the teeth should be increased day by day, and the necessity should be impressed upon the patient that they must use their teeth in order to have them healthy. You cannot get the good results from the teeth that are in a splint unless they are continually used. To use the teeth means to stimulate the flow of saliva and develop the glands to increase the circulation in the gingiva and peridental membrane, which helps to restore them to health.

We have a medical specialist in our city who says that many of the diseases are due to improper mastication, and a celebrated surgeon of London declares that appendicitis is caused by faulty mastication. It seems to me that our duty is clear that we as dentists should see that our patients, as far as it is possible for us to do, should be provided with twenty-eight to thirty-two teeth in good working order for masticating the food to a proper consistency before taking into the stomach.

The doctor has directed our attention to six points in her paper which are very important considerations. "Point One—The Equalization of Strain." To do this means accuracy and correct measurement. I will quote Dr. Black as follows: "Therefore I say, study this matter of the control and correction of the interproximal spaces, not only when you find the teeth broken down, but there are other important conditions; measurements carefully made show conclusively that the ordinary dental apparatus, when the patient has reached forty years of age, even though there has been no decay, even though they may appear ever so perfect, reduces in measurement from interproximal wear, pure and simple, one centimeter from the mesial cusp of the third molar around the arch to the mesial cusp of the third molar on the other side.

The arch has shortened one full centimeter and in many cases very much more than others, the surfaces have become flattened, and the food begins to catch."

To correct an interdental space I find that iridio-platinum wire gives better results than to build the filling to make the contact point. Where it is very large it divides food better and causes the teeth to become self-cleansing. The interdental space gives a great deal of trouble by food becoming impacted around the teeth and gums, and the smaller the contact point the better the results, and it surely will restore them to a better condition.

Points two, three, four, five and six are so well taken and understood by the dentists that there is no chance for argument on those points.

## THINGS OLD AND NEW IN DENTISTRY *

**By Dr. J. W. White, Knightstown, Indiana.**

One of the old and venerable things coming down in our recollections of what we have read about is the pelican—not the bird of the frozen northland, but one of the first instruments for extracting teeth. It took its name from the resemblance of the hook to the beak of the bird, and even to a late day, I am informed, it is used in some of the northern provinces of Europe.

The turnkey, invented by Gavengeot in the early part of the 18th century, was thought a great improvement over the pelican, and became popular and a necessity in the pill bags of the village and country doctors. As late as 1850, I remember to have seen it among the instruments of the dentist and in his case, used as a last resort in extracting stubborn molars when forceps failed. The first tooth I ever extracted was with the turnkey, from the mouth of a colored barber (and he commended my skill in its use), although it was early in my student life. It was done by the light of a candle, held by the patient while I adjusted the fulcrum and hook on his offending molar. I remember how I trembled and shook. I think it was a typical case of buck ague with me, for I was scared worse than the darkey. But these instruments of torture have passed away and given place to the forceps and elevators of modern shape and form. As I look back, I don't think, however, invention and genius have made the advancement in these in-

*Read before the Eastern Indiana Dental Society, 1907.

struments as on the conservative lines of tooth-saving in our profession. Today it is not so much a question as to how we shall get rid of teeth as it is their preservation for usefulness and the purposes for which they were intended by the Creator Along in the sixties, when rubber came in as a base for artificial teeth, dentists seemed to vie with each other as to who should prepare the most mouths for new teeth, and millions of useful organs were sacrificed to gratify pride and to enrich the unscrupulous dentist. Nitrous oxide and the promise of painless extraction made it an easy road to success.

The making of rubber plates was easier and less laborious than getting up metal dies and swaging gold plates, to say nothing of the lung-splitting effort to solder the case after the teeth were ground up, backed and invested.

Rummaging through a wagon-load of charcoal for a buckeye or willow piece of coal large enough to hold a denture and the investment was no easy job, I assure you.

No wonder rubber became popular as a base. It was easy and brought quick returns, with little investment of capital and less labor.

An old method for the destruction of live pulps in aching teeth was the use of arsenic and morphine, and is yet relied upon as an effective agent in devitalization. The discovery and use of cocaine, with immediate extirpation, has in a measure taken its place in single-rooted teeth, not, however, to the exclusion entirely of the old method. Antiseptic treatment and sterilization of the root-canals are essential prerequisites to the filling of such devitalized teeth

The insertion of artificial teeth on hickory pins was in vogue many years ago, and where due care and precaution were used in preparation and thorough cleansing of the root and canals and careful articulation observed, was, in a large percentage of the cases, a successful and satisfactory kind of work for that day. The preparation of the roots for the reception of the crown was a tedious operation. The excising forceps were largely used in removing the crown and broken portions, together with files made for that purpose and used by hand for final preparation down to the gum line, and even under the free margin. Hand burs were used in enlarging the canal. If you found a live pulp or nerve it was destroyed often with a red-hot wire. Nerve broaches were unknown, ex-

cept such as were improvised by the ingenuity of the operator. With the dental engine, and all the instruments that can be used for root preparation, and the methods of today, this kind of work is made easy and very satisfactory in a majority of the cases on roots free from disease and with healthy surroundings. Silver fillings, in the long ago, were made by filing down coin and amalgamating with mercury, usually in the palm of the hand. Cavity preparation was made with long-handled burs and excavators, hoe and axe-shaped, and separations were made with V-shaped files. In teeth of solid structure these fillings often preserved teeth for years if careful cavity preparation had been observed. Some of the salts of silver, the nitrate, will often arrest superficial decay in the teeth of children, after two or three applications with a stick and a little prepared chalk. The nitrate turns the dentine black, causing it to solidify and become glazed, rendering it immune from further attacks. I often resort to this in the mouths of children with gratifying results. Amalgam had a struggle for a time to maintain its place as a filling material for saving teeth. Early in the sixties of 1800, when cohesive gold was introduced, there were those high in authority who said it was the only material that would save teeth, condemning the soft foils and amalgams as failures. J. Gishi, Flagg and others took the ground that plastic fillings were better tooth preservers than cohesive gold, and the battle raged between the adherents of each for years. The friends of plastics began experiments with alloys and the dry oxids, until they have today a place in all our cabinets as good preservers and arresters of decay, under conditions favorable to their use, and where they are indicated.

Dr. Chapin A. Harris, the pioneer in dental literature, in a volume he published in 1839, advocated the filing of teeth as a remedy for caries, citing the Brahmins, Algerians and the women of Sumatra as examples where it was practiced, not for the purpose of arresting any diseased conditions, but for appearance' sake, and in his own practice as a preventive measure in caries. He recites many instances under his observation where extensive separation had been made and where the teeth had withstood the ravages of time for 30 and 40 years after the operation.

Dr. Robert Arthur, of Philadelphia, was an advocate of this

practice, and even wrote a book in defense of the operation as late as 1871, entitled "Treatment and Prevention of Decay in Teeth." His treatment of superficial decay in the proximal surfaces was to file away and polish the surfaces highly, enjoining cleanliness and care after the operation; and in case of children and the treatment of temporary teeth he recommended repolishing the surfaces occasionally until the eruption of the permanent teeth, holding that dentine is endowed with imperative powers, and hard deposits in the tubuli render them hard and less liable to attacks from recurrent decay. If it was ever good practice, why may it not be today in some cases?

The rubber dam was perhaps one of the greatest boons that has yet come to the dental profession. It is one of the new things, yet it has been over 30 years since its discovery and general use in the dental office. Before it was discovered and presented to the dentists of the world by Dr. Barnum, of Boston, there was absolutely no way by which you could isolate a tooth and have it free from the saliva and moisture of the mouth. Napkins, bibulous paper, and later cottonoid rolls, and many other devices were resorted to; even saliva ejectors failed to accomplish the desired and satisfactory results that were attained by the use of the rubber dam. I don't know that the dental profession has ever yet fully appreciated this discovery and rendered a fitting tribute to the discoverer that the merit of his invention has deserved. I know of nothing that has been the comfort to the practitioner in his office as this, given gratuitously by Dr. Barnum to his professional brethren. Had he seen fit to have patented his invention it would doubtless have made him a millionaire. He certainly had no such spirit as actuated the manager of the Goodyear Dental Vulcanite company, who for years extorted a license fee from every dentist who vulcanized plates and used a rubber base.

Next to the rubber dam was the dental engine; only those of us who prepared cavities in teeth with files, hand burs and excavators can appreciate fully the value of this invention. With all its appliances, it is one of the indispensables in the office, and near the chair of the operator. Thrice blessed be the name of the man, who, in his endeavor to invent a machine for shearing sheep, gave us the flexible joint and attachment utilized in the dental engine. That it may sometimes be used too heroically can be said by any one who has unintentionally

exposed an occasional pulp in the hasty preparation of cavity.

Cohesive foil, pellets, and other forms have been introduced, and are largely relied on, and are an improvement over soft and non-cohesive foils, and, I am free to admit, for contour work and the restoration of forms in broken-down teeth, it is probably all that can be desired in gold. But is it esthetic? Are we not all tired of gold, gold, and its dazzling glitter in teeth?

But what shall we do when cases come to us for restoration? Brewster says use my porcelains and make inlays and restore lost tooth structure and restore original form and beauty "in rotten row". Another says, cut them off and put on porcelain crowns. Others say, make gold inlays and do it easier for yourself and patient, holding that the glitter is less objectionable than broken-down and disfigured teeth.

Well, how long will this work stand? No longer than the cement with which it is retained in position. If we had an insoluble cement, we would have greater reason to rejoice in our success. But have we yet found it? I know there are those in practice today who so thoroughly burnish the platinum to the walls of the cavity, in making an inlay, that you have only a line of cement exposed to the secretions and acid conditions of the mouth, that there is no opportunity, or at least very little, for the action of these soluble agents; and if the margins are so burnished down and brought to a feather edge, you have no discernible edge or exposure of cement. Of course, if the cement is not exposed there can be no deterioration, and you have a perfect piece of work, impermeable to any outward corrosive agents. This is nice theory, but are such desirable results attainable? Time alone must prove it. I am not here to say nay, for I realize we have careful manipulators, so skillful that they may reach such results. With an intelligent clientele, people who are careful to keep there teeth clean and free from deleterious agents, better and more lasting results are obtained than in mouths where the work of cleaning and brushing the teeth is done spasmodically, or when the patient wants to appear to good advantage at some social function.

Why should we know that dentistry has been acknowledged a specialty in the healing art, so required to perform operations so lasting that there may never be any return of original conditions and disease after our efforts to cure them?

Crown and bridge-work as practiced today is an improve-

ment over plates and clasps, that were the only means of supplying teeth that had been lost by extraction or the ravages of decay.

Where these were properly constructed, and with good adaptation to the mouth and teeth, they were worn with comfort and satisfaction. When due regard was had to cleansing of the mouth and clasp teeth, this work rendered good service. Filling teeth with gold has been practical all the years since dentistry became a profession, only varying in the manner of introducing and using it. Soft gold foil was universally used, in fact the manufacturers labored hard and long to keep this quality in their products; and I am of the opinion that it is today the best material for any teeth of good structure and healthy surroundings; any form in which it may be used, either in rope, ribbon or pellets, crystal gold, moss fibre, or any form where softness has been maintained; and when introduced into a properly-shaped cavity, well adapted to the walls, fully condensed and polished, meets all the requirements necessary as a filling material. But it required skillful and careful manipulation to insure good fillings. Careful attention to details in cavity preparation is the essential requisite. That heavy malleting with cohesive gold will not always save teeth, if you depend in any degree upon enamel walls for support or anchorage is a fact fully established in the experience of many good operators.

There are many things more which might be said, but lest I weary your patience I will only allude to the efforts that have been made in the past to save and fill teeth with exposed pulps. The time was when we were advised to sterilize with carbolic acid and fill with oxychloride of zinc, gently flowed over the nerve, as the proper thing to do in cases of exposure. The dead nerves, followed by alveolar abscess, swollen jaws, and final extraction, exploded this theory and practice years ago and we have even yet preparations offered us, claiming to accomplish this very satisfactory result.

Osteoplastic os artificial, and kindred other things, had their day in the past, but have given place to others of greater merit.

I am glad to have lived in this, the greatest century of the ages, and to have been associated in a small way and witnessed the growth and development of a profession of which I am

proud, and one that has steadily fought its way to the fron until today it has outlived the traditions and practices of the olden time. Today it stands the equal in intelligence, calling and refinement, the equal of either medicine, law or theology

## LAXITY OF THE DENTAL PROFESSION IN INSTRUCTING PATIENTS IN THE PROPER CARE OF THE MOUTH.*

By J. F. Dougherty, D. D. S., Canton, Ohio.

There is no substantial blessing accorded man equal in value to health; consequently its preservation should receive his first consideration. As professional men we have no duty or responsibility equaling that of safeguarding the health of our patients. Is it not our moral duty as dentists, by reason of the degree conferred upon us, and the license granted us under the law, to see to the prevention of dental diseases in those confiding to us the care of their mouths, and to do everything within the bounds of reason to instruct our patients in the care of the teeth and their related parts, and to see to it as best we can that these instructions are carried out? But is it not a fact that every other branch of our work awakens more interest and a quicker response, in a large majority of the profession, than does that of preventive dentistry?

Never were so many new ideas, materials and devices for the treatment, restoration and substitution of diseased and lost teeth brought to our attention as at the present time. All of us, to a man, are interested in them, ready and anxious to acquire and make use of all such devices, materials and ideas as will make us more efficient dentists, and better able to render lasting service to our patients. We well remember our enthusiastic interest in the artistic branch of denistry, attending the development of porcelain work, and our extravagant hopes in the humanitarian side of our work, with the coming of cataphoric and high-pressure anesthesia; and again

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with boundless enthusiasm we welcomed gold casting; and the utilitarian branch has an inning, and most of us become inventors of casting devices, so great is our interest.

If some means could be brought to bear whereby the same degree of interest that we have shown in the subjects mentioned could be aroused in the individual members of the profession on the subject of preventive dentistry, and their sense of professional responsibility quickened to the point of activity, the added good that we could do our patients and the world at large would be incalculable, and would place the practice of dentistry on an entirely different basis, and the profession on a higher and more scientific plane.

A long stride in the right direction is being made in the agitation for the teaching of oral hygiene in the schools. It merits the hearty support of every member of the profession, but it is not meeting with that ready acceptance by the school authorities that one might expect for a movement so truly deserving and promising of so much good to humanity. When this movement does meet with general success, as it surely must before long, it will not be because the public is demanding it. The people have not been educated to the point of realizing the need of it; and a very large proportion of the dental profession is, to all appearance, very little, if any, in advance of the people on this subject. I think it is common observation on the part of those who have given this subject some attention, that the rank and file of the profession are not interested in this work; and, until there is an awakening of the dentists, we cannot expect public enlightenment to grow in this direction.

The teaching of oral hygiene in the schools in not going to lessen the responsibility of the dentist by any means; but on the other hand, as the people become enlightened on this subject, they will at the same time become more exacting. They will understand that it is the duty of the dentist to direct them in matters pertaining to the care of the teeth and mouth, and they will learn to discriminate between those who have their interests at heart and those who have not; just as they are learning to discriminate between the physician who hears a plaint, feels a pulse, writes a prescription and grabs for his fee, and the one who makes a careful diagnosis, inquires into their habits of life, arranges for them a scheme

of hygiene, and exhibits generally an interest in their health and its upbuilding. To feel and exercise this kind of an interest in our patients is our duty.

I can conceive of nothing much more disheartening to a conscientious and painstaking dentist than to see a mouth upon which, only a short year before he had spent hours, perhaps days, in doing saving and artistic work of which he was justly proud, going to rack and ruin through ignorance or carelessness, and often with a consciousness too slow in awakening to his own responsibility.

In the light of our present knowledge concerning the etiology of infectious diseases, outbreaks assuming the proportions of an epidemic are now regarded as very close to criminal, with the responsibility and the blame resting upon those who are supposed to have the health of the community in their charge. In the tropical cities, under the American flag, that have been rescued from conditions of shame and misery by the intelligent and vigorous application of the simple laws of hygiene, and made safe and delightful places of abode, with the death rate a fraction of what it formerly was, and with a feeling of security for the permanent economic and social prosperity of these cities, a return to the conditions that formerly held sway would be regarded as one of the crimes of the century, with the responsibility placed upon our government and its sanitary commissions. The dental profession, as the sanitary commission of the oral cavities of the people, have a heavy responsibility that is being shouldered by but a small minority of its members.

During the years that I have been growing into somewhat of a crank on this subject, if I am to credit many of my patients and a few of my fellow dentists, I have been told by scores upon scores, possibly hundreds, that they never before had had instruction in the care of their teeth, and I am safely within the truth when I say that not ten per cent of those who had passed through the hands of former dentists had ever had their attention called to the necessity of greater care and thoroughness, if they wished to maintain a healthy condition of the mouth, and preserve their teeth.

A little more than a year ago a case of pyorrhea came under my care. This case had received treatment from one of the best-known dentists in the state, a man well and

favorably known to most of us. Before dismissing this patient after the first treatment, the usual lecture was given as to the care I expected him to give his mouth, impressing upon him, with all the earnestness I could, that the cure would depend more largely upon his own personal efforts than upon the treatment he should receive at my hands; not that he could hope for a cure without my help, or that of some other dentist, but that no dentist could effect a cure in such a case, unassisted by him, unless he spent a great deal more time and money in my office than I thought he would care to do, and that if I did succeed in effecting a cure in his case, he could not hope for permanency in the cure unless he formed and maintained such habits as I suggested were necessary; for a lapse into the old habits would surely mean a recurrence of the disease. After I had finished my talk, he asked me if I lectured all my patients taking treatment for that trouble, as I did him. I replied in the affirmative, and inquired why he asked. He then told me that he had taken treatment from his former dentist for more than a year, that his visits were about two weeks apart, that he never had had any instructions in personal care of the mouth, that his present or former habits of brushing, or other care, had never been inquired into, and lastly, that after more than a year's treatment the condition was very little more satisfactory than when he had begun. This of one of the prominent dentists of this state, and I have no reason to doubt the statement of my patient. This case yielded nicely to treatment.

I might recite a great number of instances pointing to a woeful lack of interest, or a thorough disregard, for this branch of our work, among men well up in the profession, and from whom much might be expected.

It is not the purpose of this paper to deal with methods of treating dental disorders. The journals are full of good articles on these subjects. If I were to say anything on pyorrhea, its treatment and prevention, I fear that I should be accused of quoting almost the entire article of Dr. Grace Pearl Rogers, of Detroit, so thoroughly do I agree with her. This paper was read before The Michigan State Dental Association last year, and appeared in The Dental Summary

for November. I think it is the best I have read on the subject. It would do us all good to reread it about once a month. I will quote the last two paragraphs of her paper:

"It is very frequently some dentist's fault that a patient has pyorrhea in its advanced stage, for usually we find that the patients who come for treatment late have been regular patients of some one for years, and that some one has either treated them inefficiently or has discouraged them completely with regard to the saving of the teeth.

"It is not a difficult task to cure pyorrhea in its incipiency, and a healthy mouth is quite easily maintained such with your patient's co-operation. Pyorrhea can and should be prevented; it is your duty and it is mine. In 1880, Dr. George Mills, of Baltimore, made a prophecy which is, I believe, being realized today and which will be even more applicable to the future. He says, in speaking of pyorrhea, 'The time will come, and it is coming very fast, when men will take in interest in it and be anxious, not only to take care of the cases, but they will come to observe that the results are so terrible in the mouth and upon the health of the tissues generally, that they will anticipate cases, knowing that prevention is better than cure. This time will come, soon or late, just as stimulus is brought to bear upon our profession.' Let us see that stimulus is brought to the profession in heroic doses. Those who are interested, do all you can. Pyorrhea can be cured and kept cured, and what is even of more importance, it can be prevented. Let us not only give relief to suffering humanity, but let us hasten the time when suffering from pyorrhea will not be known."

And it is just as true that nearly all decay of the teeth is preventable. How is this reform to be brought about?

## DISCUSSION.

**Dr. F. E. Renkenberger, Youngstown, Ohio:** We, as a profession, all know that there is a large field before us in caring for the hygiene of the mouth. How many of us are today doing what we really should to instruct our patients in the care of the mouth? Nearly every day we come in contact with patients who, in some form, need some instruction in this line; and how many of us do take the proper time to explain the benefit they would derive from such instructions? Too many of us are of the opinion that

this one or that one will not heed what you tell them, so what is the use of spending the time? But, brothers, just as long as you and I continue such work, just so long will you prolong the high standing of the profession. We must be continually urging our patients in this line of work; the more we insist on having it done the more will be attained.

I think we, as a profession, should be more frank in telling our patients the true condition of their mouths. We feel in some cases we would insult them, and in reality they should have a very forcible lecture so they will remember it for some time.

Very often, if we speak to them kindly, they do not seem to care, or at least forget about it at once, for the very next time you see them their condition is not changed.

There is a certain class of patients who need such instructions very much worse than others. Take the class with very chalky, soft teeth and where the saliva is in an acid condition; such cases should have a great amout of care. I am of the opinion that you cannot cleanse such teeth too often. In such cases the dentist should use his best efforts to instill into his patient the use of hygiene. Many of these patients are not aware what the effect of true hygiene will attain, and unless the dentist will give these cases special attention you cannot expect great results.

In many cases we do not see the child until the temporary teeth are decayed beyond repair; these are often very difficult to remedy, and in many cases nothing can be done except to give the child relief, either by opening the abscess cavity or extracting the tooth. We cannot start too early in life to teach our young boys and girls the value of hygiene of the mouth. Every father and mother should know enough about this subject to start their children in this direction; and as each child is started to school they should have an examination of their body and especially the teeth, in which a record should be made and sent to the parents. If the parents are not able to attend to these needs it should be done by the city, county or state, the same as they take care of a sick person who is not able to do so.

How much better work might they do if they were not troubled with their teeth. We all know how aggravating it is to have bad teeth; no one can do a good piece of work and be tortured with an aching tooth; so think of our small boys and girls who, by neglect, are forced into such conditions. I think it is time for us to wake up and educate the public. We must go gradually, it cannot be done in a day, but by perseverance a great deal can be eliminated.

Every child should have a certain amount of hygiene of the mouth taught in our public schools, and until such steps are taken we cannot attain great results. Our physiologies should have a special chapter on hygiene of the mouth and care of the teeth. This would be a great aid to give many a pupil a good education

in this line, which they might not be able to get in any other way; and if such principles are taught our little patients, when they grow up they will have the habit attained and will not forget it so quick. So I heartily ask every dentist to do all he can in this line, and he will some day reap good results from the seed he has sown.

## ANNEALED TIN AND GOLD FILLING.

By W. M. Megginson, D. D. S., Toledo, Ohio.

In looking over The Summary for September, I find an article on the use of "tin". As I am particularly interested in tin, I will crawl out of my lazy shell and give you that long-promised paper.

Tin, as we all know, is the best tooth-saver of any metal known that is used to fill teeth. Fifty years ago tin was very extensively used, and by the shining lights of the dental profession.

In talking with Dr. Corydon Palmer on the subject, he stated that the working of tin now seemed almost a lost art, and he could not understand why the dental profession could dispense with so good a friend.

I am indebted to Dr. H. L. Ambler for my start in working tin, and firmly believe that the best service I can render my patients is to follow Dr. Ambler's advice, with a few changes as regards methods, etc. The primary question in inserting a filling or plug, to fill out the natural size and shape of a tooth that has lost its original form by decay, is to fence out, from that cavity, microscopic objects or bodies known as "germs" or "bacteria".

Now, then, in order to do so we must make our joints between tooth and metal so perfect that these objects or germs, as we call them, cannot find a way into the tooth between metal and tooth substance. The portion of tooth that is most vulnerable and which has the least natural protection is necessarily the cervical margin. Gold placed at this weak point, in working, becomes harsh; also with the plugger—we are liable to chip or crack the thin plates of enamel, which, being out of sight and a great many times hard to get at, are not no-

ticed, and we have invited failure before we have even completed a piece of work that may look extra fine.

By the use of tin, we have the softest, most pliable tooth-filling material known. It does not become harsh or hard in working, and the ease by which a filling may be inserted is remarkable as compared with gold. By the use of a tin set a first-class tin and gold filling can be inserted in any position in the mouth, that can be kept dry as easily as an occlusal cavity in a bicuspid can, using gold alone.

The finishing of tin requires even less than a quarter of the time that gold does, and on account of the small amount of grinding and cutting, is very much appreciated by the patient, and last, but not least, you are not filing away good dollars in waste material.

In tin we get a medicinal effect through its oxidation and infiltration into the tubuli which seals or partially seals them to our common enemy. Tin is cohesive, but by annealing it on the electric annealer, and then using it the same as gold, its cohesive properties become greater to a marked extent and by thoroughly condensing it into the cavity, not using a matrix, and with a thin shoe of gold for the wearing surface we have an ideal filling, one that is easily inserted, quickly finished, with no expensive waste of material and nerve force of ourselves or patients, and a contour that a ten-year-old child could bring out. A separator is not required, and that is worth the price of admission alone. A ribbon saw, two or three strips, and a Megginson knife-trimmer completes the proximal finishing.

In reference to the knife-trimmer, see cause of Exostosis—slight and long-continued irritation to peridental membrane. By using a knife you go under any overhang of filling at cervical margin and clip it off even with the tooth wall, leaving that part of the filling smooth and free from loose ends that only serve as a lodgment for food and all kinds of corruption.

In building up the tin to within three-quarters or seven-eighths of the cavity top, always keep the margins high and the center hollow; then you will never have trouble in working; weld the gold right onto the tin same as though it was just another piece of tin. Pits and square corners are not necessary, as the two metals unite readily, and you will never have your vanity hurt by patients coming back with gold pulled off from the tin.

Don't forget to use the burnisher. Burnish the edges of your filling thoroughly; it will pay. You may save your pocket-book and pride at the same time.

Where the bite is heavy a judicious use of platinum and gold foil is a fine thing, for it is hard and will stand the wear of attrition very much better than gold, and when we see our work four or five years later we will thank our lucky stars that we used it.

In summing this question up, we have, then, tin annealed on electric annealer, a set of tin pluggers (you cannot work tin with gold pluggers), a mallet and knife-trimmer, with accompanying saws and strips added to the usual other appliances, and we have a filling that is a credit to ourselves and the profession at large, which enables us to get the same fee, or more than for all gold, and the satisfaction of knowing that we have rendered the best service possible to our patients.

I want to add, remember that cervical wall in anterior teeth, to protect it with one of the best friends the dental profession ever had.

In preparing tin, roll into ropes same as gold foil. I use S. S. W. No. 6, extra tough, which in my hands works better than any other heft. I realize that we do not all work alike, or like the same things, but any make of tin is all right. In my eight years of experience with tin I have as yet to find a single case in which the lasting and saving quality of this filling is not superior to any other material known to dental science, with the exception of the cements, and they all, sooner or later, wash out.

A filling of all tin in children's teeth—that is, the permanent set—when the child is too young for gold or amalgam, and the teeth are still soft (I hope this sentence is taken as I mean it), will produce far better results than any other material excepting oxyphosphate of copper cement, which seems to exert a recalcifying influence on dentine that has become slightly softened.

There seems to be a slight difference in the tins on the market; some work better than others; that is, where they are not annealed; but on the whole, for color and all, a tin that works best after annealing seems to fill the bill nicely. Because some of our brother dentists in small towns have no electric current, and therefore can not anneal their tin, is no

excuse for not using the same, for with a good set of tin pluggers and a little practice, a wonderful saving of good money can be made, together with a filling far superior to the ones you are making right along, day after day, and cursing your luck that there is no money in dentistry because gold costs so much, and it does not save teeth anyway.

In talking with a number of the boys, I find they expect to use their gold pluggers for tin. I want to say, don't do it. Get a regular set of tin instruments, something good—do not know of a better set than the Megginson Tin Set, which consists of four points, and you can reach any cavity in the mouth with them. I wish it understood right here that I am not in the manufacturing business. It is nothing to me financially whether any one uses my tin set or not.

Thorough condensation is important, for without it a powdering and washing out is liable to happen, leaving the gold shoe suspended at the occlusal margin, appearing to us as though our work was all intact. A properly condensed filling will permit a clean shaving to be cut from it with an excavator or knife.

I have used tin and gold rolled together, without a gold shoe, but it looks like mother's old copper wash boiler, and in the majority of cases it has not been as successful as the tin at bottom and gold on top. Dr. Callahan uses the two metals rolled together, and in definite quantities, but in my hands it has not been satisfactory. An all-tin filling may wear down in the center and be all cupped out, but the sides or margins will still be covered with a thin layer of tin, which does the business as long as any of it remains.

In children's teeth, an all-tin filling is sometimes used, and when it wears down or is cupped out, a shoe of gold can be inserted on top of the tin after getting a new surface in the tin already in. I have noticed in their cases that the tooth wall around the cavity seems to be markedly harder than the surrounding tissue. This I attribute to the oxidizing quality of the metal, and only the slightest possible cutting should be indulged in.

I received, some time ago, a book of Dr. Ambler's tin No. 5, which worked very nice indeed, but in working it I find you must use a lower temperature in annealing same than for S. S. White.

Different makes require an acquaintance before one becomes as proficient as with the usual one. Moisture is another item to be taken into consideration, for as much care must be used in that direction as with gold.

I have been asked how long these tin and gold fillings will last. Will answer by saying they will last longer than the best all-gold fillings you can put in. And now, please tell me how long your all-gold fillings will last?

In placing an inanimate object in intimate connection with an animate, we do something that we cannot explain, and probably never will. We judge entirely by results. Every time we fill a cavity in a tooth this is what we are doing, so it is to our advantage to get close to nature. In other words, "Go forth under the open sky and list to nature's teachings."

# EXCHANGE OF PRACTICAL IDEAS

## PRACTICAL IDEAS.

By F. B. Spooner, D. D. S., Brooklyn, N. Y.

Get a small stew pan, of the porcelain-lined variety, with a handle. Mix your plaster in this, and wash under flowing water, when you are through, and before the plaster has set. The cost is about ten or fifteen cents against forty cents for a rubber bowl. By washing immediately it is always clean, and the handle is a convenience to hold it and to hang on a nail.

In the laboratory the plaster spatula, as well as the knives, become coated. The usual method is to scrape them with another tool. I adopted the following method: Take a sheet of tin or sheet-iron and tack it to the edge of the hole in your bench. The sharp edge is convenient to scrape off the tools, and the plaster falls into the pail below. This is better than to rub against the edge of wood, which soon coats and is dull.

The above seems a trifle, but it is astonishing how much time is saved by simple devices.

## A QUICK AND THOROUGH METHOD OF STERILIZING BROACHES.

By A. A. Meder, B. A., D. D. S., Louisville, Ky.

To sterilize broaches and not destroy their barbs nor injure their temper has long been a problem with the dentist. The following method will, I think, be of interest to the dental profession. Take a small bottle with a wide mouth, one of

about 2-ounce capacity (a quinine bottle answers the purpose admirably), and fill about one-half full of carbolic acid, 95 per cent, and insert a thin, soft cork. Remove from broach excess of cotton, filus and pulp tissue, invert bottle, grasp broach near the barbed portion and repeatedly pass broach through cork into the carbolic acid. You will be surprised to see how clean and bright the broach appears. Lay aside for a few minutes. You may now enter canal with full assurance that you will not cause any infection even with a broach which was previously used in abscessed canals.

This method of sterilization is also effective for hypodermic needles and other small dental instruments which should be sterilized before and after using. The temper and nickel-plating of your instruments are unaffected and you may lay aside same without the slightest uneasiness that they will either rust or tarnish.

# SUGGESTIONS

## TIPPING BROKEN CORNERS.

**L. M. Homburger, New York City.**

For a time I have employed a method for replacing broken tips and corners in devitalized teeth, as follows:

The cavity is prepared and a short hole is drilled into the root-canal. A matrix is made, and through the matrix an iridio-platinum post, covered with platinum foil, as above described, is thrust into the root-canal and cemented to the matrix with wax. By taking hold of the free end of the post with a pair of foil-carriers the post with the adhering matrix is easily withdrawn from the cavity. This is invested and the porcelain tip is built around the projecting end of the post. When finished the matrix is peeled off, the post withdrawn, etched with hydrofluoric acid and cemented into place.

The great advantage of this form of inlay over one with a solidly baked-in post is that it is stronger.

We all know that the weakest point in an artificial tooth is at the pins: In this respect inlays do not differ materially from artificial teeth, and as a matter of fact they are more liable to fracture, as the porcelain used for inlay work is not so strong as that used for teeth. Even if ground up artificial teeth are used the inlay will not be as strong, because artificial teeth are molded under pressure and baked by men who do nothing day after day but bake porcelain; whereas inlays are made by men who only occasionally bake porcelain and therefore frequently overbake or underbake the mass.

Knowing this to be true, I deem it extremely ill-advised to bake any form of post, pin or dowel into an inlay, unless the same is absolutely necessary, and I can say that in the past six years I have never run across a case in which it was necessary.— Items of Interest.

## WHAT CAUSES FAILURE IN CROWN AND BRIDGE-WORK?

T. J. Newman, Little Rock, Ark.

We might ask, what causes failure in crown and bridge-work? Let us brief it as follows: Improper preparation of abutments, bad-fitting joints, bands and crowns impinging on gums or peridental membrane, improper articulation, sanitary and esthetic requirements.

Preparing roots for porcelain crown or any abutment crown we should follow closely the gingival margin on approximal and labial surfaces. So many teeth are cut even across from lingual to labial surfaces, sinking crown below the festoon of gum in interdental space, which often gives rise to considerable inflammation, especially with the banded crown. With the assistance of a little impression wax placed on crown and forced to place on root, you can note the deficit in joint and cut a fit with a porcelain crown. I use porcelain as an aid in fitting difficult cases. With Richmond crown and shell crown it is, I think, more difficult to do it right, as the offset or knuckling begins with or just below the gum line, and it is necessary, if you expect a good fit, to remove this knuckling on the tooth. How many successfully do it? You surely can not slip the band for the small end of a bucket over the large end and make it fit on the small end. Therefore it is necessary for this fullness to come away in order that the band may fit tight at or just below gum line.

There are more failures of crown and bridge-work caused from bands and crowns pressing on gum or peridental membrane than from any other cause; possibly, partly on account of nervousness of patient and the dentist thinking it a bad mistake to devitalize in order to enable him to do the necessary trimming. Of the two I think the poor preparation is by far the worse mistake. With the poor patient, the dentist feels that for the price he gets he can't afford the time necessary to do the work right, and again he falters, falters for the greed of the almighty dollar that awaits him in the reception room.

We find some failures from poor articulation, a mistake we can overcome, I think, by taking off enough of occlusal surface of tooth to allow sufficient room for filling in the crown surface of crown and correctly carving your cusps. Carve your occlusal surface of crown to correspond with cusps and sulci

of natural teeth and to fit the occluding tooth. Throw your stamping machine away, carve your own occlusal surface, and you will be happy. For bridges, a bite or impression of the entire arch, with models on an articulator having a lateral movement, is the best way to get a true carving of occlusal surface. We have failures from a lack of rigidity in abutment and in the bridge construction. The open-face crown often plays its part, especially with bridges suspended from second or third molars to the cuspid, with an ordinary open-face crown on cuspid. The stress is so great it swages the crown loose. Also from the same cause, in cases of two teeth in a bridge, where the crown tooth is thin-bodied and bridge-tooth of approximate size. A porcelain bridge of two or three dummies, where gum ridge is full and porcelain frame-work is necessarily light.

In gold bridges, with or without facing, if you fail to solder the dummies to the soldered occlusal surface of the crown, they will tear the sides of your crown away, even if they are 30-gauge gold.

Many crowns and bridges are a failure from an esthetic point. A bridge may correctly articulate and have all the requisite strength, with good-fitting joints, but if it does not harmonize with the natural teeth and give proper expression, it is in a measure a failure.

The last, but by no means the least, defect or cause of failure is sanitary construction. Fill in your deep undercuts in long teeth having broad occlusal surfaces, so as to have a smooth, sloping surface on lingual side, if you have to use some other metal for filling. Where there are short teeth and full ridge, make the occlusal surface as narrow as it will justify. Don't jam your facing of dummies up against the festoon of gum around the crowned tooth. Allow free space. In lower bridges, on the side arches, I favor an occlusal suspension without teeth or facing, extending down to the gum, for it is the hardest place in bridge-work to clean, and by suspension it leaves a free open space that is almost a self-cleanser. And last, caution your patient that the life of the bridge depends largely on cleanliness; that with crown and bridge-work it is even harder to keep clean than natural teeth and require more diligent service with mouth-washes, brushes, ligatures, etc.—Dental Era.

## AMALGAM INLAYS.

H. W. C. Bodecker, Berlin, Germany.

For some time I have used amalgam inlays, principally in proximo-occlusal cavities of the molars. My experience has led me to prefer amalgam to porcelain in such places, because the margins of an amalgam inlay stand the stress of mastication better. From an esthetic point of view, however, no other material can compare with porcelain and it is therefore indispensable in certain cases.

Compared with a gold inlay, one made of amalgam has no special disadvantages, though it is of course made of a baser material, and lacks the pleasing color of gold. On the other hand an amalgam inlay is much more easily and quickly made, polished and undercut than one made of any other substance.

Compared with the ordinary amalgam filling the inlay has the advantage in every respect. It is denser and more uniform in density than an amalgam filling made in the mouth ever could be. As the cavity is more accessible on the model so a greater and more equally distributed pressure can be brought to bear on the whole mass of amalgam, giving greater hardness and at the same time rendering it less liable to distortion. In making the filling on a model we not only allow crystallization to take place undisturbed, but we also avoid the danger of having our material bitten out of shape, or having it forced up into the interproximal space.

As to grinding and polishing—how much easier it is to do that on a model than in an interproximal space, where the thin amalgam has been forced out between the matrix and the neck of the tooth. Though finishing is not always difficult, the patient is willing, nevertheless, to be spared the discomfort of such a proceeding in the mouth.

It takes no longer to make an amalgam inlay than to make a large amalgam filling. Granting that the time taken in preparing a cavity for an amalgam filling and for an inlay is about the same, it then takes less time to take an impression of the cavity than to fill it with amalgam. And at a subsequent sitting, it also takes no longer to set the inlay than to finish and polish the filling.

The cavity for an amalgam inlay is prepared in the same manner as for a gold inlay. Thin walls of enamel should be

removed. The margins should be smooth and if possible at right angles to the surface. Most cavities can be fully prepared for taking the impression by the use of stones. They cut rapidly, leave a smooth surface, and when used with water are more agreeable to the patient than burs. Only two shapes are needed, slightly conical barrel-shaped stones of different diameters, and very small round stones, such as the gem cavity points. By using a right angle hand-piece the stones can be worked in exactly the same direction in which the impression is to be withdrawn from the cavity. In most cases it is possible to shape proximo-occlusal cavities so that the inlay will be self-retentive. This can be done by running a fissure bur at an angle of thirty degrees across the buccal and lingual margins of the cavity on the occlusal surface. Excavation is continued until a margin of healthy dentin and enamel surrounds the cavity. Should there still be carious areas in the dentin, not near the margin, it is better to remove them after the impression has been taken. Sometimes it happens that the margins are satisfactory but that there are places in the lateral walls of the cavity, which act as undercuts, preventing the withdrawal of the impression. In such cases the cavity must be partially filled with cement and then ground out with suitable stones.

For impression material I use cones of various sizes made of impression compound. In an alcohol flame the point is softened and the cone pressed into the cavity. To confine the material when necessary, a thin copper band is placed around the tooth, or a thin piece of sheet steel which reaches well up to the gingival margin of the cavity is held against the adjacent tooth. The impression is then poured with ordinary plaster to which a little salt or potassium nitrate has been added. When dry, this makes a model with margins sufficiently hard to resist the pressure during the introduction of the amalgam. The objections to the hard varieties of plaster are, the difficulty of trimming and the danger of chipping the margins while cutting away the model to obtain perfect access to the cavity. After having been removed from the impression the model is allowed to dry. All excess plaster is then cut away so that the margins of the cavity and the immediately adjacent surfaces of the tooth stand out clearly. The model is now ready to be filled.

Any amalgam that gives satisfaction as a filling material can be used in making the inlay. The ideal amalgam for this work is one that does not in time distort, that keeps its color in the mouth, that is sufficiently hard to withstand the wear of mastication and that at the same time is not brittle. A slow-setting amalgam is also to be preferred, especially in contour work or when a number of models are to be filled at one time.

The cavity of the model should be filled with as much care as if the operation were performed in the mouth. The excess mercury is removed by exerting as much pressure as possible with the broad surface of the thumb upon the whole mass of amalgam. With a small thin spatula the inlay is then contoured and trimmed flush with the margin of the cavity. If necessary, cusps and fissures are carved. It is then allowed to set. Filling the model a day before setting the inlay gives the amalgam ample time to harden.

The filling can not be removed without partially destroying the model, but by forcing a hatchet excavator into the plaster near the margin of the cavity and prying, the filling is easily raised. Upon examining the inlay at this stage, we find that in places the amalgam laps over the margin of the cavity. But as the margins are very sharply defined on the surface of the inlay, it is an easy matter to remove the excess with a cuttle-fish disk. The inlay is then tried in the mouth, and if the model has been perfect, it will go into place easier than most inlays made of other material. Undercutting is rapidly done with a small circular saw on the engine. If deemed advisable, undercuts may also be made in the tooth. If the cavity is perfectly dry, and a thinly-mixed, rapid-setting cement (preferably hydraulic) is used, the undercuts in the tooth need not be deep. When the cement has set, the operation is complete, as it is but very rarely necessary to grind away any part of the inlay in the mouth.—Dental Review.

## A FEW SUGGESTIONS OR POINTERS ON THE USE OF POINTS.

**J. A. Griffith.**

It is only recently that the real value of mounted points has become generally known. It is true that points have been

used to a limited extent for many years, but as they have grown better and of more varied forms their increased usefulness has suggested itself, until now they have become a valuable adjunct to the operating equipment and are found on every table. It is not, however, sure that there will be found always at hand a point of proper form and size to suit either the dentist or the case in hand. It is here I wish to interject our suggestion. Take for our purpose a mounted point nearest the shape and size required and one made and vitrified with point and shaft in place, and it can be turned down to the smallest point and still be relied upon to do good service and remain securely attached to the shank. A point mounted in another way will not do. In cavity work is where mostly will be required points of varied and particular shape and size. To make every desirable shape mounted in a mold would be out of the question, and to fill these requirements the dentist's recourse is to his lathe. For example, should you desire a pear or flame-shape point, select from those you have at hand the one most suited to the purpose in size and form, place it in your lathe, and with an old file held upon it in the proper manner you can form a most desirable point in a moment's time. A medium-size file is the best, as it cuts more evenly and smoothly. For instance, should you desire a cone shape, select a stump shape of desired size; the file held upon the outer edge at the proper angle will result in a perfect cone-shape point. In this way can be made any shape or size desired from any point, as all are easily cut in this way. By this the dentist will find a wider scope of usefulness for his mounted points. A gratified feeling from the results, and finally a great saving in his bur bills, as he will surely find in large cavities, a carborundum point of proper size and form is far superior to any steel bur.—American Dental Journal.

## A NOTE ON THE TREATMENT OF PYORRHEA ALVEOLARIS BY INOCULATION WITH A BACTERIAL VACCINE.

**D. W. Carmalt Jones and Jack E. Humphreys, England.**

The authors state the results of the treatment of a few cases of pyorrhea alveolaris by bacterial vaccine. In most of the cases the organism most readily grown from the alveolar

pus was a streptococcus. This coccus is of very small size and occurs often as a diplococcus, or in short chains of about eight individuals. Chains of diplococci are also found. It grows fairly well in broth and on agar, but most readily on serum agar. It is positive to Gram's stain. It dies out in culture in three or four days unless planted afresh, but if replanted it can be kept alive on agar for several months. All patients were treated with vaccines derived from the organism, prepared by shaking up cultures in sterilized saline solution, standardized, sterilized by heat, and finally diluted with lysolised salt solution. The dose employed was 40,000,000 cocci at intervals of ten days. Attempts were made to control the treatment by the opsonic index, but the figures obtained are not of much value. The authors believe that the present imperfect results are only due to faulty technique, which experience will correct. Five cases in all were treated; all were cases of slight pyorrhea occurring in individuals who pay proper attention to the cleaning of their teeth, and the teeth were in all cases either naturally sound or had had carious patches replaced by stopping. The teeth were loosening, and in some cases one or more had been lost. No local treatment beyond ordinary cleansing was resorted to.

Case 1.—This patient had severe pain in a molar tooth, which was extracted. There was extensive pyorrhea all around the lower jaw. The streptococcus brevis was isolated. Four inoculations were made at intervals of about ten days. There was no improvement. After this, vigorous local treatment was resorted to, with very marked improvement.

Case 2.—This patient had suffered from pyorrhea for three months. Several teeth were stopped with gold crowns, and the patient complained of a very troublesome metallic taste. The short streptococcus was isolated and three inoculations of 40,000,000 were given at intervals of ten days. After the first there was very marked improvement, and the patient entirely lost the metallic taste. No local treatment other than scaling was resorted to. All symptoms ceased in this case in twenty-four hours.

Case 3.—This patient's teeth had been loosening for two years, and more were becoming affected. There was a slight

discharge. The same organism was isolated and four inoculations were given. The pockets were deep and the case was far advanced. The general health of the patient was poor, and although the discharge ceased the teeth were only slightly firmer.

Case 4.—In this case the teeth had been loosening since the patient had had a gum-boil five years previously. One tooth had been extracted and there had been a profuse purulent discharge from the gum which had become reduced in amount but chronic. There had been some dyspepsia, which had improved since the tooth was extracted. The patient had several inoculations, with the result that there was great improvement, but the inoculations from the last cultures seemed more efficient than from the former. The opsonic index was taken in this case as in the others, and after about two months' treatment the phagocytic index was found to be quite twice that of normal individuals. Inoculation was stopped, and the patient volunteered the information that her general health had considerably improved, and that she had lost the dyspepsia which had troubled her for some time and was presumably due to gastritis, following the septic condition of the mouth.

Case 5.—In this case the teeth were loosening and there was a slight discharge. Several organisms were grown from the pus, and the patient's serum was tested to each of them. Since the best results had been obtained with the streptococcus, the patient was inoculated with this and also with the staphylococcus, but treatment was not persisted in. There was a previous history of syphilis in this case, which had yielded to treatment three years previously. Daily local treatment, lasting about ten days, was employed prior to the patient's leaving the country, but he seemed to recover very slowly.

The streptococcus here used is a common parasite of the mouth, which apparantly becomes pathogenic in some circumstances which are not understood. The question arises whether a special vaccine requires to be made for each case, or whether one made from organisms isolated from one patient will be available for others. It is well known that in inoculation against infections by the colon bacillus, the patho-

genic action of which is to some extent comparable, the individual microbe is essential. In the case of the streptococcus, however, one vaccine was accidentally destroyed, and treatment was continued with vaccines made for other patients with quite satisfactory results.

The authors believe that pyorrhea alveolaris can, in some cases at any rate, be much improved and even cured by the use of vaccines made from bacteria isolated from the pus.—Lancet.

## SUBSTITUTE FOR IODOFORM.

**J. P. Buckley, Chicago, Ill.**

If a dentist wants to use an agent that will have the same effect as iodoform, I would suggest that he employ europhen, which is a substitute for it, and from which you can get iodine which does the work. The only reason why iodoform is used is because when it come in contact with the moisture in the tissue, it gives off iodine, and iodine is one of the best disinfectants we have; and if you want to use an iodine compound at all, instead of using iodoform, employ europhen, with which you can get the same results.—Dental Review.

## OBTAINING AN ACCURATE MODEL IN MELOTTE'S METAL.

**Dr. H. N. Orr, Chicago, Ill.**

A method of obtaining an accurate model in Melotte's metal. Impression is taken of cavity in base-plate gutta-percha, which is invested in plaster. When set, all overhang is cut away to allow of ready separation. When impression is invested it is carbonized over gum camphor. A mouth blowpipe may be used to blow the carbon into the fine points and deep parts of the impression. A rubber ring is then placed over it, and Melotte's metal is poured in quite hot and gently jarred down. Upon separation it will be found that the carbon has produced a surface over which the Melotte's metal has run to all the fine parts of the impression.—Dental Review.

## HOW JIM CUTILEX GOT STUNG.

By F. B. Spooner, D. D. S., Brooklyn, N. Y.

He was a big, handsome man, well preserved despite his convivial habits, and possessed a loud genial voice. At the cafe he frequented there was a very good cook, with liquid refreshment for those who desired. As Jim would walk down the long room between the tables he had to make frequent stops to answer the greetings of his numerous friends. He was well supplied with cash, liking to spend it on those who would drink with him, hence all thought that Jim was a kind, honest, whole-souled fellow.

I knew nothing of Jim except as above, and should have been ignorant of his last name but that I heard the waiter address him, for to all of his friends he was "Jim".

One day he called across the room in a loud tone;

"Say, Doc., I've got to have my teeth fixed and as you are a friend of mine I am coming to see you."

He came over to my table and sitting down with his cigar at an obtuse angle told me in a confidential way that he had his teeth fixed by Dr. Kennedy.

"Know the Doc.?"

"Can not say that I do," I answered.

"What! Don't know Doc. Kennedy!" in astonishment.

"Sorry, Mr. Cutilex, but this is a large city."

"Well!" in a disappointed tone, not that I could see that acquaintance with the gentleman had anything to do with it.

"The Doc. is a friend of mine and he stung me hard. Charged me fifteen dollars for a plate, ain't that too much to a friend?"

"Can't say, Mr. Cutilex, depends on the work and circumstances."

"He was a friend of mine," said he again with his tone full of sorrow. As he did not volunteer to tell the nature of the stinging I asked no questions.

"Say, Doc." said he a few days later when he walked into the office. "I came to see you as to a friend of mine that has been stung. Now what do you charge for a set of teeth?"

"To your friend, Mr. Cutilex, the price is ten dollars up, and to all others the same amount." He looked a little doubtful and then dragged a plate from his mouth saying:

"This is a plate made by Doc. Kennedy. You know the Doc. don't you?"

"I have heard of him," I answered.

"I only had that plate a year, and you see a tooth is off, came right out in my mouth. Do you call that good work?"

I looked at the article, as fine a piece of work as I ever saw, and I told him so.

"You say so, Doc., but I see you are laughing. Eh! How's that?"

"I'll tell you, Mr. Cutilex, because I could not help smiling. A lady called with a plate I made that had a tooth off. She said it came off, and as it could not have been done right wanted it made good, and was so insistent that I yielded. Her husband called for them and told how he had knocked them off the mantle on to the floor and trod on them. The lady forgot all that part when the tooth came out in her mouth."

"It sounds right for you to back up the other man," said Mr. Cutilex, "but why did he not stick the teeth solid together?"

I showed him a sheet of wax with the teeth attached. He pulled the front tooth off seeing that they were not stuck together, and then with a cunning smile said:

"The back teeth are stuck all right."

"Try them all, Mr. Cutilex," I said in possibly an impatient tone. He smiled in a deferential way, saying:

"All right, Doc. Now as a friend what would you charge for those teeth?"

"Twenty dollars," I answered.

"I paid Doc. Kennedy fifteen."

"Better stick right to him." I said shortly.

"Well, say now, I thought we could do some business, but if you are huffy I will go back to the Doc."

Next time I saw Mr. Cutilex he came into the cafe with three or four friends. I could see that he was paying for the wine while the others were listeners to him as the chief speaker. Hoping that I would not be noticed I was going out, when he called me back insisting on me shaking hands with all his friends. He had to order another bottle, and (as I by my presence suggested it to his mind) he gave all a full

account of Dr. Kennedy as a stinger, giving them the counsel that if they wanted good work, I was "his friend". Possibly seeing disapproval on my face, he said:

"That's all right, Doc., I always help my friends; that is the kind of man I am."

He took the exhibit in the case from his mouth for us to inspect, replacing them in an audible manner, and rapping on the table told the waiter to bring some cigars. He was very particular as to the brand, having the man bring more that were better, informing us that he never economized in such things. He addressed the proprietor as Jake, and was about to tell how he was willing to pay for all he got, but disliked being "stung" when one of his friends gracefully got him off the subject, asking his judgment concerning the art decorations lately installed in the saloon. Jim forgot his teeth, giving us a precise history of his house, done regardless of cost, ending with his character being not to mind price, but that he did not like to get "stung".

The autumn leaves were falling when Mr. Cutilex appeared again.

"Say, Doc., what will you charge to make this plate right?"

"Mr. Cutilex," I answered, "the plate needs repair. Dr. Kennedy has not 'stung' you, and if you will excuse me I think you do not know when you are well served."

"Well, now, I don't care to go back. What will you charge to make it over?"

"Fifteen dollars and use the old material."

"Doc. Kennedy will do it for less, but I don't know as I am called to tell you why I don't go back."

"Of course not, and you had no call to tell me anything about him in the beginning."

"That's because I am all above board and keep nothing back."

"In that case, as you have my price, why make a secret of the other price."

"I know all about dentistry, Doc." replied Mr. Cutilex. "It don't cost much for you to just make an impression and the mechanical man does it all. Ha! Ha! Tricks in all trades."

"As you understand the tricks in dentistry," I said (an idea striking me), "I will tell you what I will do so you can

save money. The mechanical man shall have the impression, but I will not adjust it afterwards, and only cost you half price."

"Good," said Mr. Cutilex, brightening up. "All there is to do is to put on new rubber and a new tooth. I will take chances. I ain't bargaining, only business is business."

"It knocks friendship sky high, Mr. Cutilex."

So the mechanical man did the work, the plate looking as neat as could be. Mr. Cutilex put them in his mouth, at first making a wry face, saying, "They hurt a little, but that would be all right, he had been there before," and he paid his ten dollars with a look of satisfaction. "So long, Doc. Say, you are the real thing."

I hoped to have seen the last of Mr. Cutilex, but the next morning he appeared without his smile. The teeth "hurt him and he could not eat." I asked him if he had not gone back to Dr. Kennedy after he had them first put in.

"Yes," he said, "I went back twice and he puttered with them and made them comfortable."

"That is skilled work, Mr. Cutilex," I said, "not puttering, and it will cost you ten dollars."

"Ten dollars," he gasped, his eyebrows coming together, "to make your work right?"

"That is mechanical man's work, Mr. Cutilex, not my work. You were told about that. And now I want to ask you, as you seem so hard on a bargain, what was it that 'stung' you with Dr. Kennedy?"

"Oh, that's all right, Doc., just make this so it don't hurt; I don't want to talk against a man. He made the plate for fifteen dollars and they got loose. Eh! I had them six months, and he wanted five dollars more to put on gold clasps. That's what he called it. Eh! Yes I told him to go ahead, and that is where he 'stung' me, don't you see, and I would not stand for it. Told me he ought to have put them on first. Ain't I right?"

"I don't think it right for you to come to me as a 'friend' telling me that Dr. Kennedy charged fifteen dollars when the price is twenty."

"Oh, say, I told you I paid fifteen. I did not pay the extra five as I thought that was too much."

"I see. You let me mislead myself. So if I had made

you a plate for fifteen dollars with gold attachments under the impression that Dr. Kennedy did so, instead of you getting 'stung' you would have got your gold work for nothing from Dr. Kennedy and 'stung' me by a subterfuge."

"Eh! What's that?" said Mr. Cutilex, "Is not business business?"

"I don't think I want to talk to you any more of business, or do more business with you," I said. "You can go back to Dr. Kennedy and pay him the five dollars you agreed, and you might do business by getting him to adjust that plate for nothing, as I am through."

So Mr. Cutilex went off and I did not see him for some time, as I abandoned the cafe, feeling that I should enjoy my dinner with a better appetite in another atmosphere. When one day a stranger came to the office, and to my confusion and shame, told that his visit was through Mr. Cutilex. Later he told me that he had heard Mr. Cutilex giving a full acount of his troubles, and had not sympathized with Mr. Cutilex, who had been treated badly by Doc. Kennedy, and later been "stung" again.

# AFTERMATH

**Marriage.**—Dr. H. C. Krieger, Chicago, and Miss Lenore Stengel, Chicago, were married June 26.

**Deaths.**—Dr. W. B. McChesney, Chicago, Ill., June 29, aged 69 years. Had been in practice in Chicago since 1871.

**Weekly Half-Holiday.**—Every dentist's office in Elyria, Ohio, will be closed on Wednesday afternoons until October 1.

**Loss by Fire.**—Dr. Emmet Peyton, Pinckneyville, Ill., June 29, lost the contents of his dental office by fire; little insurance. Residence and dental office of Dr. E. Z. Zeidler, New Orieans, damaged $750, July 2; covered by insurance.

**Elected President.**—Dr. C. W. Meguiar, of Munfordville, was elected president of the Kentucky State Board of Dental Examiners. Dr. Meguiar was recently appointed by the governor to succeed himself on the board for a term of five years.

**Dentist is Found Dead.**—Dr. Harry Hertig, a successful dentist of Waynesburg, Pa., 39 years old, was found dead in the rooms adjoining his office, where he made his home. Heart trouble is assigned as the cause. Dr. Owen Hertig, of Pittsburg, is a brother.

**Died from Abscessed Tooth.**—Death lurked in a tooth that Mrs. Franklin H. Lafferty, of Pottstown, Pa., had extracted to relieve an abscess. Unable to discharge the flow of pus that followed the operation, Mrs. Lafferty gradually grew weaker and strangled to death.

**Robberies.**—Dental office of Dr. E. L. Sheldon, East Hampton, Mass., robbed of $100 worth of gold, etc. Dr. W. E. Blackburn, Shelbyville, Ind., $75 worth of gold. Dr. Sparks, Rushville, Ind., loss not given. Drs. Chenowith and Dykeman, Richmond, Ind., materials amounting to $125. Drs. Slabaugh and Parker, Omaha, Neb., $60 worth of gold materials. Harvard Dentists, Kansas City, Mo., $70 worth of gold and bridge work. Drs. Peach and Richards, Salem, Mass., robbed, loss not estimated. E. B. Caldwell, Ann Arbor, Mich., loss $25.

**Washington State Dental Society** elected the following officers: Dr. George T. Williams of Seattle, president; Dr. F. L. Moak of Montesano, vice-president. The following were elected to serve on the executive committee: Dr. George T. Williams, Dr. C. A. Holmes and Dr. E. S. Barnes of Seattle.

**Results of Examining Board Examinations.**—Fifteen of eighteen applicants passed the state dental board examination in Utah. California State Examining Board, 56 examined, 38 passed. Pennsylvania State Examining Board, 212 examined, 176 passed. Massachusetts State Examining Board, 153 examined, 92 passed.

**Children's Teeth Call for Early Dental Attention.**—The teeth of children was discussed by Dr. G. V. Black, of Chicago, before the Indiana State Dental Association, at Indianapolis. He declared that parents do not give enough heed to the supernumerary teeth, and that the result is that facial disfiguration follows. His talk was illustrated with stereopticon views.

**Maine Dental Society** elected the following officers: President, W. R. Bibber, Eastport; vice-president, F. H. Mead, Bangor; secretary, H. A. Kelley, Portland; treasurer, E. J. Roberts, Augusta; librarian, D. W. Fellows, Portland; executive committee, E. P. Blanchard, Portland; E. L. Hall, Augusta; I. E. Pendleton, Lewiston; I. P. Lancaster, Madison; Archer Jordan, Auburn.

**Campaign against Dental Companies.**—Dentists have been following with interest a campaign against so-called dental companies which has been in progress in Boston recently. At a special session of the municipal court in Boston recently before Judge Burke, three incorporated dental firms, through their officers, were arraigned on charges of practicing dentistry without proper licenses.

**The Wobbler.**—There is one sort of man that there is no place for in the universe, and that is the wobbler, the man on the fence, who never knows where he stands, who is always slipping about, dreaming, apologizing, never daring to take a firm stand on anything. Everybody dispises him. He is a weakling. Better a thousand times have the reputation of being eccentric, peculiar and cranky even, than never to stand for anything.—Success.

**A Family of Professional Men.**—Five sons of Mr. and Mrs. E. R. Warren, of Rogers, Ark., and their families spent a week with their parents at the old homestead. All the sons are doctors, one being a practicing physician and the other four being dentists. Dr. Homer Warren is located in Chicago, Dr. Frank Warren at Chickasha, Okla., Dr. Fred Warren at Galveston, Texas, Dr. Bert Warren at Houston, Texas, and Dr. William Warren at Dallas, Texas.

**Dentists in Japan.**—Today the Flowery Empire has only seven hundred and fifty dentists practicing in the whole empire. The distribution of the Japanese dentists throughout the kingdom is as follows:

| | |
|---|---|
| In Tokio | 200 |
| In Kioto | 56 |
| In Osaka | 75 |

The remaining dentists are scattered throughout the whole of Japan, and that small number of dentists must take care of the 50,000,000 inhabitants.—American Dental Journal.

**Rubber Statistics of 1907.**—The total production of rubber in 1907 amounted to about 69,000 tons, against 65,000 tons in 1906. England imported 22,964 tons, and America, 16,020 tons. The shipments of Para rubber amounted to 30,360 tons, and of Peruvian, 7,160 tons; of this quantity Europe received 20,940 tons. The supply of plantation rubber from the East has increased to over 1,000 tons (in 1906 it was 510 tons); the area planted is about 350,000 acres, or 50 per cent more than in 1906. Brazil exported about 41,500 tons in 1907, against 38,000 tons in 1906. The total production of West African rubber amounted to 17,000 tons, about the same as in 1906. East African rubber showed an increased supply.

**Dental Treatment in German Schools.**—Consul E. Theophilus Liefeld makes the following report on the results of the public dental service established in the city schools of Freiburg, Germany, on April 2, 1907: Up to the end of 1907, on thirty-seven different days when examinations were made, 2,478 children were treated. The number of extractions was 3,689, fillings 1,231, new teeth put in 102, and roots treated 64. The number of extractions must gradually decrease and the fillings increase before the real object of this dental clinic will have been attained. Of the children examined, only two in every 1,000 had ever before been treated by a dentist, hence the condition of the mouths of the children was deplorable.

**Prospective Patient Proves to be a Thief.**—A tall, smooth-faced stranger, on the pretext that he wanted to have some bridge work done, entered the office of Dr. George R. Ulrich, Philadelphia, and when he left, a wallet containing a large sum of money went with him. The man told the dentist that he had several teeth which had troubled him greatly and that he wanted them removed and bridge work put in their place. The dentist stepped into another room and when he returned found the prospective patient gone.

It was sometime afterwards that the loss of the wallet was noticed and the police were notified. The man has robbed a number of professional men in this city in a similar manner, it is alleged, and has always escaped detection.

**Pennsylvania State Dental Association** officers elected for 1908-09 are: Dr. C. B. Bratt, Pittsburg, president; Dr. W. D. DeLong, Reading, 1st vice-president; Dr. C. C. Walker, Williamsport, 2d vice-president; Dr. L. M. Weaver, Philadelphia, recording secretary; Dr. V. S. Jones, Bethlehem, corresponding secretary; Dr. W. A. Spencer, Carbondale, treasurer; Dr. J. G. Lane, Dr. H. E. Friesell and Dr. Geo. F. Root, members of council. The following were elected as the board of censors: Dr. E. W. Bohn, Reading; Dr. C. C. Taggart, Pittsburg; Dr. W. C. Scott, Landsford; Dr. W. H. Fundenberg, Pittsburg, and Dr. W. C. Middough, Easton. To the State Board of Examiners these dentists were elected: Dr. C B. Bratt, Dr. C. V. Kratzer, Reading; Dr. W. H. Fundenberg and Dr. H. C. Register, Philadelphia.

**Advice to Young Dentists by Professor Mix.**—Don't go to church on Sunday just to get patients. Don't make the mouth of a rich patient a young gold mine merely because he has money. Don't be a hog if you make a discovery—tell the world about it. These and a few other don'ts as well as many "do's" were given to 155 graduates of the Northwestern university dental school by Professor Charles Louis Mix. "The ethics of the profession of a dentist are exacting," said Professor Mix, "more so than any other one. You should be men. Don't join churches and clubs merely to become a petty grafter. Don't tell one of your patients that he has thirty cavities in his teeth just to get his money. Tell him the truth, and try to educate the public to take care of its teeth so that in time there will be no more dentists. Try to advance in your profession, but never do it at the expense of your honor."

**North Carolina State Dental Society** elected officers as follows: Dr. F. L. Hunt, Asheville, president; Dr. I. Wilson Jamieson, Charlotte, 1st vice-president; Dr. R. G. Sherrill, Raleigh, 2d vice-president; Dr. J. C. Watkins, Winston-Salem, secretary; Dr. S. P. Norris, Durham, treasurer; Dr. F. W. Eubank, Hendersonville, essayist. Changes were also made in the board of examiners: Dr. J. H. Wheeler, Greensboro, succeeding Dr. Charles A. Bland, Charlotte, retired from active practice; Dr. J. N. Johnson, Goldsboro, succeeding Dr. S. P. Hilliard, Rocky Mount, whose term expires; Dr. E. J. Tucker, Roxboro, succeeds himself, as do the other members and officers of the board, as follows: Dr. V. E. Turner, Raleigh, chairman; Dr. R. H. Jones, Winston-Salem, secretary, and Dr. F. S. Harris, Hendersonville. The next annual convention will be held at Asheville.

**Springs on Flask Bolts Cause Accident.**—Dr. C. E. Crawford, of Buchanan, Va., met with what might easily have been a very serious accident on the first of the month. While closing a flask, after it had been packed and after it had been pressed home by a flask press, a bolt, on which was one of the little flask bolt springs, broke. The

spring, upon being so suddenly released, acting upon the top of the flask as a base, threw the nut and top half of the bolt with much force, and so that it struck him fairly in the eye. Luckily the rounded end of the bolt went forward and the result was simply a bad bruise to the eye-ball. Now is the benefit derived from the use of these springs sufficient to warrant their use, especially when a much more serious accident might easily happen? The bolt that broke had been used but a few times, and the fracture showed that there was a flaw in the material. The force used was not great, just enough to tighten the spring, for the two halves of the flask had been brought together by the press.

## OPTIMISM.

'Tis oft' we find a timid few
Whom strenuous acts appall:
The simple life in them runs rife—
Heed not ambition's call.

And when we see an empty life
Made up of acts deferred,
Only depict a derelict—
Then are we onward spurred.

Again we find meteoric flights
Of genius, in Life's course:
These deeds of men of superior ken
Are a strong impelling force,

That raise the plane, on which we stand,
To such tremendous height,
Criterions new, are spread to view,
Each one a beacon light.

To all of great activity
The simple life spells rest.
But let them pause, digest the laws
With which to make the test.

They'll find insidious energy
All powerful, is lent
By that great mass, the middle class,
For earth's aggrandizement.

So grieve ye not, thou humble man,
You have not lost the race:
For you belong to that great throng
Which really holds the pace.—David E. Sheehan, D. D. S.

**Care of the Teeth of Africans.**—Muenchener Medizinische Wochenschrift comments on the wonderful appearance of the teeth of the African negroes, which has often been ascribed to purely climatic conditions, and to the food they eat. It seems not to have been suspected that these ignorant natives might have remedies for the treatment of the diseases of teeth, or that they should take special care of their teeth. From the many observations made by the German governors of the Imperial government's colonies, it appears that the natives are even more careful of the teeth than are most Europeans. The sound teeth of ivory whiteness can no longer be said to be the result of Providence, but of purely prophylactic agencies applied in an empirical manner, and we must say, with great success. Many herbs, barks and juices are made use of by the Africans in the treatment of their teeth, if the reports of the German governors are correct. A few instances may be cited. In Ngumba, when the teething period is over, an infusion made from the leaves of the sson tree is held in the mouth. This is said to fasten the teeth, though it may simply shrink the gums on account of some styptic agency contained in the leaves. To relieve toothache, the natives living near the source of the Nile use the roots of the leguminous plant, Dalbergia Melanoxylon. The A-Madi, A-Mangbattus and A-Mangballes, living to the westward of the Nile's source, prepare an infusion from the seeds of a clinging vine known as the A'Kadesso or Kasso, which is said to be a specific for toothache. It seems too remarkable to be true that this same decoction is used in the preparation of an arrow poison, and, in times of famine, as a food, and yet the educated gentlemen governing in Africa have personally made these observations. For a tooth brush they make use of the wood of the Madi Cratlava Adansonii and also of the Kitsch Salvadora Persica. Whether these woods have inherent properties which are peculiarly beneficial to the teeth is still a mooted question, though the white teeth of the natives proclaim its usefulness as a tooth brush. The Wanganiwasi of German East Africa are reported to color their teeth with the juice of the fruits called mena. While the use of the above agents may be attributed to some form of fetish worship, still this is no reason why we should condemn them as remedial agents a priori. It must not be overlooked that many of the fetish priests are more learned in the wisdom of the woods than their neighbors. That they should symbolize that which they wish to communicate to their people, by holding up a fetish, adds to, rather than detracts from, their knowledge of the whims of a naturally superstitious people. The medicine man of our Indians has enriched our pharmacopoeia with many curative drugs; we must expect the same from these medicine men of Africa.—Dental Era.

**Recent Patents of Interest to Dentists:**

885018—Artificial tooth, H. E. S. Chayes, New York, N. Y.

886300—Dental vulcanizer, F. W. Korb and W. F. Hieber, Cleveland, Ohio.

886140—Apparatus for forming dental structures, J. A. Lentz, Phoenix, Arizona.

886091—Machine for boxing toothpicks, S. S. Tainter, Dixfield Maine.

887181—Tooth brush, E. D. Barnes, Tarboro, N. C.

887577—Artificial tooth, L. and H. Bernstein, New York, N. Y.

887478—Anterior matrix clamp, J. W. Ivory, Philadelphia, Pa.

887528—Dental appliance, J. B. Schafhirt, Washington, D. C.

888297—Combined rubber dam and tooth-backing punch, H. M. Bell, Houston, Texas.

888138—Tooth brush, V. C. Bell, New York, N. Y.

888310—Dental dam holder, C. A. Conover, Newburgh, N. Y.

888071—Dental crown heater, E. W. Dodez, Ft. Wayne, Ind.

888011—Tooth powder holder, P. S. Hay, Montgomery, Ala.

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

# REGULAR CONTRIBUTIONS

## ORAL PROPHYLAXIS.

By Grace Pearl Rogers, D. D. S., Detroit, Mich.

### PART II.

(Continued from page 647 September issue.)

### TECHNIC.

To describe the details of any mechanical performance or treatment in an interesting way is most difficult, and to the listener the description is apt to prove very tiresome. In order, then, not to tax any one's patience too greatly, the writer wishes to be brief and trusts that the reader will be sufficiently interested in the subject to overlook any lack of interest in this article, and since this is being written only for beginners in this new field of dentistry, she does not desire the "higher criticism."

The scope of oral prophylaxis is a broad one and properly includes the study, diagnosis and treatment of any unhealthy mouth condition which mechanical dentistry cannot relieve. However, if one can successfully treat pyorrhea in its different stages, and prevent for his patients, the larger per cent of caries, then he can be trusted to cope with other con ditions which he is liable to meet. For the sake of brevity then we will consider only the technic of the treatment necessary to relieve conditions which constitute the bulk of our practice in oral prophylaxis, such as inflamed gum tissue, including pyorrhea in any of its curable stages, as well as the slightest irritation of the gum margin.

The object of treatments given in an unhealthy mouth, is to place that mouth in a state of health. In order to do so one must of course remove the cause, be what it may. It is not necessary to discuss a case where poor dentistry is responsible for the inflammation, since all good dentists would know the best remedy. But let us consider a case where foreign substances of a pathological or chemical nature are the irritants. These may be tartar (serumnal or salivary), bacterial deposits, dead tissue, soft accumulations, and oftentimes a roughened enamel surface.

A person who works at anything without an aim seldom accomplishes much in that line. So we in oral prophylaxis should have an aim, an ideal toward which to work. Let it be in every case a mouth in perfect health, which is a joy and comfort to the possessor, and one which exhibits the least possible amount of patchwork. We should not consider the work complete until we have also educated our patients to the highest ideals in dentistry and to a keen sense of appreciation of oral hygiene and value of their teeth. We have an unusual opportunity to educate our patients to the best there is in dentistry, and if they do not respect us and our profession it is our own fault or that of some other dentist. If we would spend as much time holding up the dignity of our profession as physicians spend on theirs, there would be no question as to our position among the professions. Any person who is not proud to be a dentist has no right to the D. D. S. degree, while those who are proud of that degree should hold their heads sufficiently high to attract attention.

To consider the details of our part of the work: First of all the patient must be shown the exact condition of his mouth, including inflamed or hypertrophied gum tissue, stains, visible deposit, and the invisible coatings by staining the latter with iodin. Then he will appreciate the task you have before you, and the necessity of his improving the personal care of his mouth. Tell him that this condition has not all taken place in a week or a month, but is probably due to years of neglect (as it is in most cases), and that he cannot expect one or two treatments and a few days of time to effect a cure. Do not, above all things else, begin your work and keep plugging away with no word of explanation, for in that case the difficulty of your work will not be understood and

your efforts will not be appreciated. First of all obtain your patient's interest, and soon you will get him enthusiastic, and then your road is clear. All this is essential because this work is new to every one and they do not understand that your aim is any different from the dentist who "cleans teeth" simply to get them clean. They do not realize that you have in mind a healthy, comfortable mouth for them, preservation of their teeth through life, prevention of much caries and in many instances relief and prevention of systemic disturbances, to say nothing of the esthetic result.

For the removal of tartar and roughened enamel margins, one must have efficient scalers and files. For the heavy deposits, one must use strong scalers, but the largest and most difficult part of our work is with the small deposits and under the gum. For this we must have delicate instruments, of a sufficient variety of shapes so as to enable us to work in any position with the least possible laceration of gum tissue. The writer has found the set of Carr instruments to be ideal for work under the gum margin. However, there are many other good instruments which if used intelligently will accomplish wonders. The Smith & Ferris-Thompkin files are indispensable to any one, no matter what is contained in his collection of scalers. For the heavy work the Darby-Perry scaler No. 9, and its modifications by Dr. Jungman, as well as the D-P No. 11, and its modifications by Dr. Meerhoff, are most valuable.

One must learn to steady his hand while scaling and polishing, and especially is this necessary when working under the gums. Usually one can use the teeth for the fulcrum, but sometimes this is impossible, owing to their absence in some locations, or to the fact that they are too unsteady, in which case one can use a finger of the left hand to advantage by placing it against the process wherever needed.

Do not use an anesthetic unless absolutely necessary, which will be but seldom. If the proper instruments are used and the work carefully done, but little pain is caused, unless, of course, the teeth are sensitive at the necks. This latter condition is usually overcome by adding a very small amount of bicarbonate of soda to the tooth powder, and by recommending a weak solution of it, used hot, for a mouth wash for a week or ten days after the first general treatment.

If a patient is suffering when he first comes to you, of course you must needs relieve him, but at the first appointment remove all visible accumulations and take the time at this sitting to carefully instruct him in the care of his mouth. Show him what you have done and that his teeth are free from visible accumulations, and impress upon his mind the fact that he will be responsible for keeping them that way. Be sure that he has, or will procure, the proper tooth brushes and floss. Give him the kind of powder his case requires, and an astringent mouth wash to use until you see him again (providing, of course, that his teeth are not sensitive, in which case he would require the bicarbonate of soda solution).

Just here let me enter a plea for recommending an astringent mouth wash during the healing process. It will help materially and no one can afford to get along without this aid.

There are many good reasons for this general treatment of the whole mouth at the first sitting, rather than to take one section of the mouth at a time. First—The gums respond very quickly to this form of treatment and will soon be comfortable enough for the patient to brush and massage them, thus stimulating the circulation and so aiding the healing process as you continue your work. Second—Hemorrhage will be less during the operations under the gums if the mouth has been first treated in this way, for the inflammation of the gum tissue will have subsided considerably, and there will be less cause for hemorrhage. Therefore, and for other reasons, the operator will have an agreeable field in which to operate. Third—Another important reason for this method of procedure is that the patient's ability and willingness to follow your instructions regarding the personal care of his mouth will have a fair test, for you see his mouth from time to time while scaling the roots, which gives you an opportunity to encourage, criticise or instruct, as the case demands. Fourth—The patient is better satisfied for he can see and feel the improvement and is naturally more agreeable and willing to help. Fifth—If there is a tendency for salivary calculus to deposit, by a few minutes' work you can remove the little granules, call your patient's attention to those surfaces in particular, and thus give him a fresh start. As often as once in two weeks, in most cases during treatment, it is necessary to carefully polish by hand methods the exposed

tooth surfaces. This is a great aid for it smooths the enamel surfaces which have been roughened by years of exposure to stains and acid accumulations, and at the same time stimulates the tissues. For the benefit of those who condemn the hand method of polishing, the author would say that just as soon as you use the engine for this work, you lose sight of its foundation principle, its aim and its excuse for being, which is the health and comfort of the mouth and the preservation of the teeth through life. The dentist who uses the engine does so to clean the teeth, and thinks that we use the orange wood and floss for the same purpose. We use the orange wood and the floss on every exposed tooth surface to massage and stimulate tooth pulp, peridental membrane and gum tissue, as well as to remove the invisible coatings, which latter cannot be recognized except by the sense of touch. Each operator will have his favorite shapes of orange wood points; however, the largest-sized sticks are a saver of time and strength. The flat ribbon dental floss is best for the work, as it spreads out on the proximal surfaces not endangering the gum tissue. The waxed is better where the teeth are in contact, while if they are separated the unwaxed is more efficient.

We must develop the tactile sense to the highest possible degree, for in this treatment we have little else to guide us. It is best to scale one tooth thoroughly, remove from the pocket any dead tissue or foreign substance, and then after medicating it, allow it to rest until you have completed the scaling of the other teeth. If the pocket has not healed by that time, there is more work in it for you to do. Nature will do wonders if you give her half a chance, so do not depend upon medicaments, for they are only her assistants. Do your work thoroughly and watch results. For the comfort of the patient, however, do not send him away without any medication, for by using a healing solution and an astringent wash, the gums will not be so sore after the treatment. The "1-2-3-4 solution", Carr's remedy (containing, 1 phenol, 2 tincture of aconite, 3 tincture of iodin and 4 glycerin, in the proportions and order named), is very effective in reducing inflammation and is excellent to apply to gum tissue around the teeth scaled, before dismissing the patient. Be sure to tell your patient, before he leaves the chair, that his gums are liable to be sore

that day and possibly the next because you have been working around inflamed tissue. He will feel much more kindly toward you if you take the trouble to do this. Patients resent surprises of this kind.

After completing the curative treatment we should dismiss our patient for one month, and then when he returns there should be no deposits visible. Many will take exception of this treatment, but the writer firmly believes that it is possible in almost every case where we have been conscientious and thorough in our work, given the patient proper instructions and efficient materials suited to the care of his particular case, and have obtained his co-operation.

The writer does not wish to leave the impression that she has attained her ideal in every case, and that she has complete control of all her patients. That would be unreasonable and untrue. However, the results of her experience have been such that she believes, without doubt, that fully 98% of the cases can be controlled, and with them our ideal realized. Of course this would be true only among an educated class of people, and providing, of course, that the cases were not hopeless when we began. This latter condition is apt to discourage many an eager beginner, and here I would enter a plea for suffering humanity. Do not tell your patients pyorrhea is incurable, even if you cannot successfully treat it yourself. If you do not believe it can be cured, at least tell your patients that some claim to cure it. You will lose nothing by this, instead you will win much respect, not only from your patients, but from members of your profession.

If these few pages contain any suggestions which will help a beginner in this most important work, the writer will be fully repaid for the time spent in writing this article.

Oral prophylaxis is that branch of dentistry which has for its object the reclaiming of the mouth tissues to a state of health, and preserving them in this condition by increasing their resistance against hurtful influences, and by anticipating and removing the cause of disease in them.

Repeat your instructions until your patient understands them.

An astringent mouth wash is indispensable during the curative treatment.

Lactic and other acids for medicaments should be used cautiously, if at all, since they are apt to irritate the cementum and dentin where the latter is exposed.

Prevention is better than cure.

Repair work is still necessary, but set your ideal above it.

Orthodontists are the nearest kin to the oral prophylaxis specialists.

Potassium iodide and iodin crystals, 19 gr. of each in 4 oz. of $H_2O$., equals Ferris' solution. This will stain the coatings on the teeth without injury to gum tissue.

Hurry makes waste, and time in oral prophylaxis is as essential as proper instruments.

Your patients may at first object to using dental floss, but when they realize that it is absolutely necessary and understand how to use it, they will willingly use it.

Leave nothing to a patient's imagination or ingenuity, but give your directions in detail.

Anesthetics are seldom necessary if the operator is skillful and is using proper scalers.

Xantippe-like, we must scold if our patients neglect to carry out our instructions; that is our privilege.

If you cannot cure pyorrhea, you can prevent it.

Study each case until you have decided what brushes are best fitted for that mouth.

(To be continued.)

## SOME CONSIDERATIONS CONCERNING ACCURACY IN TAKING THE BITE.*

By Charles R. Turner, D. D. S., M. D., Philadelphia, Pa.

The term, "taking the bite," has so long been employed to indicate one of the fundamental procedures in the construction of artificial dentures, that it seems to convey the idea of the operation to which it refers more intelligibly than any other in common use, and its long usage seems to warrant its emplyment even by those who realize its lack of scientific accuracy and its inadequacy to express the various steps associated with its meaning at the present time. Using the

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term in its earlier interpretation, the subject matter of this paper may be fairly inferred from the title which has been selected for it. However, for the sake of clearness, it may be well to state more precisely which one of the various procedures included under the phrase, "taking the bite," it is our purpose to discuss.

In its simplest terms, "taking the bite," originally meant actually securing a record of the bite of a patient for whom some dental restoration was to be made. The patient was instructed to bite into a mass of some plastic material, such as wax, imprinting it with both jaws, and biting until they were established a certain distance apart, which was determined upon by the dentist as correct, and thus a record was obtained of their relationship in this position. The plaster casts were placed in these imprints and then attached to an articulator or to each other by plaster additions with a view to maintaining them in this relationship while the artificial teeth were being set up. Primarily then, taking the bite was simply securing a record of the relationship of the jaws in what was judged to be a satisfactory position of occlusion for the artificial dentures. But in addition to this, more data were necessary to insure an arrangement of the artificial teeth which was capable of satisfying all the requirements of function and appearance, so that now by an extension of the original term the measures by which nearly all of these data are obtained have been included under "taking the bite."

For purposes of greater accuracy, the employment of bite-plates has succeeded that of the plastic material and the various other records just referred to are made by the use of these. First, the median line of the mouth must be recorded so that the center of the arch of the artificial teeth may correspond therewith. Then as it is important to know how much of the future denture will be exposed to view in the movement of the lips, a record of this is secured in the so called high lip-line, a line drawn upon the bite-plates which indicates the highest position to which the margin of the upper lip may be elevated. Some dentists mark the low lip-line, which analogously records the lowest level to which the lower lip may be depressed. A record is also made of the line of the upper lip when in repose, and this is usually done by having the lower margin of the upper bite-plate to correspond

with it or to extend a fixed distance below it. This serves in determining the position of the cutting edges of the upper anterior teeth and in consequence the edges of the lower teeth, since it is desired to establish these in such relation with the margins of the lips as will appear most natural or most beautiful. As artificial dentures are to restore the external appearance of the lips and contiguous structures, it is necessary to obtain a record of the amount of fulness which their buccal and labial surfaces must possess in order to support these overlying tissues in the positions desired. This is secured in the contours of the corresponding portions of the bite-plate, which after trial have been found satisfactory in this regard, and which are to be rough models of the dentures in this particular.

While these records are sufficient to enable the prosthetist to arrange the artificial teeth in a manner which will satisfy all the cosmetic requirements of the case, and in such a way that they will occlude when the mandible is in the position of occlusion, yet other data are necessary if the teeth are to be arranged to functionate properly in the various movements in which the food is masticated. The relationship of the jaws to the temporo-mandibular joint must be obtained by the use of the Snow face-bow or some similar device, if the casts are to be mounted upon an anatomical articulator in correct relation with its joint mechanism. And if an articulator is to be used which is capable of individualizing the movements of its joint mechanism in imitation of those of the temporo-mandibular joints of the case in hand—and it is only by this means that we are able to arrange the teeth so that they will accurately articulate during masticatory movements—we shall require a record of the path of the mandibular condyles or its equivalent, as suggested by Christensen, for example. For lack of a better expression these operations have also been included by some under the term, "taking the bite," which now no longer gives full expression to these several ideas.

The most fundamental of these various procedures, and likewise the most important of them, is that of securing the record of the relationship of the jaws in the position of occlusion to be established by the future dentures, and as this is the most difficult of all these preliminary steps in denture

construction, without which success in the others is of no value, and, furthermore, since the element of individual judgment enters so largely into its correct accomplishment, this has been chosen as a most suitable topic for our consideration.

Let us analyze the question to which we are to address ourselves in order that we may be able to approach it with a clearer understanding of the means we may employ in its solution. It is fundamentally a problem in mechanics, but the elements of the machine consist of living tissues and as these are also subject to the muscular activities of the patient which in turn depend upon impulses derived from the central nervous system, it is evident that it is not a matter of pure mechanics, but closely bound up with the fundamental problem are some psychological questions which have to be reckoned with, and these are of no small importance. In recalling to our minds what the mechanical question is, it will be necessary to keep constantly before us the dual nature of the problem.

When the natural teeth are present in the mouth there exists a certain position of the mandible in which certain definite relations obtain between the occlusal surfaces of the teeth when they are said to be in occlusion. In this position one row of cusps of each series of teeth fits into the fossae of the opposing series, this interdigitating establishing a very definite fitting together of the occlusal surfaces of the teeth, and, while it is maintained, fixing the mandible in a very definite positon, which has been termed the position of occlusion. During the continuance of this position, the muscles elevating the mandible are in a condition of contraction only slightly greater than that in which they exhibit ordinary tone, and the mandibular condyles occupy the most distal position in the glenoid fossae which they can assume. If the elevators are still farther contracted there is a compression of the soft tissues intervening at the temporo-mandibular joint and of those about the roots of the teeth, but the teeth do not fit more closely together and the elasticity of the compressed tissues causes the mandible to return to its former position when the muscles are relaxed. There is still another position which must not be confounded with the position of occlusion, which is usually referred to as that of the resting bite. In this the muscles which move the mandible are in a condition

of ordinary tonic contraction, the mandible sinks slightly from the position of occlusion but the teeth are in contact at one or more points, the lips are closed and are applied to the outer surface of the teeth, the tongue and soft palate are in contact, and a certain negative air pressure is established in the mouth which contributes to the support of the mandible. In the occlusal position of the mandible there is just enough contraction of the elevator muscles to support the weight of the jaw, and then the forces producing its movements are in a state of balance or equilibrium. In the normal state of affairs consciousness of the occlusal relation is derived from sensations transmitted by the teeth which are exquisitely sensitive tactile organs, and from the absence of muscular strain. The muscular sense is by no means delicate enough to give this information, as the elevator muscles which are concerned in establishing this position of the mandible are designed for the exertion of great force and not for delicate movements. When one reflects that they are capable in some cases of exerting through the jaws a force of four hundred pounds or more, it is evident that the delicate muscular sense necessary to tell the position of the mandible must be lacking in them. In the positions of the mandible when the teeth are in contact, these latter give instant knowledge of the relation born by it to the maxillae. If the mandible is not forward of the incising relation, the inclined planes of the occlusal surfaces of the teeth form guides which serve to insure its return to the occlusal position. The bearing between the teeth anteriorly, and between the condyles of the jaw and the glenoid fossae posteriorly serve to guide it into the occlusal position without difficulty.

When the teeth are not in contact we still have in the temporo-mandibular point a posterior guide in whatever movements that joint permits to the mandible. The position of the anterior end of the bone is under the influence of the muscles which produce its movements. Let us examine these two factors which are related to our problem.

The temporo-mandibular articulation is a condyl-arthrodial joint which permits a great latitude of movement to the mandible. It consists of the glenoid fossa, which at its posterior portion presents a concavity into which fits the condyle of the lower jaw, with the inter-articular cartilage interposed

between, and anterior to this a surface over which the cartilage and condyle may slide in the movements of the mandible. The head of the condyle presents a rounded articular surface which approximately fits the posterior portion of the fossa, and which extends posteriorly to a lower level than anteriorly, by reason of which the mandible may rotate downward about the condyle. The condyle is attached to the rim of the fossa by means of the capsular ligament to the center of which the periphery of the cartilage is attached. Above and below the cartilage are synovial sacs supplying the necessary lubrication for the joint. This arrangement permits the condyles to slide forward upon the floor of the glenoid fossae, in which movement they are accompanied by the cartilages, and the mandible may rotate about the condyles, the cartilage always being interposed and offering a base for the rotation. These movements are bilateral. We also have in the lateral excursion of the jaw a forward and inward movement of one condyle while the other remains in the distal part of its fossa and simply rotates about an axis approximately vertical. These are the limits of movement of the condyles as the capsular ligament binds it firmly in the socket. This ligament is thick externally and internally by reason of which rotation is permitted, and yet the condyle is held firmly in contact with the cartilage. It is more lax anteriorly but posteriorly it presents a collection of elastic fibres which contribute to pull the bone back into the fossa in its return movement.

Another anatomical peculiarity of the ligamenture of the joint is a factor in one of the movements of the mandible with which we are chiefly concerned in the consideration of our problem. This is the point of attachment of the external lateral ligament which extends from the root of the zygoma anteriorly downward and backward to the neck of the condyle. The nature of this attachment is one of the factors which causes the condyle to move forward in the movement of depression of the mandible, a characteristic feature of this movement with which all are acquainted. The point of insertion of this ligament upon the neck of the condyle acts as a fulcrum serving to pull forward the head of the bone as its anterior end is depressed. Of course this is not the only reason for the observed method of movement in depression of the jaw, the chief active factor in its being the pull of the

external pterygoid muscle which is inserted into the neck of the condyle and its surmounting cartilage. This muscle serves to pull the condyle forward in the protrusive movements, acting simultaneously with its fellows of the opposite side; when the contraction of these two muscles is combined with that of the muscles attached to the anterior end of the mandible, depression of the jaw ensues, in which the bone rotates about a horizontal axis passing through its condyles, which latter at the same time slide forward, and sliding and rotation both occur during the whole movement. If only one of the external pterygoids contracts, one condyle remains in its socket and while the other is pulled downward, forward and inward, thus producing a lateral excursion of the jaw to the other side.

Now in returning to the position of occlusion from any of these excursions, it is by the movement of retraction or of elevation, or by a combination of both, according to the position from which the return is made. Normally this is accomplished by a contraction of the masseter, temporal and internal pterygoid muscles and sometimes in combination with the muscles attached to the anterior end of the mandible. By the contraction of the elevator muscles the body of the jaw is drawn upward and backward and the condyle slides up the incline of the glenoid fossa into its distal part. The attachment of the stylo-maxillary ligament and the elastic fibres of the posterior portion of the capsular ligament serve to cause the condyle to return to the distal portion of the fossa. The lower fibres of the temporal muscle, the inner fibres of the internal pterygoid and the posterior fibres of the masseter serve to draw the jaw back, opposing the action of the external pterygoid but not directly in line with it. For retraction to take place there must be complete relaxation of the external pterygoid. This muscle has the power of fixing the condyles at any point on their return path which the joint ligaments will permit and ordinarily this means at any point but the farthest forward position of the condyles during depression of the jaw. The condyles being thus fixed by the external pterygoid, the jaw may then be elevated by the elevator muscles rotating in about the condyles. Tomes and Dolamore have shown that normally the path of the anterior end of the mandible in closure is constantly anterior to the path in

opening the mouth. If the natural teeth are in position, as soon as these touch, they at once give information as to the location of the mandible and the return to the occlusal position is easy.

The complete loss of the teeth leaves the edentulous mouth without the means of judging accurately of the position of the mandible. There is no point of bearing anteriorly, and the balance established between the opposed sets of muscles producing its movements and the absence of strain at the joint are the only means which the individual has of judging of its position.

The individual for whom the bite is being taken is unable to assist in securing the mandible in a satisfactory position of occlusion, one of the conditions of which is that the condyles shall occupy their most distal position in the glenoid fossae. Even should there be a thorough understanding of what is desired, the patients no longer possess the means of telling when the mandible is in the position required, and when they do not understand, as is commonly the case, they are not only not helpful, but positively greatly hinder the efforts of the dentist.

After the loss of the teeth when a position of occlusion no longer exists, the change in the joint incident to this condition further complicates the problem which we are considering. The muscles are no longer accommodated to a fixed position of the mandible and the elevator group become somewhat shortened, as do all the tissues extending between the jaws. The ligaments at the back of the joints become very much stretched, so that in course of time the mandible can be elevated to touch the upper jaw. In some cases where only a few teeth have remained at the last, the ligaments become stretched in the effort of the individual to bring these teeth into contact for purposes of mastication, and sometimes this occurs more on one side than on the other. By reason of these conditions the articulation becomes loose and wandering, and this is contributed to by the absorption of the anterior portion of the glenoid fossa, which results in a flattening of its floor and renders the protrusive movements very easy and those of retraction very uncertain. On this account the condyles may be forward of their most distal position without causing a strained feeling at the joint.

In the construction of artificial dentures for an edentulous case, if it were possible to tell what the former position of occlusion was, it is likely that this would satisfy all the requirements of occlusion of the dentures, but as, of course, we have no way of knowing what this was, we must determine upon some position of the mandible which will answer the requirements of the case. One of the demands upon such a position is that the condyles shall occupy the most distal portion of the fossae. This determines the antero-posterior position of the mandible, and if be established the proper distance from the upper jaw, this is the position required. If the positioning of the jaw were under the control of the dentist instead of the muscles of the patient, this mechanical problem could be easily solved. As it presents itself the effort should be made to reduce to the lowest amount, the patient's part in the operation, and to increase the mechanical aspects of it which are under the direction of the dentist.

Let us first arrange these mechanical details. The relation of the jaws is to be obtained by means of bite-plates. These are temporary devices which fit the jaws and afford bearing surfaces between them. They should be made of some material which may be easily altered during their fitting, but which should be firm enough to retain its form in use, and it is very essential that the plates should be stably retained in their place upon the alveolar ridges, as accuracy in taking the bite depends on this to a large degree. The plates may be made entirely of modeling compound, or what is to be preferred, a base plate of metal or vulcanite upon which the alveolar portions are built up of modeling compound. When the teeth are to be mounted on a metal plate, this, of course, serves as the base for the bite-plate. Where an already vulcanized base-plate is to be used in vulcanite work this forms the base for the bite-plates. The alveolar portions are given the probable length and inclination which may be necessary for the case, but these dimensions are entirely tentative and are to be subsequently determined by trial in the mouth. After their retention in the mouth has been positively assured by trial, we are ready to proceed to their use.

The upper bite-plate is tried in and it should be observed whether its buccal and labial portions restore the contours

of the overlying tissues. This cannot be finally determined now, but it may be roughly done as a guide in the subsequent procedures. The occlusal portion of the upper bite-plate should then be trimmed so that it extends one-sixteenth of an inch below the margin of the upper lip in repose, and posteriorly the surface should be slanted upward in accord with the probable curve of occlusion of the future dentures. After this the occlusal surface of the bite-plate should not be touched and all the trimming in the adjustment of the two done upon the lower plate. The anterior portion of this occlusal surface determines the position of the cutting edges of the upper anterior teeth and is to be preserved as a record for this. The upward slant of its posterior portion serves a purpose presently to be mentioned.

Then the lower bite-plate is tried in. The judgment as to the correct distance between the jaws which is to be established for the future dentures is based purely upon the appearance of the overlying tissues of the face. These are the sole guide in deciding the question of the vertical position of the mandible. As the appearance of the tissues is affected both by the length of the two bite-plates and by their fulness, these two dimensions must be considered conjointly.

It is purposed to trim or add to the occlusal surface of the lower bite-plate so that it shall, when in contact with the upper, maintain the jaws a definite distance apart, while at the same time the external surfaces of the two plates confer upon the tissues of the lips such contours as are required. The tentative fulness of the upper bite-plate having been matched in a similar tentative fulness of the lower plate, the occlusal surface of the latter is to be trimmed or added to until when in contact with the upper, the margins of the lips in repose are gently in contact. It is essential that the bite-plates shall be in contact evenly at all points on their occlusal surfaces, and this must be the case while the condyles are distally placed in their fossae. This necessitates, on the part of the prosthetist, ability to tell when the mandible is in this position, or the measures which will enable him to get it there. Palpation of the head of the condyle, and inspection of the skin overlying it are useful adjuvants in ascertaining its position. Asking the patient to alternately protrude and retract, besides enabling the palpating finger to follow the

condyle, is apt to result in bringing the condyles completely back in the retractive movement, and when this has been judged to be the position of the mandible, the labial surfaces of the bite-plates are trimmed flush. With the jaws in the position in which they are flush, the occlusal surface of the lower is trimmed so that it comes approximately in contact with the upper evenly all around. It is preferable to leave it slightly longer behind and then removing it, to soften this portion of it by heat, and returning it to the mouth to compel a closure of the jaw while the anterior surfaces are flush. This makes the plates fit evenly together. The backward slant of the occlusal surface of the upper favors a movement of the mandible backward rather than forward. When this has been attained attention may be given to the various details of the contours of the lips, which are affected by slight changes in the contours of the plates or their length. As the bite-plates are to serve as guides for the dentures in the matter of these labial and buccal contours, time and attention given to this portion of the work is well spent.

When the dentures have been inserted, what appearance should the lips and cheeks have? When viewing in profile the upper lip should incline slightly out from its base at the nose, or in very old persons it may be nearly straight. It should extend slightly beyond the lower lip, the amount being dependent upon the retrusion of the chin. If the chin is far back the upper lip projects farther over the lower, and vice versa. About an equal amount of mucous membrane should be displayed in the two lips. The lower lip should be slightly everted as it rolls out, by reason of its contact with the upper natural teeth when they are present, and should exhibit the sulcus mento-labialis in cases in which this may be established. When viewed from the front the contours of the lips at the following points must be especially noted: At the canine eminence where considerable resorption has occurred the bite-plates must be built out to restore the lip contour. This can be judged largely by reference to the linea naso-labialis which is constantly present in persons of the plate wearing age. The effort should not be to obliterate this entirely, as it is a natural fold in the skin, but to proportion its depth to age of the patient, the amount of resorption of fat in the surrounding tissues, and the other contours of the face. Any

slight alterations in the plates to cause them to establish these contours may be made without affecting the distance between the jaws.

During these various procedures it is, of course, necessary that the condyles of the mandible shall be in the distal part of the fossae, or the various details of contour will not be correctly adjusted. This may be judged by having the two bite-plates trimmed so that their labial surfaces are flush when the mandible is in the position, and also by marking the median line of the mouth upon both bite-plates. Any lack of correspondence of these in subsequent manipulations shows at once that the mandible is protruded on one or both sides. The occlusal portions of the plates are trimmed out on their lingual sides until they are about one-half inch wide, giving abundant room for the tongue in order that the plates may feel comfortable in the mouth.

Having arranged the bite-plates so that they maintain the jaws a fixed distance apart, and having a means of judging from them as to whether the mandible is protruded or not, we are ready to proceed to their use in securing the relationship of the jaws. It is commonly the practice to interpose some soft substance between the plates and to request the patient to close, the object being to fix the plates together in the movement. It is intended that the patient shall elevate the mandible in such a way as to cause the condyles to slide back in the fossae in this movement. The anatomical difficulties in attaining this object have been pointed out, and it is necessary for us also to remember that one of the safest ways to insure an incorrect bite is to have a considerable amount of wax, or other soft material, interposed between the plates and necessitating considerable force in bringing the plates together. This is because in the exertion of force with the natural teeth the jaw is always somewhat protruded on one or both sides before it is drawn into the occlusal position. This is especially true if the interposed material is at the front of the bite-plates. In such position the resistance to the closure of the jaws reflexly calls into existence the movements that were useful in incision, and this is to be avoided in every way possible. In many instances the method may be successful, but the objection to it as routine practice is founded on the fact that it does not always result in giving

the most distal position of the jaw. One of the devices employed to secure the backward movement is to ask the patient to swallow, in which act, as is well known, the mandible has to be fixed by its elevators to afford a base of operation for the elevator muscles of the larynx. This has a two-fold effect in pulling the jaw back, by the traction of the laryngeal elevators, and in accomplishing an act which is naturally performed with the condyles in the distal part of the fossae. Another method is to request the patient to throw the head back and to close the mouth, which puts on the stretch the tissues below the mandible, thus tending to prevent its forward movement. Another is to ask the patient to close with the tip of the tongue held either back of the upper bite-plate or in a depression in it, the effect being to necessitate a backward movement of the mandible. Still another method is to ask the patient to bite the back teeth together, a procedure only possible for a natural denture when the condyles are retruded. Any of these may be successful and none of them may be in a given case.

By an extension of this idea relative to forcing the jaw back, it is easy to see the origin of the various measures in which external force is used to secure the object. Pushing the jaw back by clasping the hands back of the neck and pressing on the symphysis with the thumbs is one of these methods. One operating in a somewhat different way but on the same principle, is the use of Garretson's device which is recommended by Molyneaux. The objection to these measures is that it is almost impossible to push the jaw back if the muscles pulling it forward resist, and this is usually a sure way to cause the external pterygoids to contract. If the muscles resist, no ordinary force can overcome them.

There alone remains the possibility of having the condyles slide back after the bite-plates have touched, and this may be done by having the patient alternately protrude and retract the jaw with the plates in contact. By thus observing the bite-plates and by an external examination at the position of the condyle the posterior position may be judged. As soon as the mandible occupies this the bite-plates are to be marked on the side with lines continued from one plate to the other; the center lines must correspond and if the plates are not exactly flush, they are made absolutely so. The plates are then

removed and grooves are cut at the cite of the first bicuspid and first molar tooth on each side with a longitudinal groove between. Then the smallest quantity of soft, yellow wax is attached to the upper plate over the back groove and they are returned to the mouth and the patient is requested to close the mouth. If the anterior surfaces of the plates and the marks on them indicate that the mandible is correctly located, it is only necessary to fuse together the edges of the bite-plates, or to unite them with wire staples, and the record is obtained.

The wax is not for the purpose of fixing the plates together, although it serves to do this in part, but it presses the bite-plates against the mucous membrane, thus taking up any lack of adjustment in the fitting of their occlusal surfaces, and offers slight resistance at the back of the bite-plates, thus serving to have the muscles pull backward and upward as in mastication.

If the jaw closes forward of its proper position, asking the patient to swallow may cause it to retract, or the request to bite the back teeth together or to touch the posterior part of the upper plate with the tongue while closing. If none of these succeed, alternately protruding and retracting the jaw may again give the occlusal position, when we shall have to depend upon uniting them by fusing their surfaces, or by using soft plaster of paris, as recommended by Ottolengui. This method then consists in arranging the bite-plates to fit in the position of occlusion, to arrange them so that the occlusal position may be judged from them and to get the jaw into the occlusal position without the exertion of an appreciable amount of force.

## MODERN METHODS OF FILLING TEETH.*

**By H. E. Friesell, D. D. S., Pittsburg, Pa.**

Pessimistic practitioners have said recently that dental societies are degenerating, and the meetings becoming less interesting because nothing new is being brought out, all possible subjects having been thoroughly covered and exhausted. One noted composer of "Swan Songs" has gone so far as to state that no advances have been made in the past quarter of a century.

*Read before the Lake Erie Dental Society, May, 1908.

Such views seem peculiarly uncalled for when we consider that a veritable revolution is taking place in the practice of dentistry. The casting of gold inlays is not referred to, even though that subject seems to be the all-absorbing topic of the day. Interesting as it is, the fad will eventually run its course and the gold inlay will take its proper place as a preferable substitute for large amalgam fillings and the gold crown. It will not displace the gold filling, nor relegate the plugging instrument to the college museum.

The revolution that is taking place is far greater in scope. Founded upon sound scientific principles, it is progressing slowly and surely, as all great things do, gathering such volume as it spreads, that it must, in a very few years, completely revolutionize our methods of practice.

The title chosen for this paper is a homely one, but, notwithstanding our familiarity with it, the subject of "Filling Teeth" may still contain some points of interest which merit our consideration.

First let us consider briefly some of the prevalent principles of practice: Remove decay, cut to sound tissue, smooth the margins and fill; have the orifice of the cavity smaller than the interior; leave softened dentin over the pulp rather than risk exposure of that organ by removing such decay; make retaining pits and undercuts to retain the filling in the cavity; keep the gold a little higher against the walls than in the center during the progress of the filling; contour the filling in accordance with the general shape of the surface involved and the available space (this generally resulted in a rather indefinite convexity of the surface of the filling); expose to view as little of the filling material as possible; extend the cervical margin of the cavity toward the gingival line, or better still, lay the margin in the cementum, to prevent cervical decay.

Such is an epitome of operative dentistry as practiced generally in America until very recently, and as still practiced by the majority of our profession.

These methods are empirical and unscientific. Their sole object seems to be the haphazard stuffing of cavities with filling materials so that they appear full. They transgress the laws of physics, pathology and mechanics. They do not save teeth.

The revolution that is in our midst demands that we abandon these empirical methods and perform our operations in accordance with proven scientific principles, in order that our work may be permanent in character, and that it may save the teeth. This requires the dentist of the present to understand:

The cause, progress and effects of caries.

The intimate structure and physical characteristics of the tooth tissues involved.

The physical properties of the filling materials used.

The mechanical and physiological environment of the completed filling.

The proper relationship between the tooth filled and the occluding and approximating teeth and the soft teeth.

Modern dentistry is not satisfied with a filling that only appears to fill the cavity. It must not only fill the cavity perfectly but it must preserve that surface of the tooth in proper occlusion and apposition, protect the surrounding soft tissues, and withstand the mechanical wear and tear of mastication.

Operations that satisfy these requirements are not easily made. They require intelligence, skill and much patience; and he among us who is not willing to cultivate these qualities must fall by the wayside, for he is out of tune with the spirit of modern dentistry. Ours is not the calling for the dull, the careless, or the indolent.

A consideration of the principles recognized by the modern school of dentistry may afford an interesting comparison with past methods.

Cavities in the teeth are caused by a disease called dental caries. Caries attacks certain surfaces of the teeth earlier than it does others. Some surfaces appear immune to it. It always begins on the surface of the tooth.

The exposed surface of a tooth is classified as clean or unclean, according to whether or not it is polished by the friction of food in mastication. That portion of the surface of the tooth which lies to the occlusal of the point of greatest horizontal diameter is termed a clean surface, and the balance of the surface to the gum line is an unclean surface.

Caries never begins on a clean surface of enamel. It generally commences about the center of the unclean surface

and spreads in all directions, its rate of progress being modified by the age of the patient and the virulence of the disease. Toward the occlusal its advance is checked where the unclean surface merges into the clean surface; toward the gingival it stops at the gum line; laterally it seldom reaches the angles of the teeth.

Recognizing these principles we must first decide where the outline of our cavity shall be laid, and we must base our decision upon our knowledge of the immune and the susceptible areas of the enamel, rather than upon the amount of tooth structure that is actually disintegrated at the time the operation is performed. If this be not done, our operations will not be of a lasting character.

The outline form decided, the next step is to prepare the interior of the cavity in such a manner that when the filling is completed it cannot be displaced by the stress of mastication, by adhesive food matter lifting it out of the cavity, or by gravitation. This means that we must take into consideration the strength of the bite, which in different individuals will vary between one hundred and three hundred pounds. A cavity, to support a filling against such stress, must have the strongest possible resistance form, which is best obtained by cutting the pulpal and gingival walls flat and at right angles to the direction of greatest stress. The other walls should be cut so as to give the cavity a box, or cube, shape, and a definite angle should be made where any two dentin walls join.

In contradistinction to the round-bottomed cavity with constricted opening, this box-shaped cavity gives us easier access, a simpler form of cavity to fill, vastly greater resistance form, and tooth walls not undermined but left at their maximum strength.

Undercuts and retaining pits should never be depended upon to supply the resistance form of a cavity, and in most cases they can be dispensed with for retention, because they generally weaken the wall of the tooth and greatly increase the difficulty of adapting the filling material perfectly.

A study of the physical properties of dentin teaches us that it possesses the property of elasticity to a considerable degree, and if our filling material is properly wedged against the cavity walls, the advantage of this elasticity is obtained,

and vastly greater retention thereby secured than is possible from ordinary undercuts and retaining pits. If definite point and line angles are made, no starting points are needed.

The elasticity of dentin is not properly recognized. If a cavity be prepared for an inlay so that all lateral walls diverge, and from which a wax model or impression can easily be drawn, gold can be packed so tightly into that cavity that it cannot be displaced by any normal amount of force, so great is the elasticity of dentin.

Our knowledge of pathology and bacteriology should no longer permit us to leave decalcified dentin in the bottom of a cavity. We must recognize that the decalcification of the dentin is brought about by the poisonous excretions of the caries fungi, and when we leave it under a filling we are sealing in that which makes the death of the pulp a certainty. If it be desirable to keep the pulp alive it will have a much better chance if covered over by inert filling material than if it is subjected to the action of poisonous tox-albumins.

Having prepared the cavity so that our filling will remain in it when properly placed, we must next consider whether our filling material and the margins of our cavity will endure the strain to which we know they will be subjected.

It is generally conceded that a margin of enamel, properly prepared, will stand any normal strain, and that one improperly prepared will fracture easily. However, judging from clinical observation, we have a very indefinite idea of what constitutes a strong enamel margin, or else we consider it good theory but not so good in practice. The limits of this article will not permit a lengthy discussion of the requirements of enamel walls, but it would be incomplete without reference to a few important points:

Sound enamel supported by sound dentin is very hard and strong; unsupported by sound dentin it will not withstand the force of mastication.

Enamel, in structure, consists of rods or prisms joined together by cementing substance. Both rods and cementing substance are of the same chemical composition, the rods apparently representing a higher degree of crystallization. The rods are practically of uniform diameter throughout their length, and they radiate at right angles to the immediate surface of the dentin, their outer ends forming the outer

surface of the enamel. As the outer surface of the dentin in the crown of the tooth is considerably less in area than the outer surface of the enamel, and as the rods are uniform in diameter, many rods starting together at the dentin gradually diverge as they pass to the outer surface of the enamel, leaving V-shaped spaces between their outer ends. These V-shaped spaces are filled in with short rods whose inner ends do not reach to the dentin. This condition is greatly pronounced over the points of cusps and ridges on the surface of the tooth. If these short rods occur on the margins of a cavity, they are certain to break out under the strain of mastication, if they do not fracture during the condensation of filling material against them.

From these facts we learn that our enamel wall, to have the proper strength, must be supported by sound dentin; it must be cut parallel with the long axis of the enamel rods; the cavo-surface angle must be beveled sufficiently to remove any short rods that might exist there, and it is safer to bevel the outer ends of the longer enamel rods to insure suitable resistance to stress of mastication and improbability of fracture during the condensation of filling material over the margins. The enamel wall should be planed smooth until it presents a vitreous or glassy appearance. This is done by lightly pressing sharp enamel planers over the enamel wall at right angles to the length of the rods.

A cavity margin should never be laid near a formative groove or the crest of a cusp or a marginal ridge, but in all cases where it approaches such, it should be extended further and include the groove, crest or ridge. The results of neglect of this requirement are frequently observed at incisal, lingual and occlusal margins of cavities.

Careful clinical and laboratory investigations of the properties of gold indicate that its specific gravity is a little over nineteen; that a gold filling, to resist normal masticatory stress, must be condensed to a specific gravity of sixteen or over; that this condensation can safely be attained in our filling operations if proper mechanical principles are observed. A large percentage of gold fillings do not have a specific gravity greater than twelve or fourteen. A gold filling not condensed to sixteen by the operator is very likely to be compressed by the patient in mastication, which will result

in drawing the filling away from the cavity walls and permit leakage. Fillings of from sixteen to eighteen specific gravity can be made by using small pieces of gold, well-annealed, condensed with a plugger point not over one-half to three-fourths mm. in area, the plugger stepped over the gold in regular order until every portion of the surface is welded, and the mallet blow used need not be so heavy as to irritate a healthy peridental membrane.

Perfect adaptation of the filling material to the walls and margins of the cavity is a fundamental requirement, without which any filling is a failure; and yet many of us manipulate filling materials in such improper ways that perfect adaptation is impossible, and gold fillings that leak are a matter of every-day observance.

The operator must understand the properties of gold, and must have the patience and good judgment to observe them. He must also realize that speed counts for nothing unless accompanied by perfection of results. Cohesive gold must be clean and thoroughly annealed. The annealing should not be done in an open flame.

With a cavity prepared as has been described, moderate-sized pieces of gold should be condensed along a line angle from one point angle to an opposite one, which will securely anchor the first portion of the filling between two opposite walls. The gold can be adapted by two methods—shingling and wedging.

Shingling consists in building up the gold in the angle in the form of a prism, letting each fresh piece of gold extend over the wall of the cavity slightly beyond the gold already condensed. The angle of force should be toward the line angle at the base of the prism. It should not be directly at right angles to the plane of the wall being covered.

The wedging principle of adapting gold to cavity walls consists in starting the condensation of a fresh piece of gold at the center of the gold already condensed, and stepping the plugger toward the wall of the cavity, the gold next to the wall being the last to be condensed. As it is wedged between the wall and the already condensed gold, perfect adaptation results. A thin layer of gold cannot be adapted to a cavity wall.

To secure perfect adaptation to the cavity margins the

gold should gradually overlap the margin, in the shingling process, and the marginal condensation should be made with a foot plugger placed at right angles to the cavity margins. In this manner gold can be adapted to a gingival margin as certainly and as perfectly as it can to the most accessible margin of the cavity.

When, through study and observation, we have become familiar with the size and shape of a normal interproximal space, and of the necessity for maintaining that space in order to protect the proximal surfaces of the teeth from decay; when we realize that the contact point is a point of contact and not a contact surface, and that its proper restoration is necessary for the preservation of the health of the interproximal gum tissues and for maintaining the tooth in proper occlusion, there will be a definite convexity to the contour of our filling. If the space available is not what is needed, we will recognize that it is absolutely necessary to first obtain that proper interproximal space before we can complete a satisfactory filling.

When, through a more creditable knowledge of dental anatomy, we are familiar with the curvature and location of the gingival line and the normal position of the gum line, and we realize that teeth do not decay under healthy gum tissue, we will succeed better in preserving the health of these soft tissues, and there will be less pyorrhea to trouble the dentist and less sickness in general.

With our growing knowledge of the effects on the general system of unsanitary conditions of the mouth, the importance of oral hygiene and intelligent dentistry seems paramount. The writer firmly believes that half of the sickness of our people is caused (or largely contributed to) by unhealthy oral conditions, and he also believes that these unhealthy oral conditions are amenable to skillful, intelligent dentistry.

# MANAGEMENT OF PUTRESCENT PULP AND A PERMANENT ROOT FILLING.*

By Dr. T. C. Reid, Adrian, Mich.

In presenting this paper I do not lay claim to anything particularly new, to the members of this society. Rather laying before you for approval or otherwise, as the case may be, some thoughts that may be of use to us in our daily practice.

In no other branch of our profession are the conditions so varied or the treatments so diversified as in connection with pulpless teeth.

In commencing the treatment of such teeth, the first query in each case which presents itself is as to the manner in which the vitality has been lost. We consider pulpless teeth under two classes.

First, those which have died through mechanical causes and thermal changes.

Second, those dying from infection through decay, subjecting the canal contents to inflammation, suppuration and death.

In the treatment of teeth under class one I apply the rubber dam before an opening is secured into the canal so that all danger of further infection is obviated. I then wash out the canal with warm water and dry thoroughly with alcohol, being careful not to disturb the contents of the canal any more than possible; then place in cavity a small piece of cotton saturated with equal parts of beechwood creosote and formalin. After three or four days reopen canal, with rubber applied, wash out with warm water and with a fine broach remove the contents of the canal thoroughly and repeat the treatment with creosote and formalin for some length of time as in the first, then cleanse the canal with a 40 per cent solution of sulphuric acid when they may be safely and permanently sealed.

Class two. Those dying from infection through decay, subjecting the canal contents to inflammation, suppuration and death. If under this head there should be a blind abscess

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with tooth to be treated, I first wash out well with a warm solution of glyco-thymoline, open up as thoroughly as possible, apply rubber dam and dry well with alcohol. Insert a loosely placed cotton dressing saturated with ¼ of 1 per cent of beechwood creosote, being careful not to seal the cavity too tightly and paint gums with aconite and resublimed iodine.

If at the end of three or four days inflammation has not subsided and pus still present, I repeat the treatment. Should there be no pus or inflammation present, I use same treatment as in case under the first class. If the abscess has a fistulous opening I wash out well with a warm solution of glyco-thymoline forcing it through the opening and dry thoroughly, then by means of a small piece of cotton on a fine broach I force ¼ of 1 per cent solution of formalin in beechwood creosote through until it appears at the opening in the gum. Dismiss patient, leaving canal cavity open, and repeat operation in three or four days. After this treatment the same method may be followed as described above, where no complication previously existed.

We are now ready for a root canal filling and desire one that is antiseptic, non-irritant and that will permanently seal the apical foramen. I have experimented with several materials, among them being chloro-percha, iodoform and various other materials, until at last I found one which has for the past six years given me the best results. When canals are ready to be filled and all preliminary steps taken. a thread of cotton wrapped around a smooth broach, is dipped into tincture of iodine, then into finely powdered tannic acid, and forced to the apical end of root canal; after drying the canal thoroughly so that all excess of iodine is removed, wipe out with alcohol and it is ready for the filling. I use oxide of zinc mixed with ¼ of 1 per cent formalin in beechwood creosote to the consistency of a thick cream and by means of a thread of cotton on fine broach force it to end of root, using care not to force it through the apical end; repeat until the canal is well filled, then insert gutta-percha points.

With this material sepsis will not recur, as you have a material that sets as hard as cement, sealing the apical foramen perfectly and which is antiseptic and germ proof.

# SOME THINGS FOR DENTISTS TO THINK ABOUT.*

By S. E. Dodson, D. D. S., Grand Rapids, Mich.

"Discord is harmony misunderstood."

We know what appeals to our faculties as music. We are therefore ready to detect any jar or departure from harmony the moment it reaches our ear. We know that elementally there is nothing but sweetness and beauty in this particular collection of sounds and with a different and proper arrangement those same sounds would produce beautiful tones, in short, "harmony."

It is very much the same, then, in orthodontia. Malocclusion is occlusion misplaced. To the orthodontist belongs the task of rearranging those elements, the teeth. I am speaking to you as dentists, from, of course, an orthodontist's standpoint.

I do not believe that a dental meeting is a fit or proper place to read papers on the treatment of the various classes of malocclusion. The dentists are not, nor do they want to be orthodontists. The up-to-date dentist sends his cases to the orthodontist, and holds him responsible for the proper treatment of the same, with no worry or bother to himself.

Dentistry is a specialty of medicine. Physicians do not attempt to cast gold inlays, removable bridge work, prophylaxis, or any of the newer operations in dentistry. Therefore the dentist who has only the best interests of his patients at heart, keeps out of the field of orthodontia, which is a specialty of dentistry. I do not say all this because I want, in my work as an orthodontist, your cases to do. There are other fields from which we can gather our work, and I can say for myself, with all honesty, that I do not care if I never receive another case of orthodontia from a dentist.

With the rhinologist, the physician, the teacher in the public schools and the parents themselves all on the lookout for the welfare of these little patients, the dentist is far from being the whole thing. The dentist in his capacity of dental advisor to the family, should be the first to discover

*Read before the Southwestern Michigan and Fifth District Dental Societies, Grand Rapids, Mich., April 14 and 15, 1908.

and warn his patients of the necessity for treatment and it is with the object of stimulating him in this direction that this is written.

He should get and read Dr. Angle's book on malocclusions of the teeth. He should learn the different classes of irregularity. He should know the difference between these classes. It would be well for him to be able to distinguish between cases wherein the maxilla was merely under-developed, as in many cases of Class 1, and an over-developed mandible, as in Class 3; the facial outline in the former being much the same as the latter.

I could go on at much length on this same topic, but do not wish to take your time. It is to be understood that this is said from the standpoint of an orthodontist. It is for the purpose of calling your attention to what appeals to me as facts, which if not known, serve to put the dentist in a very awkward position, many times, when questioned by parents as to what the treatment of the orthodontist is likely to consist of, and its probable results facially.

I would recommend to your notice an article on mouth-breathing, by Dr. Woods Hutchinson, published in the Saturday Evening Post, of April 4. A careful perusal of this will go further to arouse an interest in your minds, no doubt, than anything I would be capable of writing, or telling you.

This paper is necessarily brief and I think you will like it all the better for that. The discussion which I feel it should bring forth, will, I think, prove beneficial to all.

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## DISCUSSION.

**Dr. C. B. Blackmarr:** I am very glad that Dr. Dodson brought out the fact about Dr. Wood Hutchinson's article in the Saturday Evening Post. I think that is my point at this meeting, to try and have a whole lot of these copies distributed and to have shown to us the responsibilities for our patients' general health that we are not recognizing.

**Dr. Hoff:** There is another phase of the subject that I would like to speak about, but I don't want to take all the time. Dr. Dodson's paper, as I gathered from the reading of it, is a plea for specialists or specialism. Now I most cordially agree with that idea. I believe that the time has come when we must specialize, whether we want to or not. Technically, perhaps, some of you

who do not keep up to date on the advances that are being made do not see the burden that is being put on the average dentist of today the way I see it. I have been one of those people who have always prided myself on trying to keep up with everything that is being done. Everything that comes up that is new I try to learn all about it that I can. I find that I cannot do it, however. It is practically impossible for any dentist today, and especially a man who is in full practice, as you all are, to keep up with all the advances that are being made in dentistry. No man can do it and do it as it ought to be done, so I would most cordially commend the idea that we have got to specialize, and the man who has the courage to specialize and tries to do his work worthily, I don't care whether it is orthodontia, or what it is, this man ought to be encouraged, and we ought not to feel that they are doing an uncalled-for work. We ought to help them, in fact, and we ought to feel it our duty to refer patients, that we cannot properly handle, to men who are willing to withdraw themselves from general practice and take up a special line of work. The results of which, so far as money is concerned, are often problematical. We ought to encourage these men and ought to help them. I feel as though the time is coming when more of this specializing in different branches of the work has got to come, and when men do undertake to specialize in anything in our profession, it ought to meet with our approval and our encouragement.

**Dr. Runyan:** The relation that dentists should hold as between the parents and children and our own specialist and the family physician is a growing problem of great interest and importance. Now we cannot all specialize on all these subjects, but we should be intelligent so that we can see a case requiring special treatment and know where to place it. The child's teeth should be taken care of from the time they begin to erupt, and the dentist is the only one that is prepared to recognize true conditions. The dentist, if he is as intelligent as he should be, will recognize as soon as he looks into a child's mouth whether there are adenoids, or whether enlarged tonsils, and he should be in such relation with parents that they have confidence enough in him to rely on his judgment and also will rely on his recommendation. When the tonsils are enlarged or when there are adenoids, it is our duty to recommend to the parents of our child patients that they be taken to the rhinologist, if there are adenoids, or to a throat specialist to have the tonsils removed, and explain thoroughly to the parents what the results will be if these conditions are not taken care of. All this brings us into proper relation with the physician, the throat and lung specialist, as well as our own specialists. Each one's responsibility is not entirely removed by just doing the work that comes to his hand, but we should all work in harmony so that we can all be working together, that the patient may receive the best results from working together.

**Dr. F. E. Williams:** I agree upon the points mentioned, and I hope your attention may be drawn more closely to observing occlusion of the teeth. This matter of occlusion should bind us together as a whole, the specialist and the general practitioner. And we must all be prepared to give light to any patient. As some one brought out yesterday, our patients are our kindest teachers; they want to know the conditions, and the reason why, and it devolves upon us to be able to tell them. And as the doctor who has just spoken says, our relations between ourselves and different specialists in medicine, we should be able to recognize the conditions that would naturally come under their treatment, and be somewhat cognizant of the different treatments involved, to be able to intelligently direct our patients in order that they may receive the benefits that they should have, and at the right time, at the beginning stage. We orthodontists must get at our patients sooner than we do, as then the trouble or difficulty is in its inception and they can be most readily corrected.

**Dr. Dodson:** There is only one point that was brought up in the discussion that I care to speak of particularly and that is one of Dr. Hoff's remarks. I cannot let him get away with the idea, or have you folks get away with the idea, that this little article was written with a view to benefit specialists, that is to benefit orthodontists. I am perfectly sincere in saying that it is for the benefit of the dentists themselves. You all know, the men who have given the subject any attention at all, how many of these cases there are that go through your hands continually, and those of you who don't know had better find out, because they are going through your hands every day, and all of you have a number of these patients now. This paper was written simply with a view of awakening your interest on that subject. The matter as to whether or not dentists send me, personally, a case of orthodontia, I meant just what I said, doesn't make a particle of difference. I speak impersonally for the good of the cause as I see it. Orthodontia is launched and it is going to stay launched. As to Dr. Hoff's further remarks about a man trying to cover the entire field, I agree with him. We are in the position of the man who had a horse which was a "wind sucker." He advised his man to keep the manger full of hay, and when he inquired next day how he was coming on, the stableman replied, "God, no man can do it." Dr. Runyan has given my ideas perfectly, as to public work. Having had the pleasure of seeing a few of his slides, I think that he is engaged in about the noblest work of any of us. I only wish I had the courage to undertake the work myself.

## PRESIDENT'S ADDRESS.*

By Dr. Oel E. Lanphear, Paw Paw, Michigan.

A most pleasant place to meet is this fair city, perfect type of Michigan's industrial centers, of first rank in furniture making the world over, embellished by nature's choicest gifts and abounding in generous hospitality and hearty good-will. The cordial welcome we have received together with the care and precision with which the zealous local committee has worked, give ample promise of an enthusiastic meeting. Many will appreciate our program, but few realize the energy and time required to produce it. I wish to take this occasion to publicly thank all who have so kindly contributed to the success of this meeting, be he officer, committeeman or member.

This great profession of ours is in a state of intellectual unrest; the majority are ever striving to increase their intellectual grasp and to stimulate their mental digestion. This striving finds expression in the multiplicity of dental meetings held and the volume of dental literature published annually. These meetings "are the clearing houses" of advanced ideas and form the nucleus of the profession. They help to encourage the formation of many permanent professional friendships which, aside from social enjoyment, serve to reduce friction, rivalry and dissension. There, wide-awake men may meet their neighbors, grasp them by the hand, look into their faces and compare investigations, experiences and opinions by face to face discussion. There the great and near-great need not seek for personal aggrandizement. Everything is arranged for the benefit of all practitioners, insofar as they care to partake of the good things offered. The inspiration of their presence is most earnestly desired as well as any suggestions they may offer to help some brother practitioner to secure better results from his work. This reacts by producing a marked benefit, not only directly to themselves, but indirectly to their clientele. Dental meetings provide most excellent opportunities for the reciprocity of ideas. The vigilant stand ready to adopt the best means and

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methods and raise the standard of professional ideals. They who would achieve professional ideals must be business men and make a business of their profession. They must strive for "broader and deeper intellectual training, not simply in the theoretical and practical, but in all branches of knowledge which strengthen the mind."

A powerful stimulus is gradually bringing about a unity of action throughout the profession, making possible, not only successful district and local meetings, but great national and international gatherings. Concentration and co-operation will eventually bring about the amalgamation of the profession into one great world-unit. All the great institutions known to men are builded upon concentrated effort. A universal wave of organization is sweeping over the dental world. All men conversant with existing conditions realize the necessity for reciprocity and interstate licensing boards, whose requirements and examinations are practically the same. The state boards should be given power to register approved candidates. A strenuous individual effort should be put forth to cause every ethical dentist to feel the necessity of attending the meetings of his local and state societies. A membership in the local society should carry with it a membership in the next higher organized unit. Thus a national association might be built up of sufficient strength to bring about active uniform dental legislation, maintain and develop vital relations with their constituency and to publish a weekly journal carrying to every member a concise report of the new, and an authentic history of the old, making it possible that an operation originating in Berlin or London may be put in practice in New York or San Francisco within a fortnight. The national association has voted to publish such a journal, and has an active committee working on the details. A guaranteed circulation is one of the requirements for the publication of this associational organ, and this can be secured only by developing the strength of the association until it reaches proportions adequate to the task. The time is not far distant when a paid membership in the National Dental Association will carry with it a subscription to the best journal in existence. The Southwestern Michigan Dental Society, aside from its good work, will be strengthened by a just consideration of this great organization movement.

We need more earnest and zealous workers in our local societies, men who are willing to work for the uplifting of their societies, regardless of personal feelings and prejudices. Doctor Peck, in his address at Minneapolis, says: "Insofar as our purpose centers in the welfare of the profession we represent, insofar as we seek only the good of the association, our striving is laudable. When we forget the good of the brotherhood in aims that are purely personal and selfish, we dishonor ourselves and do untold injury to the cause we claim to cherish."

Until each individual dentist becomes aroused from the accursed apathy which has so long threatened the profession, and become alive to the great truth that only by his earnest human effort can the best good be accomplished, will perfect amalgamation and consolidation be attainable.

One of the most deplorable conditions in existence in our work today is the lack of training of the youth of our land in the proper use of the teeth and care of the mouth. Are we going to leave this most important phase of our work to be carried on by the firms engaged in the manufacture of proprietary dental adjuncts, under the semblance of "Educational Associations"? Rather, let us condemn this work and set ourselves the task of removing the possibility of such so-called "Educational" work being carried on in this way. I would recommend that our society endorse the work of well-trained, efficient dentists, as our Dr. A. C. Runyan, who has made the presentation of this branch of our work a study for years, and encourage trained men to appear before the teachers' associations, mothers' clubs and social and literary organizations of America, for the purpose of enlightening the present generation and preparing the way for the education of generations to come by securing a place for oral hygiene in the curriculum of the public schools.

Let us stand by the best of intention, attention and retention. May our intention be to look for the best in others and give the best we have to fill our niche to accomplish our task, to leave the world better than we found it, in short, to make our lives an inspiration to the many. May our attention be concentrated upon finding the largest measure of happiness in the cultivation of thoroughness of work,

kindness of heart and gentleness of manner, upon the admiration of earth's beauty and comfort in the promises of Divine love.

May our retention find realization in successful fillings, and successful aims adhered to throughout our professional careers, admitting of naught but the best motives and actions. our reward achieved in the thought of having done well in all things attempted.

He who has done all these things has achieved success and holds the whole country under obligation.

## DISCUSSION.

**Dr. N. S. Hoff:** I would like to say some very complimentary things about the address of the president. I could not say anything else. It was a very concise and truthful statement of the professional attitude towards our work today. The value of society work is one that I believe you are to have up for discussion later in the session. This is one of the most important things that there is in our dental atmosphere just now; what shall we do, and what are we to gain by a closer organization? It is a vital subject with us just now, and one that we ought to discuss calmly and seriously, and do what we can to bring this matter to some satisfactory conclusion.

The subject of dental reciprocity, or an interstate license, is also a very large and important subject. It is one that has had a great deal of discussion in recent years, and one that will have a great deal more in the years to come, as it is not yet settled. We have a provision in our new state law that gives us a basis for interstate reciprocity as far as we are concerned as a state, and I don't know that we can discuss it from any other standpoint than our own legal status. It is, unfortunately, a very difficult matter to adjust satisfactorily on a legal basis. On a legal basis things have to be adjusted so and so, and one cannot make allowance for anything or anybody. Whether it is a matter of equity or professionalism we cannot take into consideration strict professional ethics in the adjustment of these interstate or international relations of professional men. I think it is almost deplorable that we have to resort to legal measures to establish our professional standing. It is not the best way in my judgment. We ought to establish our relations upon an educational basis, or on a professional basis, if you please, which means an educational basis. If we could do so, it would put our state board in a position to handle the subject professionally, and in a way that would be entirely satisfactory. We have the idea in our minds that we must establish these interstate relations on a legal basis

and I don't see any use of our discussing it on any other basis. It is the only way that in the very near future we are going to be able to consider this question at all. We may talk all we please about professional courtesies and the desirability of establishing reciprocity on professional grounds, but we shall not be able to do it, at least not for some time to come.

The president brought up another important matter that I want to say just a word about; it is the matter now very prominently before the professional public at least—and is being forced by the profession to the notice of the general public. It is the education of the public in the matter of dental hygiene, through our public schools and eleemosynary institutions, and through the more recent propaganda of certain commercial institutions. I don't believe any of us sympathize at all with the idea of doing this work through commercial institutions of any sort. I think as a profession it belittles us to sanction such enterprises. It is not on a right basis in my judgment, and although we may try to excuse ourselves on the plea that the end justifies the means, I don't believe that we will respect ourselves as a profession as much if we should undertake to do the work in the unethical way, as we will if we shall be compelled to do less work, and make less progress by a more truly professional course. A great many people have objected to taking Mr. Carnegie's money and Mr. Rockefeller's money for school purposes and for libraries, because it is tainted money. I don't think anybody's money is tainted so long as it is current, but it seems to me we are in an entirely different position. We are a profession that is supposed to rest on the basis of honor and public integrity one to another, and that same fraternal integrity is the basis of our relations to the general public. We must consider all of our actions on that basis and if there is an objection to using tainted money from a commercial house, as in this particular case to which the president referred—he didn't specify the particular house, but I think we all know to whom he referred—we have no business, it seems to me, to be playing with that kind of fire. It is one of those things that will react on us, and not to our credit. I most cordially commend this particular phase of the president's address, and say that we should be very careful as to what we endorse in this direction. We should not commit ourselves to this kind of propaganda until we have more seriously discussed and considered its bearing upon our relations to the public, than we have done heretofore. I simply make this statement and don't wish to enforce it or to specify any more particulars about it, but I want to express my own view of all such matters.

**Dr. M. L. Ward:** I am sure the president has gathered a great deal from our current literature regarding the need of reorganization and the benefits to be derived from it. I am glad he has put it before you in the way he has, as he understands so well the benefits that are to be derived and the steps that are

necessary to lead up to a better organization than we now have, not only in our local, but state and national organization as well. To get any good thing we need unity as well as enthusiasm, and you must get together and agree to do this thing, and then heartily co-operate to accomplish the object for which we aim. The spirit of the new organization movement is one grand campaign for members of our societies, local, state and national. Statistics show that in both the medical and dental professions that only 50 per cent of the profession, in the best organized states in the Union, belong to societies. Four years ago in the state of Illinois only 14 per cent of the men registered in dentistry belonged to a society, while today a little over 50 per cent belong. One grand campaign has raised the percentage from 14 to 50. In the medical profession the percentage has been raised from about 32 to 33 to 55. After six years of hard work they have secured only 55 per cent; even this has accomplished worlds of good. In the dental profession in this state we make a better showing than most of the other states; we have about 25 or 26 per cent of the dentists belonging to our dental societies. We ought to raise this percentage from 25 to what others have, 50 to 60 per cent. In order to induce this percentage of men to attend our dental societies we must have a better organization, we must perfect a plan organization first. In order to perfect such an organization we must have the co-operation of all the now existing societies. The reorganization committee of the state society has adopted the Illinois plan and has successfully put it into effect in a large part of the state. It is a plan which will show results, it has shown results in other places and in other states and will certainly show results here. The time has come when no man that cares to be a professional man can afford to let two or three dollars, or any other ambitions that he may have, stand in the way of his taking an active part in society work. The organizations of labor, in which there is little education and no such general intelligence as we claim, have developed men and measures to a greater extent than we shall if we don't get busy right away. They have perfected an organization that is little to be improved upon, to say the least. We hope that with the assistance of the already existing societies in this state to accomplish some things in the line of concerted professional activity. We are first hoping to get our organization completed, and then to make a grand campaign for members. We cannot do this successfully until the whole organization is perfected.

**Dr. B. J. Cigrand:** I want to say just a few words. Personal contact at a meeting of this kind does us more good than we realize. Dentists, as a usual thing, have an idea that they can read the proceedings of a society when they come out in the journals. I want to say, and I want to emphasize it, that the proper way to get the inspiration of a paper is to hear the man read it who is the

author of it. You can get much out of a paper by reading it at home, and studying it; but after all there is a great deal to be gained from the personality of the author that you derive only when you hear and see the man. I have nothing at all to offer on this general subject at this time, except that I am always enthusiastically in favor of the men of our profession meeting in convention to exchange opinions. There is nothing for debate on this subject, as the president has offered it, that I can see. Organization is essential, and union of effort is everywhere recognized as practical accomplishment. I can only say that when the proper time comes I hope that you will take the proper course which will secure the success of all the state and local societies of Michigan.

## PRESSURE ANESTHESIA OF THE PULP AND TREATMENT—IMMEDIATE FILLING OF CANALS.*

**By Dr. Henry Barnes, Cleveland, Ohio.**

The subject of immediate root canal filling is greatly misunderstood mainly because the writers upon this subject have failed to clearly define their meaning. While I firmly believe in this method, my practice does not include all canals treated. All abscessed roots, putrescent canals, canals involving inflammation of the peridental membrane or highly inflamed pulps are not immediately filled. Some cases not enumerated under the above, but which require judgment obtained from experience, may also be included.

Immediate root filling may be satisfactorily practiced in those cases where the removal of the live pulp leaves a surgically clean wound, and when your technic leaves no doubt of asepsis.

It is extremely difficult to state positively the cases favorable for the employment of this method. Before entering upon this method as a practice, the cases should be carefully selected until such time as the operator's judgment is sufficiently educated to enable him to successfully treat the same. With the foregoing explanation I trust my meaning may not be misunderstood. Criticism or condemnation has emanated from many who have honestly believed this method

*Read before the Northern Ohio Dental Association, May, 1908.

impracticable. Those failing and condemning the practice have not been mindful of the fact that "it is the man behind the method who counts." There is no operation which we are called upon to perform that calls for so much patient, persistent, dogged, never-quiet perseverance and care as does the treatment of root canals. Successfully performed, there is no other operation which affords to operator and patient so much satisfaction. To treat these cases and send the patient away with little present and no future consciousness of an operation having been performed is possible in a very large percentage of cases. Failure in this operation must ensue no matter how carefully or conscientiously performed, regardless of method, but other things being equal, the best result will follow a treatment which conforms to the recognized surgical treatment of the day. With few exceptions there is no time when the wound is so well prepared for final dressing as immediately after the extirpation of the pulp, because the canal is at this time, if properly treated, aseptic, and you cannot be so sure of this condition at any future time. In immediate root canal filling all the different steps are completed at one sitting with one application of the dam.

One of the objects hoped to be attained from this paper and clinic to follow, is to convince a few, at least, that arsenic as a pulp destroyer is absolutely unnecessary. I do not hope to enlist any of that class who use arsenic simply because it can be easily applied, or because they have not time; but I do hope and expect to disturb the mind of him who is honestly striving to do his best for suffering humanity, and to cause him to seriously question his present use of arsenic, I greatly sympathize with those who believe arsenic necessary, having had experience. Habits are hard to break, whether it be the whiskey, morphine, cocain or arsenic habit. My habit at present is cocain, and I consider it rightly used, the greatest boon that has come to us in many years.

As the subject of this short paper involves pressure anesthesia, not high pressure produced by a powerful syringe, but pressure obtained through the use of a small piece of warm gutta-percha or unvulcanized rubber, it will be in place at this time to describe in detail the technic employed. The technic is a composite from well-known methods, with additions, chief of which is the vacuum principle; and I

desire to thank, from the botton of my heart, the author (name not known) of pressure anesthesia, and also my good friend, Dr. J. R. Callahan, for knowledge of the use of sulphuric acid.

### TECHNIC, IN DETAIL.

An exposed live pulp.

Open the cavity as much as possible and wash with warm water before applying the dam.

After dam is applied use freely 3% H2-O2.

Place in cavity approximately one-tenth of a 2½ gr. cocain tablet, such as is supplied by Parke, Davis & Co., after Dr. Hoff's formula.

Moisten with a drop of water.

Fit into cavity a small piece of warm pink gutta-percha, and with suitable instruments or thumb,

Press on same.

The amount of pressure to be regulated by the case.

Many pulps will be anesthetized at the first pressure, but others will require two or more applications.

The first class of cases are easily taken care of and require no special consideration as all are quite able to deal with them.

The second class being more difficult requires special treatment to anesthetize.

A part of the coronal portion of the pulp in these cases may be desensitized, and my practice is to remove this portion and use the pressure again and again until the canals are reached, when, if the pulp is still sensitive, a final pressure is made.

If sensitiveness is still present I conclude that somewhere in its course the absorption of the agent is interfered with.

Take a fine, smooth broach and gently force same between pulp and wall.

Doing this in every canal where sensitiveness remains.

While the broach or broaches are in place, fit another piece of gutta-percha in the cavity and resort to gentle pressure, and while pressing the gutta-percha quickly remove the broach from each canal.

A vacuum is thus formed into which the solution is forced, and very rarely does this fail to work.

The next step is to remove the pulp from the canals.

Using a new broach, never an old one.

Should there remain a small portion at the apical third not anesthetized, do not again use pressure, because I firmly believe my first failures in immediate root filling were due to that cause. Pressure at this time is liable to force the contents of the canals through the apical foramen and injure or perhaps infect the peridental membrane, giving rise to what is called secondary hemorrhage.

Instead, use sulphuric acid, C. P., full strength, and with a barbed broach gently work same into the canal until the apex is reached.

The acid will destroy this portion of the pulp and moreover, the acid with broach will enlarge the small canals.

Continue this until all sensitiveness is lost, and neutralize with soda bicarbonate solution.

Dry with compressed or warm air.

Removing all the debris when the canals are ready for filling. Now place in canals a little Oxpara, creamed with the powder, placing in each canal a smooth broach, and in cavity warm gutta-percha, sealing all canals and very gently press, quickly drawing out the broaches one by one.

Wipe out the surplus in coronal portion and flow in chloro-percha.

Again placing small broaches in canals and repeat pressure as before. The canals may now receive a metal point of aluminum, phosphor bronze, .copper or gutta-percha, according to their size.

The operation is now complete and ready for the preparation of the cavity for final filling at this or some future time, as desired.

Great pressure must at no time be used, and the greatest care must at all times be taken, if you would succeed.

There is a class of cases which I have not been able to anesthetize, but these are not the cases for arsenic.

I use for these Oxpara and seal same in cavity with pink gutta-percha, doing this in several successive treatments when the pulp is found to be quite dead.

Gentlemen, if I have severely condemned any method it is only because I know there is a better.

## DISCUSSION.

**Dr. S. M. Weaver, Cleveland, Ohio:** The essayist has given you a very comprehensive paper, and as far as I know an original technic on his so-called vacuum trick.

Dr. Barnes is always giving us his ideas, and in the past we all have had many valuable suggestions, and as he has something new every time you meet him, we will still look for good things in the future.

I agree with his statement that "immediate root filling may be satisfactorily practical in those cases where the removal of the live pulp leaves a surgically clean wound, and when your technic leaves no doubt of infection." These would be called ideal cases, and I might say they are few. It is much easier to cite the favorable case than the unfavorable.

The essayist speaks of sending the patient away with little present and no future consciousness of an operation. I agree with him about the present, but the future in my practice has brought many sore teeth, which, of course, as the essayist says, was due to my faulty manipulation.

The essayist states: "Failure in this operation must ensue, no matter how carefully or conscientiously performed, regardless of method, but, other things being equal, the best results will follow a treatment which conforms to the recognized surgical treatment of the day." Now what are the other things that are equal? The surgical treatment is all right if you were positive there would be no secondary hemorrhage, or that your broaches did not pass through and wound the peridental membrane, which at the time is anesthetized and the patient unable to feel, the most important thing in filling root canals.

A surgeon never closes a cavity while hemorrhage is going on, every vein and artery is blocked with artery forceps or ligated, and if hemorrhage occurs after closing the wound, there is generally trouble for the surgeon.

Now is the pulp canal in the best condition immediately after the removal of pulp? It is a question in my mind if a better condition is not obtainable for a permanent filling by medicating for 24 hours. For instance, washing out canals with peroxide of sodium and dressing with oil of eucalyptol for 24 hours, giving nature a chance to heal the injured stump.

In following out the doctor's technic, I find my methods are prictically the same up to the point of inserting the smooth broach to form the vacuum chamber. Instead, I try and work carbolic acid down the side of the pulp with a smooth broach, this having quite marked anesthetic properties, as well as cauterizing, makes the operation possible with a minimum amount of pain. I have not used Dr. Barnes' method, but have been wondering what the patient would be doing while you are inserting three broaches down to the apical end of the roots, without any anesthetic being

worked along with them. This method probably works and obtains the results which the doctor states, but I cannot figure out the theory, as the essayist has, but think the vacuum idea is wrong.

The idea of having the broaches in the canals holding the pulp away from the wall, and at the same time holding back any decalcified portion of the pulp from blocking the canal when pressure is applied, I believe the important point of the trick, and not the quick removal of the broaches, as in my judgment, to make any vacuum under these circumstances would be an impossibility.

I wish to be understood as merely criticizing the theory and not the method, and as methods and technics are what count in the speaker's opinion, the theory is of little clinical value. What we are after is results.

In speaking of anesthetizing the apical portion of the pulp, Dr. Barnes states: "Pressure at this time is liable to force the contents of the canals through the apical foramen and injure or perhaps inflict the peridental membrane, giving rise to what is called secondary hemorrhage."

First. I cannot see any possible reason for putting enough pressure on to force the pulp back through the end of the root, and if it was a possibility, which I doubt, the portion of the pulp would certainly be anesthetized before any such thing would happen, and that is all we require.

Second. It would not be possible to infect the surrounding tissue by simply forcing the pulp tissue back, but would cause a disturbance that would ultimately develop into an acute peridontitis, which is decidedly undesirable and annoying to both patient and operator.

Third. The essayist states that this injury or infliction, if it occurs, of the peridental membrane, is what is called secondary hemorrhage. Now if the essayist meant what he said, he has entirely the wrong idea.

Secondary hemorrhage is caused physiologically in this way, the cocain being a vaso-contractor, contracts the minute capillaries and blood vessels surrounding the apical end of the tooth, and temporarily arrests the hemorrhage without the natural method of a clot being formed, when the root filling has been inserted. After a time the cocain is absorbed and the capillaries and blood vessels regaining their normal condition, there being no clot present, allows the blood to flood the apical space, which results in so many sore teeth after immediate root filling, technically speaking, peridontitis.

I am pleased to see the essayist deviating from the old path of chloro-percha.

You will remember in the early part of his paper he stated, "Habits are hard to break." In this case you can see the ear marks of the chloro-percha habit, for even though the doctor has used oxpara for the all important part of the root filling, that of sealing the apical end, which I heartily endorse, he cannot resist the habit

of putting in a little chloro-percha in the coronal portion, where it could not do any possible good, more than ease the appetite of habit, of which the doctor has so strongly impressed upon you.

I have never used metal points in root filling, so cannot speak from experience, but as a matter of conjecture, what would be the result if one of these metal points should stain through the root of a front tooth and reflect a green shadow, as we often see from the cheap German silver dowel pins, used in crowns?

And again, let us presume that Dr. Barnes has filled the roots of one of the eight anterior teeth, with, for instance, a phosphor bronze point, the size of the canal, and in after years this same tooth has to be crowned with porcelain, necessitating drilling out the phosphor bronze point to admit the post. I am inclined to believe that the doctor would say to himself that he wished in this one particular case he had used a rubber point.

The pressure method or first called spunk method, works beautifully when you have an exposure, or nearly so, but this covers a small percentage of cases when devitalization is necessary. In many cases it is almost impossible, where some cavities are located, to get the required pressure and adaption of the rubber piston to do the work.

These cases are much more easily handled with high pressure, and also with much more accuracy, if like everything else in dentistry, common sense is used.

I will give the technic for one case and will select the hardest for example.

An exposed, or nearly exposed, pulp; the cavity located on the distal side, of an upper second molar at the cervical margin, caused by a partially erupted third molar, before extraction of third molar the cavity was not seeable or findable. This is the exact description of a particular case treated a few days ago. The cavity was dried out and filled with thin cement and allowed to set. The rubber dam applied after it was practically impossible to have access to the cavity with the rubber dam in position. In making a pit, I always try, if possible, to put it in a position that will be included in the cavity when ready for insertion of the filling.

In this case, to get access to the root canals, the position was selected directly in the center of tooth in bottom of sulci.

A pit is first drilled with a No. ½ S. S. White round bur until sensation is reached, no matter whether you are through the enamel or not, but if you can get through without hurting, do so and save time. Next step is to take a bud bur about three times the diameter of the small bur and open the mouth of the pit. This makes a perfect taper and cuts away the broken edges and insures perfect contact, providing your needle has a true taper.

The high pressure syringe is warmed and filled with the anesthetic, also warmed. In cold weather this instrument should be held under the hot water faucet to take off the chill, and the straight cocain tablets should be put in a small receptacle and the

required amount of warm water added. In this way the tooth does not receive a shock, which so often occurs if aforesaid technic is not followed out. All air is forced out of syringe first by holding point up and shoving in piston until liquid appears; the instrument is now ready. When the pit has been made deep, say entirely through the enamel, if you insert the needle, which should fit air tight, you can see you would have a column of air the length of the pit ahead of the anesthetic. Now if you try to force the liquid in under these conditions you will have intense pain. Why? Because the air has to be forced into the tissue before the anesthetic. To avoid this allow a drop of liquid to be forced into the pit before you put the needle in and seal it, take a fine explorer and work the liquid in as you would a root filling, then seat the needle tight and apply pressure very gently, never sufficient to cause pain. Apply first pressure from five to ten seconds, remove and take the No. ½ bur and drill gently straight toward the pulp through the same pit. You can generally drill into the pulp chamber without a particle of pain, but be careful not to let the bur go through into the pulp tissue, for if you do it will be found extremely sensitive. Now with the pulp fully exposed, place the instrument again as before, and without any pressure on the back of the piston, work the ratchet five times. This is so finely adjusted that every five clicks forces one drop out. Hold in this position for half a minute and test with a fine, smooth broach to see if sensation has ceased. If so, your work of anesthetizing is completed; if not, apply again and force two drops in and again test.

I do not practice immediate root filling, but in one class of cases, and that is where there is slight hemorrhage and easily checked without medicament. In these cases I am positive nature has formed a natural clot in the blood vessels and am reasonably sure I will not have any secondary hemorrhage and ultimately a sore tooth. Generally the canal is packed with a wisp of cotton saturated with dentaline and left for 24 to 36 hours.

I am positive most of the trouble is caused by having the tissue about the end of the root anesthetized so the patient cannot let you know how much you are jabbing the broach through the end, trying to remove that last bit of pulp that is not there, and afterwards forcing the root filling through. These difficulties are all regulated by the patient if you wait for sensation to return before filling.

The ideal root filling material is a liquid that does not shrink on itself, and also has the properties of a permanent, non-irritating germicide that will take care of any fibers that cling to the walls or fluid that fills the tubuli, followed with a hard rubber point to force out the excess fluid.

I wish to go on record as condemning chloro-percha as a root filling. It shrinks on itself, leaving the walls of the canals, making

a space which gradually fills with fluid, inviting all kinds of trouble. It has absolutely no therapeutic properties and is merely a substance for filling canals, that does everything we don't want it to do.

## RESULT OF CLINIC ON TECHNIC OF PRESSURE ANESTHESIA OF THE PULP, AND TREATMENT AND IMMEDIATE FILLING OF CANALS.

Dr. Henry Barnes' Clinic at the Northern Ohio Dental Association followed the technic described in his article in this issue. The tooth operated on was a left lower second molar containing an exposed pulp.

Skiagraph taken immediately after operation.

The skiagraph here presented was taken by Dr. E. Ballard Lodge, after the operation, and shows the result of the skillful manipulation.

## TREATMENT OF ABSCESSED TEETH.*

**By J. R. Owens, D. D. S., Cleveland, Ohio.**

First Day—If abscess is pointed, lance. But if one, two or three days old, treat as follows:

Remove debris from cavity, syringe with antiseptic solution. Excavate until free access to root canals Syringe with hydrogen dioxid. Remove putrescent pulp and accumulations from root canals with fine broaches, being careful

*Clinic at Northern Ohio Dental Association, June, 1908.

not to go beyond the apical foramen. Cleanse canals with barbless broaches, upon which is twisted a shred of cotton saturated with $H_2O_2$. Do this thoroughly.

Use aspiration, either with syringe or the patient's mouth. Medicate roots with tincture iodin, but leave them clear first day. Loosely place pellet of cotton in cavity and dismiss patient with instructions to suck upon cavity frequently to remove pus or gas, and call next day.

Second Day—Syringe cavity with antiseptic solution. Remove any foreign matter with broaches and syringe cavity with $H_2O_2$. Cleanse root canals carefully and thoroughly as on first day with $H_2O_2$. Pack roots with shreds of cotton, medicated with tincture iodin. On top of this dressing in pulp cavity pack firmly cotton medicated with beechwood creosote and seal with pink gutta-percha. Paint gums with tincture iodin and aconite. Instruct patient to return immediately if soreness increases.

Possible Third Day—In such cases remove medicated filling so root canals are clear. Treat roots with tincture iodin and instruct patient to suck on cavity frequently. Dismiss until next day.

Third or Possible Fourth Day—Throughly cleanse cavity and canals. Fill same as second day, with same instructions to return if disagreeably sore. The majority of cases will be comfortable. In the exceptions, the above treatment is continued, i. e. cavity and canals opened and cleared and carefully cleansed and left open for a day and filled the next, after thorough cleansing. So continue until comfort is secured. After a test of three days and there is no soreness the tooth is ready and should be permanently filled.

### SOME THINGS TO OBSERVE.

The object desired in treating abscessed teeth is to allay inflammation. To do this, the cause of it must be removed and kept removed.

### THINGS TO DO.

Be thorough and exact.

Use tincture of iodin to reduce inflammation.

Use hydrogen dioxid for cleansing pulp cavity and canals. No other cleanser is necessary nor so good.

Fill the tooth as soon as possible after the test filling has demonstrated it will bear filling. Three days is sufficient test.

Take measurement of root when broach goes through foramen easily.

**DON'TS.**

Don't go beyond end of root in cleansing and treating.

Don't force medicine of any kind beyond apical foramen.

Don't use irritating medicaments, such as creosote, carbolic acid, oil of cloves, trikresol, etc., in trying to reduce inflammation. They increase it.

Don't neglect following up treatment. If neglected the temporary filling becomes foul and a source of trouble.

Don't try to open canals with drills, unless in rare cases, and then use fine flexible drills.

Don't drill through the foramen.

## A DISCUSSION OF CLASS II.*

**Dr. Blackmarr:** From my own patients I wish to present a few pertinent cases. The first is a girl whose mother is a Christian Scientist; she had a growth upon her finger that was nearly two or three inches long, and it was raised, I should judge, half an inch, and she asked me what to do about it. She hated to tell her mother, as she believed she ought to go to a surgeon, and advised with me as to whom she should go. I looked at her finger and suggested a surgeon we have in our city; but during the time she was talking about it I had done some work for her, and noticed that when she was impressed and something took her mind from herself that she would bite her finger nail. I saw at once that the growth she thought was a tumor, or something threatening, could have been removed by Christian Science, or by simply keeping her teeth away from her finger. After calling her attention to what she was doing, she recognized that she was the cause of that growth, and she stopped biting on that finger. She was a student, and when studying she picked out another finger unconsciously, and while the first finger got well the other began to develop an enlargement. And the worst of it all was that she had deformed her occlusion by this bad habit.

Another one of my patients is a young lady, about 15 years of age, who came to me with her mother to see about her double lip. There was a fold of the mucous membrane below the inner margin of the lower lip and they could not account for it. After

*The paper of Dr. Williams, A Discussion of Class II, was a copy of the one contributed to and published in the Dental Summary, May, 1908, page 369.

watching her for some time I discovered, the same as with the other girl, that when she was impressed, that she would constantly suck the mucous membrane on the inside of her lip, until she drew it abnormally down. This habit was quite a stunt for this girl, and she did not know she was not only injuring her lip, but deforming her teeth by indulging it.

My office girl, who came from Ohio, went to some of the best dentists, wondering what was the matter with her teeth. There was quite a space between the front teeth. They all thought nothing could be done for such a case, and no one seemed to be able to detect the cause, and it was seven months before I was able to detect what was happening. I said to her, one day, that at any time that I should ask her to stand perfectly still and hold every muscle in her face still, I wanted her to do it, and one day I saw her reading and I noticed her lower jaw was being thrown back and forth, and I said to her that she should hold still. I went up to her and found she had her tongue between her teeth. She didn't know that she had it there at all. But she had forced her tongue in between the teeth so much that it had forced the lower teeth down and the upper ones up. This was quite an unusual and marked case of malocclusion, resulting from a bad habit.

The next one I might mention was a young lady whom I discovered was in the habit of putting her thumb between her teeth and sucking it. When I told her mother that I had discovered the cause of her daughter's mouth being so irregular, I don't think I ever saw a woman madder than she was; she said: "Dr. Blackmarr, the idea! I am the mother of that child and I put the child to sleep every night and I know that she does not suck her thumb." And she took the child by the hand and led her away. It was but a few days when one of her little classmates came into the office for work, and I asked her about the little girl, if she ever saw her have her thumb in her mouth. "Why, yes," she said. Then the fact came out that she only did this when she was studying. Now, while she was in school, and that would be quite a good deal of the time, she had thrown her upper teeth out and the lower ones down, by the habit of thumb sucking, but she didn't do it at night. Afterward the mother came back and apologized, but that was done by her biting the thumb.

I have another little fellow that came in to let me see what caused the irregularity in his teeth, and it was quite a question to find out what he was doing, but I found out from his seat-mate that he had an extra long rubber on his pencil, and he had just been doing business with that little rubber on the end of the pencil. These are simply little things but they are, to my mind, quite important.

In the Saturday Evening Post, of April 4, there is an article on mouth breathing by Dr. Woods Hutchinson, and I feel as though I could not be too enthusiastic over the matter. It is one of the finest written articles that I have ever had a chance to read and feel sure

that you would be well repaid if you would get a copy of it. It tells so much about these habits and other things that your patients can readily understand it. It is quite a contrast to one in another issue of the Saturday Evening Post of January 11, where a medical man, for the fun of the thing, takes one of his patients into a dental college when the dentists are away, hypnotizes the patient, and pulls out some of his teeth for the fun of it. The idea of this article does not consider the importance of the tooth; it is fun for the medics to see how many teeth they can pull. I could not help but wonder how the physician would feel if a dentist should take one of his patients over into the medical department and pluck out an eye or two, or cut off an eye-lid or two, or an ear just for the fun of it. It would be a mutilated eye, certainly, but an extracted tooth certainly leaves the mouth in a mutilated condition.

**Dr. N. S. Hoff:** The thing that seems to me evident is that this is a paper and a discussion in which the orthodontists would be more interested than the general practitioner, and yet it has a very large bearing upon the work of the general practitioner. I feel that the general practitioner does not recognize cases of malocclusion of the teeth at a time when they could be more easily handled than they usually are. General practitioners don't look for this kind of work, and they put off referring the patients to the specialist until such time as the teeth are in a hopeless condition, or the patient resents the conditions, and then the practitioner is compelled to do something for them himself, or to refer them to somebody who will treat them. As a rule, at this period, the general practitioner will find more or less decayed teeth in the mouth, and he usually will find one that he thinks by extracting will correct the condition somewhat, and possibly in this way do something to appease the patient and accord with his own ideals of orthodontia. As a consequence of such extractions, those of you who have followed the matter closely, know that no correction of malocclusion is ever accomplished by any such work, because too often the practitioner selects a tooth, regardless of its bearing or importance in the matter of the correction of malocclusion, simply because it is decayed and he thinks it can be spared very much better than any other tooth. This is a very serious matter, also from the fact that many times the tooth that is extracted is a perfectly sound and healthy one. No specialist in orthodontia will extract a tooth simply because it is decayed. If the root of such a tooth is in a healthy or normal condition, or can be made so, he will retain the roots of all such teeth. I think that one of the commonest causes of malocclusion is produced by the extraction of the the first molar teeth. I don't believe that any, or all other abnormal conditions, such as mouth breathing and other bad habits, have anything like as much to do with producing these two classes of malocclusion under discussion, as has the general habit or

practice of dentists of extracting the teeth when they should not. It seems to me that the practical thing for us to consider here today is the ruthless extraction of the most essential and valuable tooth that we have. The first molar tooth, according to the ideal of the modern orthodontist, is the most important and valuable tooth; it is the one tooth that no orthodontist will sacrifice if it is in any way possible to save and put it in a normal and healthy condition. General practitioners, because the tooth is badly decayed, or because it is apparently decayed so early in the life of the child that they feel they could not save it, will extract, and often at the instance of the parent, who is eager and anxious to have the child relieved of toothache when they know, or should know if they know anything about this matter at all, that such an operation is going to seriously handicap their child all its life. If I should emphasize anything in this discussion it would be this point, that we, as general practitioners, owe it to our patients, and we owe it also to the advances that have been so recently made in our profession in this matter of correcting malocclusion of the teeth, and to our professional pride as well as our integrity, that we save all such teeth, or at least that we don't extract them until we have carefully considered and pondered the results that are liable to happen because of such work. We ought not to extract these teeth without consulting some one who is competent to make a proper diagnosis and decision for treatment.

**Dr. M. G. Hillman:** It was quite gratifying to me to hear Dr. Blackmarr speak in regard to the article in the Saturday Evening Post. In the last six or seven months I have taken three little patients to a physician to have them treated for adenoids. I have placed the same article that is referred to upon my table in my office and have referred to it a number of times since this article was published, and especially to mothers whose children have adenoid growths. I have had some personal experience with adenoid growths in my own family. My little boy, now eight years of age, was in such a condition two years ago that I took him to Detroit to be operated on. If I had taken the child two years earlier I feel that he would have escaped a vast amount of sickness. He was bothered so much that at night the pillow would be spotted with blood where he would pick his nose during his sleep. He had pneumonia soon after the operation was performed, and I attributed it largely to lowered vitality due to the adenoid growth. And he has been a very weak and puny child until within the last year and a half, or since the operation, but since then he has improved wonderfully. And I wish to say that I have had one great fight with him because of his mouth breathing, which he acquired during the growth of those adenoids, and so far I have not been able to conquer it. Otherwise the child is improving rapidly, and I wish to urge upon my fellow dentists this responsibility.

Examine the children that come into your office, look into their throats as well as their mouths. Watch them as they come

in with their parents, for you don't know the amount of good you can do if you will only show the parents these little deformities and defects when the children are young. You will find this a great source of satisfaction in the future if you will only do it religiously. Get into touch with some up-to-date physician that will co-operate with you, and you will be gratified to see the good results that will follow your efforts.

**Dr. F. E. Williams:** In closing this discussion I wish to emphasize that I appreciate the talks from the different members.

After my graduation from the university in general practice I felt an inclination to become interested and was interested in the treatment of malocclusion of the teeth, and it has been a great satisfaction to me to realize that I have achieved any results at all. I studied with Dr. Robinson, of Los Angeles, in an office where they did not do anything else but the correction of irregularities of the teeth. I think that with the help of a college education that not a six weeks' course, but a six or nine months' course where nothing else is done, and where one can see cases started and see those same cases finished, would be a valuable preparation, and I think that we will derive more benefit and be compensated for our time and expense, even though it costs us double the amount of our education. I have no regrets that I mapped out my course that way, and from my results I think I did right.

Now, of course, it is not especially necessary, perhaps, for the general practitioner to know all about orthodontia classifications, and still it is, because it draws our attention to malocclusions. We all know that occlusion is a subject for our serious consideration. In the study of occlusion, what is brought to our notice is, the lack of correct occlusions. I confined my paper to Class II, and more especially to mouth breathing. Now, mouth breathing will cause a typical case of Class II, the narrow palate, protruding upper teeth, and bunched or retruding lower teeth, and after one has paid a little attention to the subject he can and will notice all such cases, and will know that they are in Class II. Some cases in Class II are the worst cases; such as where the chin protrudes and the patient breathes through the mouth; but it is in abnormal cases where they cannot touch the lips. It is not touching the lips that allows the patient to breathe through the mouth. If his lips remain closed during the day he will naturally breathe through the nose. It is easy to breathe through the mouth at night because the head is thrown back and we haven't our faculties of the day, and as I attempted to bring out in my paper, the automatic actions and impulses prevail. We can take cases, as I mentioned, to the rhinologist and he may treat them and this may prevent or throw these cases into Class II. Dr. Hoff spoke about the first molar. We meet with too many of these extractions and it is too bad, for we need this molar especially in mastication. We need this molar in speech. We need this molar especially in order that

they may complete the development of the upper and lower arch, for the space left will close up, and this multiplies our troubles. It does not necessarily change our classification, one side may be maloccluding where the tooth is extracted, and the other side have normal articulation, and we meet with the results of this extracted molar in all of our classes. Mouth breathing and the bad results, not only as regards the shape of the mouth and its dental arches and the results of malocclusion of the teeth on the general system, I think does not receive the attention that it should.

## CIGARETTE PAPERS IN PLATE REPAIR.*

**By Dewey D. Smith, D. D. S., Sandusky, Ohio.**

Invest broken plate in the usual manner. Remove plate, grind, and dovetail. Instead of using wax in dovetailed parts, place a strip of moistened cigarette paper over same to prevent plaster from entering. Paint exposed plaster of paris with separating fluid. Pour remaining half of flask in the usual manner. Separate, pack rubber and vulcanize.

*Clinic at Northern Ohio Dental Association, June, 1908.

# EXCHANGE OF PRACTICAL IDEAS

[This department being an exchange of practical ideas, it depends upon our readers furnishing material to keep it going. Just a few practical ideas from each subscriber will make it of mutual benefit and practical worth. Are you willing to do your share? Help the good cause along by sending the editor a few practical suggestions. Send something today. Address Dr. L. P. Bethel, 1255 Neil Ave., Columbus, Ohio].

## CAST COPING FOR BANDLESS PORCELAIN FACE CROWN.

By H. F. Best, D. D. S., Dillon, Montana.

Prepare the root as for Richmond, only the enamel need not be removed from the periphery, prepare your pin of platinum or platinoid of proper length to extend a couple of millimeters beyond face of root.

Warm a small piece of carving wax, such as you use for your cast inlays, and press over face end of root, imbedding end of pin in same. Cool with water from your syringe and remove. The pin comes off with the wax cope, invest pin and wax cope in your metal ring and proceed as with an inlay. There is a slight overlap at the margin; this may be trimmed before the wax cope and pin are removed from the root, but it can be accomplished easier after the coping has been cast to the pin, as the imprint of the margin is left in the wax.

If you will try this method you will find that you have a perfectly fitting cope.

## SHAPING WAX MODEL FOR CERTAIN CAST GOLD INLAYS.

**By Dr. C. Edson Abbott, Franklin, Mass.**

I have found the following of great value in shaping the wax model for certain cast gold inlays: In compound proximal cavities in bicuspids and molars I adjust the medium soft wax to approximate contour and bulk. Then I stretch a strip of rubber dam ½ inch by 2 inches, over it and against it, holding the ends taut with the left hand. Pressed against the cavity by the rubber dam, the wax is easily burnished to exact proximal contour, occlusal contact, and smooth surface. I then remove the rubber dam, invest and cast as usual.

## CARE OF BURS.

**By Dr. Gustavus North, Cedar Rapids, Iowa.**

Keep your burs sharp and clean; never remove a bur from the hand-piece until it has been thoroughly cleaned by the use of a stiff brush wheel attached to the head of the cable shaft of the engine. Do not use burs haphazard from your general stock, and have them all dull and unfit for use. A dentist should have a good assortment of burs on hand, and from them select one or two of each number and use them until they need sharpening, then lay them aside and select another set. When you have a few dozen worn burs, have them recut and sharpened; by so doing you will always have burs in good condition. The small burs that are unfit to recut will make good drills by grinding to a spade-shaped form.

# SUGGESTIONS

## UNSOLVED PROBLEMS IN BRIDGE WORK.

H. J. Goslee, Chicago, Ill.

First, for example, should the pulps in teeth which are to support artificial crowns be devitalized as a procedure incident to the preparation of such teeth, or not? Second, should a crown be made with a band, or without? Third, should a band, when one is used, extend beneath the gum margin, or not? Fourth, should we destroy or mutilate the beautiful crown of a sound tooth for the purpose of obtaining support for a bridge, or not? Fifth, if this is not warrantable, should we use an open-face crown, a so-called "hood" or "groove" attachment, or some other method? And, sixth, should we use a "fixed" or a "removable" structure in the building of our bridges?

If dentistry is a scientific profession, and if it has progressed and developed with the marvelous rapidity with which it has been accredited, does it seem reasonable that such apparently simple and practical questions should remain unsolved?

While it is quite beyond the pale of human reason to expect that any scientific body should agree on all things, or that all would be unanimous in their deductions and conclusions, yet it is not at all unreasonable to expect a solution of these more or less fundamental propositions. There must be a right way and a wrong way, and in these instances one or the other must be right or wrong, in a large proportion, or, at least, in a majority of cases, and that procedure which is best in a majority of cases is the proper procedure in a very large proportion.

By way of analysis, the question of devitalizing the pulp of a tooth which is to be crowned is not one of personal equa-

tion, nor one which should be decided by the pet hobby of any man, but is simply a question of, first, whether it may be placed in a condition which will be most favorable to its comfort and longevity unless this is done. If such a tooth can be prepared from a mechanical aspect so as to admit of the accurate adjustment of an artificial crown, and if such preparation does not seem to endanger the vitality of the tooth, then to devitalize the pulp would perhaps be unnecessary, and consequently wrong; but unless this may be done and done in a thorough and conscientious manner—which is seldom possible—then devitalization becomes an absolute necessity, and must be resorted to whether we believe in it or not.

The same may also be said of the question as to the advisability of making a crown with or without a band. In this instance the point is not so much whether we believe in a band or not, but is a question of the physiological and mechanical requirements of the crown which the root is to support. These combined demand a union between crown and root which will afford a minimum of irritation and a maximum in strength. If such composite requirements may be obtained to the best advantage without a band, then the use of one is unnecessary, and therefore objectionable; but if the presence of a band will afford a better adaptation of the crown to both the base and periphery of the root, thereby minimizing the possibilities of irritation, and carrying the joint to a more immune area, thus better protecting the mounting medium, which its proper adaptation has usually heretofore afforded, then such a type of construction is not only indicated, but demand as a practice.—Items of Interest.

## SACRIFICING NATURAL CROWNS.

**H. J. Goslee, Chicago, Ill.**

The question as to whether we may or may not be warranted in sacrificing or mutilating the crown of a sound tooth for the purpose of obtaining support for missing teeth, should not be one of personal preference, but should and can only resolve itself into, first, whether a fixed structure would be the best means of supplying the missing teeth or not; and, second,

whether an artificial crown would afford the best and most permanent means of obtaining attachment to that tooth.

Until the present time an artificial crown has seemed to offer the best means of obtaining such attachment in the most artistic and permanent manner, for the reason that a better adaptation between it and the supporting tooth could be effected, than was so universally possible by any other means at our command. Previous to the successful application of inlay work this was true, because most, if not all, of our former methods were so difficult to adapt with any degree of accuracy that they could only be considered as being of a more of less temporary character, and since a remaining natural crown was thus saved—only to be subsequently lost—such a procedure was often warrantable, and would be so today under the same conditions.

The same general line of thought is also applicable to the question as to whether a fixed or a removable bridge should be used when missing teeth must be supplied. This, however, need no longer be considered a problem, but rather as a simple matter of judgment on the part of the operator, for there are distinctive indications and contraindications for the use of each.

If the position and stability of the teeth which remain, and which may be used to support the structure supplying the missing teeth, are favorable and adequate to the mechanical or dynamic requirements of a fixed structure, then such a type of construction is indicated, but in all cases where this may be at all doubtful, then a "removable" piece is demanded. Hence the success of the procedure will depend not so much upon the selection made from the vast array of methods at our command, but, on the contrary, must rest more or less entirely upon the appreciation of mechanics exercised by the operator. Indeed, my sympathy goes out to him in whom this faculty is not developed, and to his patients also when he essays to do dental bridge work.

Such an analysis of these so-called problems leads us to the conclusion that they are not questions of principles, but rather of judgment. Therefore, it behooves us to cultivate and develop this attribute to a higher degree if we would hope to aid in placing this specialty on a broader scientific and less empirical plane.

If this degree of judgment prevails, first in the application of correct principles, and, second, in the selection of methods of procedure, let me again prophesy that we will find ourselves discarding old methods, if indeed we have not already done so, and using even a lesser number of the new ones, and the practice of crown and bridge work will therefore become practically revolutionized.—Items of Interest.

## THE PRODUCTION OF ANESTHESIA OF THE UPPER INCISORS AND CANINES THROUGH THE NOSE.

The fact, previously known to rhinologists, that the application of a tampon soaked in cocain solution to the nasal fossa often produces anesthesia of the upper incisor teeth on the same side, has recently been studied by Escat. The proceeding consists in placing a tampon of wool of the size and shape of an almond in a solution of cocain of the strength of 1 to 20, or better, 1 to 10, which may be combined with a 1 to 1000 solution of adrenalin. Stovaine and other anesthetics may be used in the same way. The tampon is inserted in one or the other nasal fossa, taking care that it lies a little above the anterior end of the lower turbinal, and between it and the septum in front of the lower meatus of the nose. This is necessary because the anesthetic does not act on the lower part of the nostril, and must come in contact with the dental nerve which crosses the floor of the nose behind the vestibule. Special illumination is not required for adjustment of the tampon. After it is inserted the patient should bend slightly forward to allow any excess of solution to escape from the nose instead of being swallowed, as may happen should he adopt the usual position in the dentist's chair. Anesthesia is not apparent till fifteen, or more commonly twenty minutes, have elapsed, but attains its maximum in thirty minutes; when, if the tampon is removed, it persists in its complete form for about fifteen minutes, but does not entirely cease for half an hour. Escat has studied in forty-six cases the precise limits of the anesthesia obtained, with the following results: In thirty-seven cases complete anesthesia of both incisors and the canine on the side corresponding to the tampon was ob-

tained, with incomplete anesthesia of the first premolar of the same side and the central incisor of the opposite side. In eight cases the complete anesthesia extended to both incisors of the other side, and in an incomplete form to the canine. In a single instance the anesthesia was crossed, being complete in the canine and incisors on the side opposite the tampon, and partial in the first premolar of that side and in the incisors, canine and premolar of the side to which the tampon was applied.

Clermont has investigated the course of the anterior dental nerve, and finds that it does not traverse the thickness of the bone, but crosses the floor of the nasal cavity. In 47 per cent. of the cases the canal is not closed by bone, and lies directly under the vascular mucous membrane of the nose, while in the remaining 53 per cent. there is but a thin shell of bone which is readily permeated by the cocain solution. The wider range of anesthetic action and its occasional occurrence on the opposite side are probably due to greater diffusion of the solution in the bone.

This method of anesthesia may be applied to the relief of pain in the teeth or gums of this portion of the jaw, as well as to extraction or other dental operations. It may also prove useful in surgical operations on this portion of the alveolar border. It also indicates an easy method of access to the nerve, should its resection be called for by the presence of intractable neuralgia or other condition.—La Presse Medicale.

## GOLD CAST INLAY INVESTMENT.

**F. B. Arvine.**

In making gold cast inlays successfully, the material for investing the wax filling forms a very important part. The following formula has been used by me for the past six months, and has given good results. The proportions are by weight only:

| | |
|---|---|
| English china clay ... ... ... | 1 part. |
| Ground quartz... ... ... ... | 1 part. |
| Plaster of Paris.. ... ... ... | 1½ parts. |

That is, weigh 1 lb. clay, 1 lb. quartz, 1½lb. plaster.

For making small lots—4 or 5 lb.—use a housekeeper's flour sieve with the agitator removed. I would recommend that the quartz be weighed and sifted first, then the clay. To put the clay through the sieve requires force, as it is lumpy and, so to speak, greasy to the touch. Put a little into the sieve and rub it through with a pestle, or a piece of wood shaped at one end like one. After sifting all three substances, see that they are thoroughly mixed; do this part well, or the investment will be of little use.

When mixing the powder with water for use, shake the material from a spatula into the water (do not sift it in) until the water is just about saturated, then stir it well. It should be, when mixed, of such a consistence that it will pour easily.—Dental Cosmos.

## FINISHING THE POSTERIOR EDGE OF RUBBER DENTURES.

**E. J. Perry, Chicago, Ill.**

I think that a loose, ill-fitting denture may be responsible for sounds going in under the denture. This may be overcome, of course, by making the heel of the plate sharp, not blunt. We often see vulcanized plates finished up with a very thick edge at the heel, and I have often wondered how an operator could put such a plate into a mouth. I always make the edge as sharp as possible, so that the air that passes along the palate will not meet with any interference.—Dental Review.

## ARTICULATING PAPER.

**W. H. Taggart, Chicago, Ill.**

Instead of using carbon articulating paper which is extensively employed to locate the high points on masticating surfaces of artificial teeth, I use a piece of typewriter ribbon which has given better results.—Dental Review.

# AFTERMATH

**Married.**—Dr. Walter C. Davis, Alamosa, Colorado, was married July 2, to Miss Jessie J. Harrison, of Okaloosa, Iowa.

**Dr. C. P. Dennis Dead.**—Dr. C. P. Dennis, Portsmouth, Ohio, died of apoplexy at his home, August 5, aged 75 years.

**Fires.**—Dr. Harry Yaple, Mendon, Mich., loss $6,000, August 24. Dr. W. B. Campbell, St. Louis, Mo., loss $300, August 29.

**Dr. E. W. Crowe Drowned.**—Dr. Emory W. Crowe, aged 25 years, a dentist of Baltimore, Md., was drowned, August 1, at Ocean City, while bathing.

**State Dental Examinations.**—Pennsylvania, 212 applicants, 182 passed. Montana, 12 applicants, 11 passed. District of Columbia, 30 applicants, 22 passed.

**Orthodontia.**—Dr. J. B. Stewart, formerly of Dayton, Ohio, announces that he has opened an office in "The Groton," Cincinnati, and that his practice will be limited to orthodontia.

**Dies from Effects of Chloroform.**—A young lady of Winnipeg, Manitoba, died in a dental chair from the effects of chloroform administered for the extraction of teeth, September 5.

**Announcement.**—Dr. John Q. Byram announces that after October 1, 1908, he will devote one-half of his time to the practice of dentistry in the Willoughby Building, Indianapolis, Ind.

**Died Under the Influence of Chloroform.**—A young lady, aged 19 years, of Brattleboro, Vt., died, July 27, in a dentist's office, after having been given chloroform for the purpose of having a tooth extracted.

**Fox River Valley (Wis.) Dental Society.**—At the annual meeting of the Fox River Valley Dental Society, these officers were elected: President, Dr. J. L. Blish, Fond du Lac; vice-president, Dr. H. K. Pratt, Appleton; secretary, Dr. G. A. Stratton, Oshkosh; treasurer, Dr. G. E. Johnson, Appleton. The next meeting will be held in Fond du Lac. It was decided to affiliate with the Wisconsin Dental Society.

**First Lady Dentist to Practice in North Carolina.**—North Carolina has just acquired its first woman dentist, Mrs. D. Z. McGuire, of Asheville, having obtained a license to practice from the North Carolina Dental Association.

**Wisconsin State Board Officers.**—At the annual meeting of the Wisconsin State Board of Dental Examiners, held in Milwaukee, on June 15-19, 1908, J. J. Wright, of Milwaukee, was elected president, and F. A. Tate, of Rice Lake, secretary.

**Dies While Under the Influence of Anesthetic.**—A lady in Wisconsin died while under the influence of an anesthetic in a dental chair. Shortly after inhaling thirty drops of chloroform her heart stopped beating. A postmortem showed that the woman had lung trouble.

**Delta Sigma Delta Fraternity.**—Officers chosen were: Supreme grand master, Dr. Chas. E. Meerhoff, of Chicago; supreme worthy master, Dr. M. D. Sittig, of Boston; supreme scribe, Dr. R. H. D. Swing, of Philadelphia; supreme treasurer, Dr. J. Q. Byram, of Indianapolis.

**Reappointed Members of State Examining Board.**—The governor of Texas appointed Dr. H. W. Lubben of Galveston, Dr. J. M. Murphy of Temple, Dr. Bush Jones of Dallas, to membership on the State Dental Board. These gentlemen's terms expired last July and they were reappointed.

**Wisconsin State Dental Society** elected the following officers: President, Dr. Wm. H. Mueller; first vice-president, Dr. G. F. Hauser; second vice-president, Dr. E. A. Geilfuss, Milwaukee; secretary, Harvey M. Jackson, Milwaukee; treasurer, Dr. Adolph Gropper, Milwaukee; librarian, Dr. Harry Morton, Milwaukee.

**Northern Indiana Dental Association.**—Goshen was selected as the place of meeting next year. Officers were elected as follows: President, Dr. W. R. Meeker, Peru; vice-president, Dr. J. A. Dinwiddie, Lowell; secretary, Dr. W. I. Vallette, Goshen; treasurer, Dr. J. F. Peterson, Milford; supervisor of clinics, Dr. J. A. Stage, Goshen.

**Virginia State Dental Association** elected the following officers: President, Dr. F. A. Lee, of Lynchburg; first vice-president, Dr. E. J. Applewhite, Newport News; second vice-president, Dr. F. W. Stiff, Richmond; third vice-president, Dr. W. H. Moseley, South Boston; recording secretary, Dr. George F. Keesee, Richmond; corresponding secretary, Dr. W. H. Pearson, Hampton; treasurer, Dr. William M. Sturges, Norfolk; executive committee, Drs. William Pilcher, Petersburg; J. H. Manning, Norfolk; C. T. Womack, Martinsville.

**Dies in Dentist's Chair.**—After suffering three weeks from toothache, a retired farmer, of Worcester, Mass., had several teeth extracted. Laughing gas was administered, and after the teeth had been drawn it was found that the patient was dead. Death resulted from heart disease, aggravated by the administration of the nitrous oxide gas.

**Dentist Held for Boy's Death.**—A Chicago dentist, who said he had practiced dentistry for over twenty-five years, is held to the grand jury on a charge of manslaughter by a coroner's jury following an inquest over the body of a boy four years old, who died after he had been put under an anesthetic by the dentist preparatory to having four teeth extracted.

**National Association of Dental Examiners** elected the following officers: Dr. F. A. Shotwell, of Rogersville, Tenn., president; Dr. J. R. Wallace, of Louisville, Ky., vice-president for the South; Dr. Albert L. Midgley, of Providence, R. I., vice-president for the East; Dr. J. J. Wright, of Milwaukee, Wis., vice-president for the West. Dr. Charles A. Meeker, of Newark, N. J., was re-elected secretary.

**Dentist Held Blameless.**—Following the extraction of four teeth, a young lady, age twenty-two years, living in Illinois, died in great agony. Blood poisoning set in and physicians were unable to check it. Thinking that the death of the young woman might be the result of rough work on the part of the dentist in removing the teeth, the coroner investigated the case and held the dentist blameless.

**Dental Science.**—Dental science exists not for the dentist but for the people, and the most legitimate advancement of the dental profession is that which renders it more proficient in administering to the needs of the people. A man is ranked in respect to his professional life in accordance with the dignity of his calling and his proficiency in carrying out the highest ideals of that calling.—The late Professor W. D. Miller.

**New Jersey State Dental Society** elected the following officers: President, F. G. Gregory, of Newark; vice-president, C. H. Dilks, of Trenton; secretary, Charles A. Meeker, of Newark; treasurer, Henry A. Hall, of New Brunswick. Doctors Meeker and Hall were re-elected. The new executive committee consists of Henry Fowler, of Harrison; Harvey Iredell, of New Brunswick; Wallace F. Naylor, of Sommerville, and W. W. Hawke, of Flemington.

**Saves Three from Drowning.**—Dr. Frank W. Brandow, a dentist of Lenox, Mass., rescued three people, of Stamford, Conn., when their launch was swamped in a storm, July 21. Just before dark he saw the launch with glasses far out in the Sound laboring in the heavy sea, and with Geo. F. Foot put out in Foot's launch. It was dark when they reached the launch, which was half full of water, the occupants exhausted with bailing. The party was landed at Stamford.

**Drove Steel Instrument into Hand.**—Dr. Lester D. Lockwood, of Bridgeport, Conn., while at work in his office, drove a canal drill into his left hand, and the thin instrument broke off, leaving an inch and a half of steel in the dexter member. It was necessary to lay bare the hand with a four-inch cut before the steel point could be extracted. The principal difficulty was that the steel had crowded between the fourth and fifth bones of the hand and the barb could not be pulled out.

**Deaths.**—Dr. W. H. Reilly, Oskalooso, Ia., July 15. Dr. J. F. Griffith, Salisbury, N. C., July 16, aged 57 years. Dr. John P. Williams, Nashville, Tenn., July 20, aged 46 years, of consumption. Dr. Henry C. Widup, Columbia City, Ind., August 1, aged 66 years. Dr. Burton Weller, Toledo, Ohio, August 14, aged 30 years. Dr. Moses R. Thompson, Lewistown, Pa., August 24, aged 82 years, of catarrhal pneumonia. Dr. James O. Wells, Minneapolis, Minn., August 27, aged 37 years, of pneumonia. Dr. Abner C. Crysler, Niagara Falls, Ont., August 28, aged 76 years.

**Levied on Dental Dealers' Trunks.**—Mistaking some trunks belonging to the dental exhibitors for the effects and properties of the "Mr. Bluebeard" and "Don Jose" theatrical troupes, which were in Ashbury Park, N. J., in July, a constable attempted to levy upon the exhibitors' outfits. He soon discovered his mistake, however, and placed the embargo on the scenery of the "Mr. Bluebeard" company for the purpose of satisfying a board bill which the proprietor of the Lake View hotel claimed some of the chorus girls related to Mr. Bluebeard owed him.

**Dental School at Fort Worth, Texas.**—In all probability a department of dental surgery will be adden to the Fort Worth Medical College this year, reports a Texas paper. The dental college has practically been organized, and among the promoters are a number of the directors of the medical college. The matter of making the dental college a department of the medical college is now being favorably considered, and is apparently assured. No delay will be experienced, and the department of dentistry will be installed by the opening of the fall term.

**Death of Dr. A. L. Northrop.**—Dr. Aaron L. Northrop, for many years a prominent dentist in New York City, died suddenly in Paris, on August 31, from heart disease. Dr. Northrop, who had lived in New York since 1852, retired from business two years ago, and went to live at Richfield, Conn. He was a graduate of the Baltimore Medical College, and was first president of the Odontological Society. Dr. Northrop was a member of the Broadway Tabernacle, of the Union League and Lotos Clubs, of the Masonic Lodge, Coeur de Lion, and of Mecca Temple, Mystic Shrine. He was about seventy years old.

**Court Affirms Receiver for Board of Dental Examiners.**—The appointment of a receiver for the Washington State Board of Dental Examiners has been affirmed by the state supreme court in the case of Attorney S. R. Stern against the board. Stern was employed as attorney by the board to bring suit against a number of advertising dentists who had failed to secure licenses from the board. He sued the board for his services and recovered judgment in Spokane for $1,400 and costs and when this judgment was not paid the Spokane court appointed a receiver to take charge of the receipts and pay the judgment.

**Electric Light Narcosis.**—A Swiss dentist, after having for several years made experiments with the narcotic effects of blue rays of light, reports that a complete narcosis (stupefying effect) can be obtained if the rays of a blue electric light are brought to bear on the human eye, while all other rays of light, particularly of daylight, are kept off it. The narcosis thus obtained is so complete that dental operations, such as pulling or filling teeth, etc., can be executed without causing the patient pain. While the effect of the blue rays is a strong one, that of violet blue and green rays is less intensive. Yellow or red rays show no effect at all. The inventor is unable to give a definition of this discovery.

**Wisconsin State Dental Society to be Reorganized.**—At the opening session of the thirty-eighth convention, reorganization of the Wisconsin State Dental Society into district or component societies was assured. The president, Dr. William H. Cudworth, of Milwaukee, urged this action in his annual report, and Dr. H. L. Banzhaf, of Milwaukee, who responded to Mayor Anderson's address of welcome, also spoke of the contemplated action. The reorganization plan contemplates starting dependent societies to include every dentist in the territory allotted to the district. Every member of these district organizations must belong to the state society. The present membership of the state organization is 250 and it is hoped to make this 1,000 before a year elapses.

**Decoration for President of Dental Examiners.**—As soon as Dr. F. A. Shotwell, of Rogersville, Tenn., had been elected president of the National Association of Dentists' Examiners, at the closing session in Boston, and escorted to the chair, an emblem consisting of a bar and pendant bearing enameled pictures of Bunker Hill Monument, Faneuil Hall, Paul Revere's lantern and a beanpot was presented to him by Dr. Dowsley in behalf of the Massachusetts Board of Examiners, and pinned upon his coat, amidst great applause.

Thirty-four states and province of Nova Scotia comprised the roll call in the voting for officers. Dr. S. Richard Wallace, of Louisville, Ky., was elected vice-president for the South; Dr. Albert L. Midgley, of Providence, R. I., vice-president for the East; Dr. S. S Wright, of Milwaukee, Wis., vice-president for the West, and Dr Charles A. Meeker, of Newark, N. J., secretary-treasurer.

**Burglars Give Advice to Victim.**—Sending to a victim a marked copy of a newspaper giving a half-page account of how monster safe deposit vaults withstand the shrewdest of burglars seems to be the latest trick of those gentry.

Dr. U. S. Traub, a Yonkers, N. Y., dentist, left his office about noon on August 22, and went out in his automobile with his family. That night, on his way home, he stopped at the office and discovered that thieves had been at work. About $120 worth of gold had been stolen. He received yesterday a marked copy of a newspaper containing a half-page description of big vaults and safe deposits, detailing how they withstand the cleverness of "crooks." It had been mailed in New York. With the paper there was a letter advising the dentist not to worry about his loss and warning him not to report the burglary to the police under penalty of death.

**Rochester (N. Y.) Dental Dispensary Report.**—In the annual report of the board of directors of the Free Dental Dispensary is an appeal to the Rochester public to aid the work of the dispensary, as funds are needed. As shown by the report of the board, much is accomplished by the dispensary, each year, all of which necessitates a large expenditure of both time and money.

In the past the major part of the expense of the dispensary had been met by Captain Henry Lomb, whose death, June 13, removed one of the mainstays of so many of the city's institutions. Deserving charities were his special care. Captain Lomb's aid is spoken of at length in the report, which concludes:

"The board of directors hopes, with the aid of our public spirited citizens, to place the dispensary on a firm financial basis, that it shall be a monument to his memory."

**Dentist to the Khedive of Egypt Dead.**—Dr. James Frederick Love, the American dentist to the Khedive of Egypt, died in Marseilles, France, on July 16, after an operation to remove an abscess on the liver. Dr. Love was born in Ireland in 1846. He studied medicine and surgery in Dublin, and on reaching his majority came to Philadelphia and immediately applied for citizenship. He took a post-graduate course in dentistry, graduating from the Philadelphia Dental College in 1868 at the head of his class. He made his home in Philadelphia, returning every four years to vote at the presidential election. He practiced dentistry in London, Paris, Florence and Vienna. In 1873 he went to Egypt at the request of Ismail Pasha, the Khedive, who made him the court dentist, which post he held to the time of his death. Dr. Love was an accomplished linguist, speaking and writing French, German, Italian, Spanish, Hebrew, Greek, Arabic and Turkish as well as English. He possessed a collection of Egyptian curios and relics of ancient Greece and Rome found in Egypt. His library contains many rare and valuable books. He was a bachelor and his two sisters, Mrs. Newman and Miss Love, of London, inherit his estate.

**Dental Manufacturers' Exhibit.**—Arrangements have been completed for the next Dental Manufacturers' Exhibit to be held at the Hotel Sinton, Cincinnati, Ohio, on October 27-28-29-30. Cincinnati was chosen for this exhibit for the purpose of giving the dentists in the central states, who could not attend the exhibition held in March, in New York, an opportunity to attend this one. The product of the leading dental manufacturers of the United States is fully demonstrated at these exhibitions, among them being the latest inventions in all lines of dentistry and they are not only interesting but educational. No expense is spared to make these exhibitions a success, and the location of the October exhibition is exceptionally good, being in the best hotel in the city. Special arrangements have been made for the comfort and entertainment of the lady visitors, and the four days spent in the city can be filled in a most beneficial and interesting manner. There is no fee of admission, buttons being furnished on application at the registration desk, admitting the wearer to the exhibition hall and clinics at all times. All dentists and their families are invited to attend, and special hotel arrangements are being made for the out of town guests.

**Death of a War Veteran, Dr. I. N. Custer.**—Dr. Isaac Newton Custer, well known as a Westerville, Ohio, dentist and a military man, died at his home Wednesday, September 9, 1908, from the effects of exposure during his army service. Dr. Custer was born in New Rumley, 76 years ago, and in 1852 began the practice of dentistry in Steubenville, and remained in that profession for 56 years, until his health failed. In the Civil war he served as first lieutenant of the 157th Ohio Volunteer infantry, and at the expiration of this service was offered a position as a member of the staff of General Morris Schaff, commanding Fort Delaware, but declined. He also was first lieutenant of Company A, 88th Ohio National Guards, from 1863 to 1868, and later was selected captain of Company C, Fourteenth O. N. G., and served seven years. He commanded that company during the Cincinnati riot in 1884.

He was a cousin of General George A. Custer, the noted Indian fighter. Relatives who survive are a widow and four children. Dr. L. E. Custer, of Dayton, special lecturer at Ohio College of Dental Surgery at Cincinnati; Dr. Harry J. Custer, Alpena, Mich.; D. D. Custer, Seattle, Wash., and Mrs John A. Shoemaker, Pittsburg, Pa.

**Kansas Claims the First Woman Dentist.**—Dr. Lucy B. Taylor, Lawrence's only practicing woman dentist, was the first woman in the world to be granted a diploma from a dental college and formally admitted to the practice of that profession.

Dr. Taylor practiced dentistry before being admitted to a dental college. She knew that women were not admitted to such schools, so she studied the profession under a tutor and mastered it well enough to make a good living. She was practicing in Iowa, and had succeeded in establishing her reputation so firmly among the other

dentists of her state that they interceded for her admission to the Ohio Dental College. That was in 1865 or 1866. After much hesitation and many objections, the faculty of the school finally consented to try the doubtful experiment of teaching a woman to pull and plug teeth, and she was admitted. In 1866 she graduated and was granted the usual diploma.

Returning to Iowa she practiced there for some time, and then came to Kansas. She located here many years ago, and for a good many years she was one of the town's leading dentists. Of late years she has not practiced so largely, but she still maintains an equipment for doing dental work, and keeps herself thoroughly posted and up-to-date on dental subjects. She confines her work mostly to women and children, whom she treats at her home on Vermont Street.

When admitted to and graduated from college, she was Miss Lucy B. Hobbs. After her graduation in 1866, she was the only graduate woman dentist in the world until about 1870, when a Mrs. Herschfeld, a German woman, was granted a diploma. Since then the profession has "let down the bars" to women, and there are many successful dentists among the gentler sex. It is said that the brilliant success of Mrs. Taylor had much to do in breaking down the barriers.

**Robberies.**—Dr. H. F. Parr, Indianapolis, Ind., $15 worth of gold, July 14. Drs. Saunderson and Fletcher, Grand Forks, N. D., $25 in cash and $25 worth of gold plate, July 14. Dr. R. D. Kelsey, currency and gold valued at $150. Dr. Cruttendon, loss, $35. Dr. Sasby, loss, $12 or $15. Dr. Alrick, unknown quantity of gold. All of Northfield, Minn. Dr. John Spanogle, Conemaugh, Pa., several pairs of forceps, gold for filling teeth and gold tooth caps, July 21. Drs. H. J. Gray, F. W. Bliss, Phil Bliss and Don Byrne, Santa Cruz, Cal., several hundred dollars worth of gold, July 23. Dr. A. O. Hooker, San Jose, Cal., loss $50 in gold for fillings, crowns, and a valuable mirror. Dr. C. M. Dowell, Elkhart, Ind., $10 worth of gold and $1 in stamps, July 31. Drs. Meyers and Cleophas, Beloit, Wis., $75 worth of gold and platinum, August 8. Dr. A. E. Crum, Boone, Ia., large sum of money, stamps and gold, August 10. Dr. C. E. Walker, Brooklyn, N. Y., 600 sets of false teeth, gold and dental instruments valued at $1,000, August 14. Drs. Reap, Miller and McDougal, Pittston, Pa., gold fillings and several sets of teeth, August 15. Drs. J. W. Graves and F. W. Ivory, Rochester, N. Y., gold and platinum valued at $200, Aug. 16. Dr. C. H. Maynard, Fall River, Mass., $40 worth of false teeth, August 18. Drs. W. A. McFarlane and F. A. Mueller, Wankesha, Wis., gold worth about $30, August 19. Dr. Harry C. Webb, Syracuse, N. Y., $45 worth of gold, August 26. Drs. Burt S. Ide and Frank J. Moyer, Jr., Lockport, N. Y., about $100 worth of gold, September 1. Dr. Walter J. Leake, Lockport, N. Y., $20 worth of gold, September 2. Dr. T. S. Ward, Marietta, Ohio, gold valued at $35, September 2.

Dr. Mitchell, Parkersburg, W. Va., gold valued at $12, September 4. Dr. R. J. Holcomb, Rochester N. Y., gold valued at $70, September 5. Dr. P. K. Hill, Rochester, N. Y., gold and instruments valued at $150, September 5. The home of Dr. W. H. Sieberst, New York, was looted by burglars, September 13, and goods to the amount of $1,000 taken.

## OHIO STATE DENTAL BOARD.

The State Dental Board of Ohio will meet in regular session in Columbus, on October 20-23, 1908, for the examination of applicants for license to practice dentistry in the state. Only graduates of reputable dental colleges are elegible to appear for examination. All applications must be in the hands of the secretary at least ten days before the date of the examination, together with the fee of $25.00. For further information and blank application address the secretary, F. R. Chapman, 305 Schultz Bldg., Columbus, Ohio.

## CHANGE OF DATE OF AMERICAN SOCIETY OF ORTHODONTISTS.

In view of the fact that the presidential election occurs on one of the dates originally set for the meeting of the American Society of Orthodontists, the board of officers have decided to change the dates and the meeting will be held at The Burlington, in Washington, D. C., on Thursday, Friday and Saturday, November 5, 6 and 7, 1908.

Special rates have been secured at the Dewey hotel, Fourteenth and L streets, N. W., where accommodations may be engaged.

FREDERICK C. KEMPLE, Sec'y.

## NATIONAL DENTAL ASSOCIATION OFFICERS FOR 1908-09.

At the twelfth annual meeting of the National Dental Association, held in Boston, Mass., July 28 to 31, 1908, the following officers were elected for the ensuing year:

V. E. Turner, Raleigh, N. C., president; Wm.Crenshaw, Atlanta, Ga., vice-president for the south; Eugene H. Smith, Boston, Mass., vice-president for the east; W. T. Chambers, Denver, Col., vice-president for the west; H. C. Brown, Columbus, Ohio, corresponding secretary; Charles S. Butler, Buffalo, N. Y., recording secretary; A. R. Melendy, Knoxville, Tenn., treasurer. Executive committee, new members, J. D. Patterson, Kansas City, Mo., C. J. Grieves, Baltimore, Md., H. B. McFadden, Philadelphia, Pa. Executive Council, H. J. Burkhart, chairman, Batavia, N. Y.; B. Holly Smith, Baltimore, Md.; F. O. Hetrick, Ottawa, Kan.; A. H. Peck, Chicago, Ill.; W. E. Boardman, Boston, Mass.

Birmingham, Ala., was selected as place for 1909 meeting.

H. C. Brown, Corresponding Secy.

# REGULAR CONTRIBUTIONS

## DENTAL EDUCATION IN OUR SCHOOLS WITH STEREOPTICON.*

**By Dr. A. C. Runyan, South Haven, Michigan.**

For a number of years I have put a great deal of thought and study on this topic and I will show you today what I have developed in the way of presenting this subject to the schools.

In the summer of 1891 or 1892 there was a teacher's institute held in our city and the superintendent of schools invited the different professional men to come in on the several evenings and make addresses along their special lines of work. I was invited as a dentist and talked on "Dental Anatomy and Hygiene in Our Schools." It is a recognized fact that our school text-books and the literature of the day have but comparatively little to say along those lines. This has been somewhat improved, however, in our later editions. I have always thought while we were discussing these subjects in our dental societies, that it was a good deal like throwing a kiss at a girl in the dark. We knew what we were doing, but she nor any one else did not. "The People," the ones that ought to know, are not getting the benefit of the work we are doing along these lines, only as we can talk to them individually as they come to our offices. Then too often do we find conditions that are almost past remedy just because the parents have no means of knowing how to bestow the proper care and attention to their children's teeth.

*An illustrated talk given before the Southwestern Michigan Dental Society, Grand Rapids, April 14-16, 1908.

I believe that the time has come when the dentists should do constructive work rather than patch work. Then we may be called "dentists" rather than "tooth carpenters," and I know of no other way than to begin with the rising generation.

Nearly every year since my talk at the teachers' institute, the school superintendent has invited me to go to the several schools and talk to the pupils when they have arrived at that part in their text-books, treating on dental anatomy and hygiene.

At first I used a blackboard and a human skull to illustrate my talks, but not being such an adept with the crayon as Dr. Cigrand, I felt that I was failing in a good many ways in putting the matter before them. I conceived the idea of using lantern slides to illustrate my talks, thinking that it would make the subject much more interesting and have a more lasting effect on the pupils. I sent for catalogs of anatomical slides but they contained nothing that would be of use, so I began saving wood cuts and lithographs bearing on the subject. Through Dr. Keefe, of the Haskell Postgraduate College, I got permission to use the set of cuts they sent out. I will not tell you how much money I have paid out trying to have slides made, but it was because of my ignorance in not knowing where to have the work done. I can make very good slides myself now, however.

Many of you will remember that I read a paper at the Niles, Mich., meeting, entitled, "The Relation that Should Exist between the Dentist and the Child, the Parent, the Physician and the Specialist," to be illustrated with the lantern. I had my slides made but when I came to use them they were so opaque that I could not get light enough through them to get proper results. The paper was discussed by Dr. Bonine, of Niles, a rhinologist and eye and ear specialist, from the standpoint of his specialties.

I have had some of those slides made over and you will recognize many others as having even been taken from journals you are familiar with. I will give this lecture to you practically as I deliver it before the pupils. I will make it as short as possible, however, as you all understand the

subject matter. But in order that you may see the manner in which I present it, I must necessarily give it to you very nearly the same as I give it to the schools.

Dentistry as a profession is of very recent origin. The first dental college in the world was not organized until about 1844, and that was in our own beloved country and was established in Baltimore. So you see that the human teeth have been practically neglected for all time. Your parents and my parents did not have opportunities to learn how to properly care for their teeth nor teach their children their great importance. When you consider that every particle of food that we use, in order to sustain life, passes into the mouth, and should be thoroughly masticated to be properly assimilated, you realize their great importance. I am giving this talk to you so that when you have children, and I hope that you will all have children, you will know how to properly watch and care for their teeth.

First Slide Second Slide



**First Slide**

This slide represents the human skull at birth. In this, as in all the slides on tooth eruption, the outer plates of bone have been removed from the upper and lower jaws, or superior and inferior maxilla. These white spots show the teeth before their eruption. You will notice the shape of the skull and

that the inferior maxillary has practically no angle. That is so that the gums can come together so that the child can get its food in the manner in which it has to.

**Second Slide**

The temporary or milk teeth are twenty in number and are classified as follows:

Eight incisors, four cuspids, or what you understand as stomach and eye teeth, and eight molars.

This slide represents the human jaws at about nine months after birth. We begin to erupt or cut our teeth when we are from five to seven months old; the lower or inferior central incisors usually making their appearance first, closely followed by the upper or superior centrals. From the time that the first tooth makes its appearance, the care of the teeth should be under the supervision of a competent dentist. You should use the same care in choosing your dentist that you do your family physician. From now on the teeth should have the same care as the rest of the body. They should be thoroughly cleansed at least once a day. We are told that if the teeth are kept absolutely clean there will be no decay. That is not absolutely true, however, as there are other conditions which, if you are under the direction of a competent dentist, will be pointed out to you and the remedies suggested. There are three principal reasons why the teeth should be thoroughly brushed and washed every day. First, that all particles of food and other debris may be removed so that it is not left to ferment and cause decay. Second, by so doing, the teeth are under constant observation so that any irregularities that may appear, can be corrected. Third, and most important, the habit of cleanliness will be formed. We are all governed, more or less, through life by habits; so if we establish a habit of cleanliness of the teeth we will no more neglect to clean our teeth than we neglect to wash our hands and face and comb our hair.

In the past, and in most cases at the present time, the teeth are neglected till one is old enough to care for them themselves, but in some instances the teeth themselves have rebelled and have very forcibly called your attention to their neglect.

Third Slide Fourth Slide



**Third Slide**

This represents the condition of the teeth about the eleventh month. The lateral incisors have erupted so that all of the incisor teeth, eight in number, are now in place. Here the first temporary molars are beginning to make their appearance, and the second temporary molars are pretty well formed with the exception of the roots. The partially developed first permanent molar is also shown.

By the use of this slide, I try to impress thoroughly on the minds of the children the necessity of the watchful care of the dentist. How absolutely necessary it is that the full temporary set should be kept thoroughly in place so that the arch is kept expanded to its natural size. Explain to them why, if any of them are removed, there will not be room for the permanent one that comes to take their places.

The dentist is in a position to discover whether the tonsils are enlarged, or if there are adenoid growths that will cause mouth breathing, and he will advise the parent to go to the physician or proper specialist to have the obstructions removed. In this way a great many deformed faces can be avoided.

**Fourth Slide**

This slide shows the stage of tooth eruption at about the eighteenth month. This is considered the critical period of

teething. You frequently hear mothers say that the baby is very cross. It is cutting its eye and stomach teeth. I will try to explain to you why this is so. You will notice that the first temporary molars are now in place and that the cuspids are forcing their way between the incisors and molars. It seems to be a sort of stretching process and helps to form the contour of the face. Sometimes this intense pressure sets up sympathetic nervous disturbances and the whole system becomes involved, and sometimes causes severe stomach and bowel trouble, and quite frequently producing spasms. You see here that the second temporary molar is quite thoroughly developed and almost ready to make its appearance, and the first permanent molar has made a corresponding growth. You know that the popular idea is that the temporary teeth do not have any roots, but you see that is all a mistake. They have just as long roots in proportion as the permanent teeth, and it is very necessary that they be kept healthy and in position till it is time for them to be replaced by new ones.

Fifth Slide



**Fifth Slide**

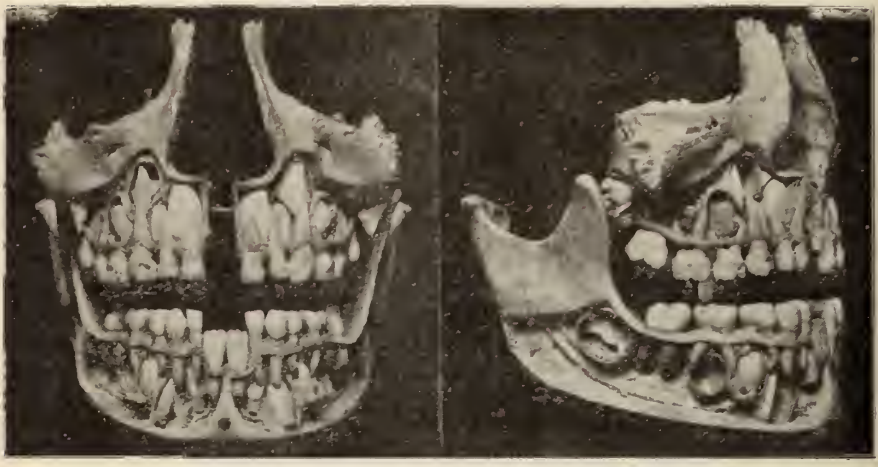
This represents the teeth at about three and one-half years. This is the complete set of temporary teeth. Here

are the eight incisors, the four cuspids and the eight molars. At this point I wish to call your attention to a peculiar thing. From the age of seven months to the age of three years, the child is cutting teeth almost continually. From three years of age till the age of six there is apparently absolute rest, as no more teeth make their appearance till about the sixth year. During this period the child's teeth and mouth should have the most watchful care of both parent and dentist. You will notice here that the crowns of the permanent teeth seem to be interwoven among the roots of the temporary teeth.

As these teeth develop, the roots of the temporary teeth gradually absorb so that when the permanent teeth reach the gum the temporary teeth loosen and either drop out or are very easily removed. That is why people have thought that the milk teeth have no roots. This is the reason that it is so essential that the temporary teeth need such care and attention during this period; that if any of them should show any indications of decay, they can be thoroughly filled. If the cavities are not filled as they appear, the decay continues till the pulp of the tooth (what you understand as the nerve) becomes exposed and painful, finally becomes infected and dies, then there will be an abscessed tooth and that produces what is known to you as a gum boil. I have known of cases developing into blood poisoning, followed by death. The pulps of the teeth seem to be essential in some way to the absorption of the roots, for we know that if from any cause the pulp dies, the roots do not absorb, and retard the eruption of the permanent tooth.

The temporary molars require the most constant care for several reasons. These teeth are not replaced by the permanent ones till from the ninth to the eleventh year, when the bicuspids are erupted to take their places. You will notice that there are no bicuspids in the temporary set. You see here is the first permanent molar quite well formed and seems to be crowding quite well up to the temporary molars. If for any cause these little molars have to be removed, you readily see how easy it will be for this tooth to drop in the place of the one removed. What is the result? When the time comes for the tooth to erupt that belongs there, there is

no room for it and it is crowded out of the arch, producing very evil results which I will show later on. Another reason for constant watchfulness at this time is, that these adenoid growths and enlarged tonsils that I spoke to you of, may be causing a serious injury at this time. These adenoids are a sort of glandular or spongy growths that are formed in the nasal passages over the palate and restrict the breathing, so that in order to breathe comfortably, the child is obliged to breathe through the mouth, the evil results of which I will illustrate later.



Sixth Slide Seventh Slide



**Sixth Slide**

This shows the front view of the superior and inferior maxilla, or upper and lower jaws, at six years. The permanent set of teeth is composed of thirty-two teeth, sixteen in each jaw, and are classified as follows: Eight incisors, four cuspids, eight bicuspids or pre-molars and twelve molars. They usually begin to make their appearance between the ages of five and seven years.

This slide shows the lower permanent incisors nearly in place. The lower teeth are almost invariably erupted first. The upper centrals have very nearly reached the gum margin and the temporary ones are almost ready to come out.

**Seventh Slide**

This is a side view at the same age. The first permanent molar, sometimes called the "six year molar," is in place. This tooth causes the dentist more trouble than any other tooth in the mouth. It is almost invariably mistaken by parents for a temporary tooth and for that reason neglected; they thinking that it will be replaced by a new tooth later on. These temporary molars, having been neglected, are frequently badly decayed when the first permanent molar makes its appearance, consequently they become infected by contact and it frequently happens that they are past repair when they come under the observation of the dentist. There is scarcely another tooth in the mouth on which so much depends as to the general contour and beauty of the face. We not only owe it to God and ourselves but to our friends as well, that this human face divine should be kept in its original form and beauty.

I will show some of the evil results caused by the extraction of the first permanent molar later.

Eighth Slide Ninth Slide



**Eighth Slide**

This shows the condition of the teeth at about the seventh year. You see that the temporary incisors have been lost and

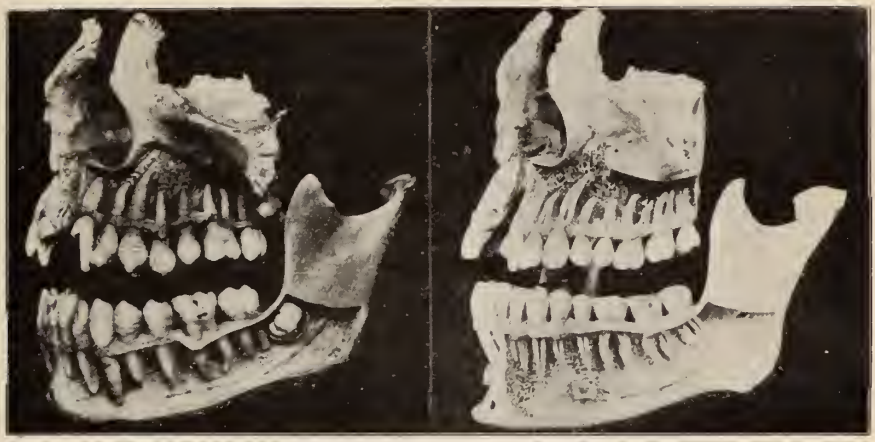
are being replaced by the permanent ones. The first permanent molar is in place and the roots almost developed. The second molar crown is quite well developed and is forcing its way into place. The teeth that show under the roots of the temporary molars are the bicuspids. Why it is so necessary to keep these temporary molars in place, is because if they are removed before the first molar is thoroughly in place, the first molar drops forward and occupies the place that these bicuspids should, so that when they come to erupt, between the ages of nine and eleven, they must erupt forward or out of the arch entirely. Then at about the thirteenth year these cuspids you see here have no room at all and are forced out; thus you frequently hear them called "tusks." You see by this how essential it is that every tooth should be retained in its proper place as you cannot disturb one without inflicting injury to the others.

**Ninth Slide**

This shows the progress of dentition at about the eleventh year.

In the lower jaw you will see that the first bicuspid is through. The second bicuspid is crowding up between the roots of the second temporary molar. The second permanent molar, sometimes called the "twelve year molar," is quite well developed and is about ready to make its appearance; and just back of that is the partially developed crown of the wisdom tooth.

In the upper jaw I wish to call your attention to the cuspid tooth. See how well developed it is, still way up in the jaw. You can readily see that if the temporary teeth have been removed before their time and the other teeth have crowded into their places, this tooth must erupt clear up under the lip; thus proving that we cannot be too particular in keeping every tooth in its proper place.



Tenth Slide. Eleventh Slide



**Tenth Slide**

This is a fine representation of a normal mouth at about the age of thirteen. The teeth are usually all in place at that age, with the exception of the wisdom teeth which are shown here in the jaw close behind the second molars. The roots are nearly all quite well developed. The wisdom tooth is not usually erupted till between the ages of sixteen and twenty. There are several points of interest I wish to call your attention to in particular. These spaces next to the gum line are called "infra dental spaces," and at the enlargement of the teeth where they touch each other, is called the "point of contact." God has planned them in this way for a purpose. If our teeth were the same size all the way so that they touched together from top to bottom, when we get anything crowded between them it would be almost impossible to remove it, but with the teeth arranged in this way, there is such a small spot that touches together that it can be forced one way or another and easily removed. It is also a wise provision for this reason: teeth are very much more prone to decay at the point of contact, so if they should touch together their whole length, they would be still more liable to decay.

At this point in my lecture I tell them how to properly clean their teeth, how to use the dental floss, etc., which I will omit here.

We will now go back to the wisdom tooth. I told you

that it usually made its appearance any time between the ages of sixteen and twenty. This tooth often causes a great deal of trouble. You see the position it occupies there in the angle of the jaw. It is also crowded against the molar in front of it. It sometimes happens that it will force its way up to the enlargement on the back of the molar and will be unable to erupt farther. Sometimes they never get farther than you see here. It is then known to the dentists as an impacted wisdom tooth and causes a great deal of pain and annoyance, and people sometimes have to submit to quite a serious operation to have it removed. I will show you later on an X-ray slide how those conditions are sometimes discovered.

**Eleventh Slide**

This represents the adult mouth with all the teeth properly in place. The frontal plates of the jaw have been removed, also the tooth roots have been ground to the nerve canals.

The incisors and cuspid teeth in both jaws have one root each. The first bicuspids in the upper have two roots, while the second bicuspids in the upper have only one root. The upper molars have three roots each; however, the wisdom teeth may not have three fully developed roots.

The lower bicuspids have only one root each, and the lower molars each have two roots. Now you will at least know that you cannot have a tooth extracted with five or six roots as our grandfathers have told us they have.

**Twelfth Slide**

This represents the human jaws at old age, but if you will care for your teeth as I have described, your mouth should never reach that condition. If you follow the rules I have outlined, there is no more reason for you to lose a tooth than you should lose a finger and that would be by accident. However, by modern dentistry, when people reach this condition, they may be supplied with artificial teeth so that they may not be in the condition spoken of in Shakespeare's "Seven Ages of Man."

Twelfth Slide



This concludes the first section of the lecture which I have passed over hurriedly. You have seen that there are many points that could be enlarged upon and improved; but as my talk usually continues for an hour, if I talk longer on one point in the subject I will have to shorten it at others.

(To be continued.)

## ORAL PROPHYLAXIS.

**By Grace Pearl Rogers, D. D. S., Detroit, Mich.**

(Continued from page 721 October issue.)

### PART III.

### THE DENTAL EDUCATION OF OUR PATIENTS.

That every dentist is responsible for the dental education of his patients, will be admitted by any one who has given the matter serious thought. This responsibility is of vital importance to the oral prophylaxis specialist, since a large portion of his work necessarily consists in the proper instruction of

his patients. What the term dental education for the patient implies is governed by the class of patients with which one has to deal; however, if we are fortunate enough to have intelligent patients in our practice, there would scarcely be a limit to the field for instruction along interesting and helpful lines.

The reader's indulgence is solicited while we consider that part of the subject which is indispensable in oral prophylaxis, i. e., the personal care of the mouth and teeth. Opinions differ regarding this all-important question, for one dentist will advocate one thing, another dentist still another, and both claim to get good results which, of course, is all that is necessary. The writer will take the time and space to detail the plan which she has found efficacious, hoping that it will be helpful to those who have not given the matter any thought. She offers no apology for dwelling at length upon this phase, for it is absolutely necessary, and without attention being paid to the patient's part of the treatment, the best operator will fail to get satisfactory and permanent results. We must, by " hook or crook," gain our patient's cooperation, because if irritating substances are allowed to accumulate upon the teeth day after day no gum tissue could heal under those circumstances, no matter what form of treatment had been given, and the next hour at the dentist's office would be spent by him in doing what the patient should have done for himself.

Most new patients will say to you when you criticise the condition of their mouths, "Why I take good care of my teeth." Upon further questioning you will perhaps be told that they brush their teeth from three to five times a day. Then why are the results so unsatisfactory, you ask yourself. It may be due to a variety of reasons, or any one of them. The chances are that they have never been taught how to care for their mouths. It is not an easy task to learn by oneself, and requires individual instruction from a dentist who understands efficient methods. That there are but few of the latter is proven by the evidences all around us, not only in the mouths of patients, but in the mouths of the dentists themselves. Then the patients may be using soft brushes, or perhaps only one brush, which if used several times a day would always have soft and moist bristles. Then,

too, the brushes may not be adapted to meet the needs of their mouths. They may not be using dental floss; and so we might continue to enumerate a long list of possible reasons for this failure to obtain results by such faithful care. One intelligent brushing will accomplish more than four unintelligent ones, and this fact we must impress upon our patients' minds.

The dental profession is at fault here because but few members of our honored number have given the matter any study. The author wonders how many dentists there are who have no soft deposits on the lingual surfaces of their lower molars, or on the buccal surfaces of the upper third molars. Blessings on the dentist who knows how to care for his teeth, and does so. Like every reform, it is best to begin at home, so every dentist should have a healthy, wholesome mouth before he even considers practicing dentistry, let alone oral prophylaxis.

Before using an instrument of any kind in the mouth, take the trouble to show your paient the exact condition of his mouth. Tell him that he is responsible for the soft deposits which you point out to him. It makes a deeper impression on his mind if you have him watch you in a hand mirror while you loosen some of the soft deposit, for then he is sure to see it to advanatge, as it shows up larger than when lying against the tooth. Call his attention to the irritated gum margin, which you always find with the soft deposits, for in this way you can impress him with the fact that he must care for his mouth, not only for the sake of cleanliness, but for the health of the mouth tissues as well. After he has watched you work around a few teeth he will be so disgusted with the condition that he will hand you the mirror and apologize, or say something which will reward you for the extra trouble you took to open his eyes.

I hear some one say, "That is all right for people who do not take care of their mouths, but my patients brush their teeth." Now in oral prophylaxis we do not consider approximate cleanliness, we must aim for absolute cleanliness, and so we judge from that standpoint. The oral prophylaxis specialist objects to the slightest deposit on any tooth surface, and to him a small amount is as disgusting as a large amount. The writer wishes to say that from her observation, which

has been among a refined and educated class of people, that the person, when first coming to her who knows how to reach all surfaces of the teeth, is the exception, as is also the patient who, after learning how, fails to do so under normal conditions.

As has been said before, it is necessary to remove, at the first sitting, visible deposits, in oftentimes alarming and disagreeable quantities, but we must look upon this as charity work, for such conditions exist because of dentists' lack of interest in oral hygiene. So for the sake of our profession we must do this work, the need of which some other dentist should have prevented, and try to make the patient believe that he himself is to blame, but how could he keep his teeth clean when he did not know how? How could he know how unless some one had taught him, and pray, who could teach him but his dentist? The chances are that he had never had his enamel surfaces put in a smooth condition, and we should not expect a patient to keep rough surfaces clean. His mouth may exhibit much poor dentistry. Could we expect him to keep it wholesome if this is true? Here is a situation that we must face, for we are responsible and the patients are beginning to find us out. It is not enough to tell patients to get a tooth brush, tooth powder, and perhaps a mouth wash, and to use them twice or three times a day, and to brush their teeth hard. This is very unintelligent advice and much harm with a small amount of good comes from its being followed. The author insists on patients brushing their teeth after each meal, or when any food is taken, which latter rule has been productive of much good in more ways than one, for it has in many instances resulted in patients refusing food of any kind between meals, because of the discomfort they experience if unable to use the brush or floss. This is, of course, beneficial to the general health.

Each case should be carefully studied before any brush or brushes are prescribed. No one tooth brush or set of instructions will answer for all cases, because numerous and varied are the conditions we meet in different mouths. Teeth vary in size, shape and position, and the different kinds of artificial work are too numerous to mention. Is it not unreasonable to suppose that one brush could be made which would fill this variety of needs? In adults we very often find a small mouth, with short crowned teeth and tense cheek

muscles, and in such a case a small brush should be recommended. If the cheek muscles are elastic and the tooth crowns are long, or if the gums have receded, making the distance exposed from gingival to incisal or occlusal edge a long one, then we should advise a wide brush. While the gums need and should have massage and stimulation by brushing, yet we must depend upon the exposed tooth surface as a support to our brush, so that only on very long surfaces should a wide brush be used, otherwise the gums might be injured or irritated instead of stimulated.

Oftentimes there is a tooth standing alone in the posterior part of the mouth to which it may not be practicable or advisable to bridge. This must be kept clean, otherwise it not only would have its own life endangered but would prove a menace to the general health of the mouth. This tooth needs a brush with an extremely short head, so short that the bristles will not strike other teeth which would interfere with its action around the single tooth. Many people are wearing shelf bridges, and a special brush is needed to care for these, if we would have wholesome mouth conditions. Where the teeth are separated and there are no contact points, still another brush is necessary, and so we might continue the list of various conditions.

This is a very important subject and should receive our immediate attention. It is hoped that the time will come when druggists will carry a more efficient line of tooth brushes, and not merely a jumble of brushes which are of but little value. The druggists lay in a supply of brushes which are well advertised because they expect a greater sale of those. But if the dentists in the various cities would get together and decide upon a number of useful sizes and shapes of brushes, see to it that these were manufactured in large quantities, and placed on sale in at least one store in every city, then all dentists would be able to recommend the suitable brushes which different cases need. Is it just that our patients should be dependent upon advertisements or the druggist's advice in selecting weapons for this, our war against uncleanliness and disease of the oral cavity? Without good tools even a good workman may do poor work, so we must be sure that our patients are equipped with good tools.

The author wishes to call attention to a few shapes of brushes which have done good service and filled many needs for her patients.

No. 1. This brush is used to advantage in a large mouth where there is considerable tooth surface exposed, as where the gums have receded, or where the teeth have long crowns. If this brush be recommended to a patient whose third molars are present it would be wise to suggest his using No. 5 in connection with it, for it is much easier to get at those teeth with a small brush and short bristles. The disadvantage of using a brush with long bristles for wisdom teeth is, that, owing to the limited space in the back part of the mouth, the bristles bend over and wipe a surface with the body of the bristle instead of brushing with the point.

No. 2. This brush is of especial value in caring for single teeth, i. e., teeth that stand alone in any part of the mouth, also in caring for the second and third molars when the first molar is absent, and a space exists between these and the bicuspids. It is useful, too, in keeping salivary tartar off the lingual surfaces of lower incisors.

Nos. 3 and 4 are for adults with all natural teeth present and but slight, if any, gum recession. Wherever a space exists between teeth, the tooth surfaces facing this space should be cared for by carefully rubbing them with floss, preferably the unwaxed. Use No. 3 for short-crowned teeth, No. 4 for long-crowned teeth.

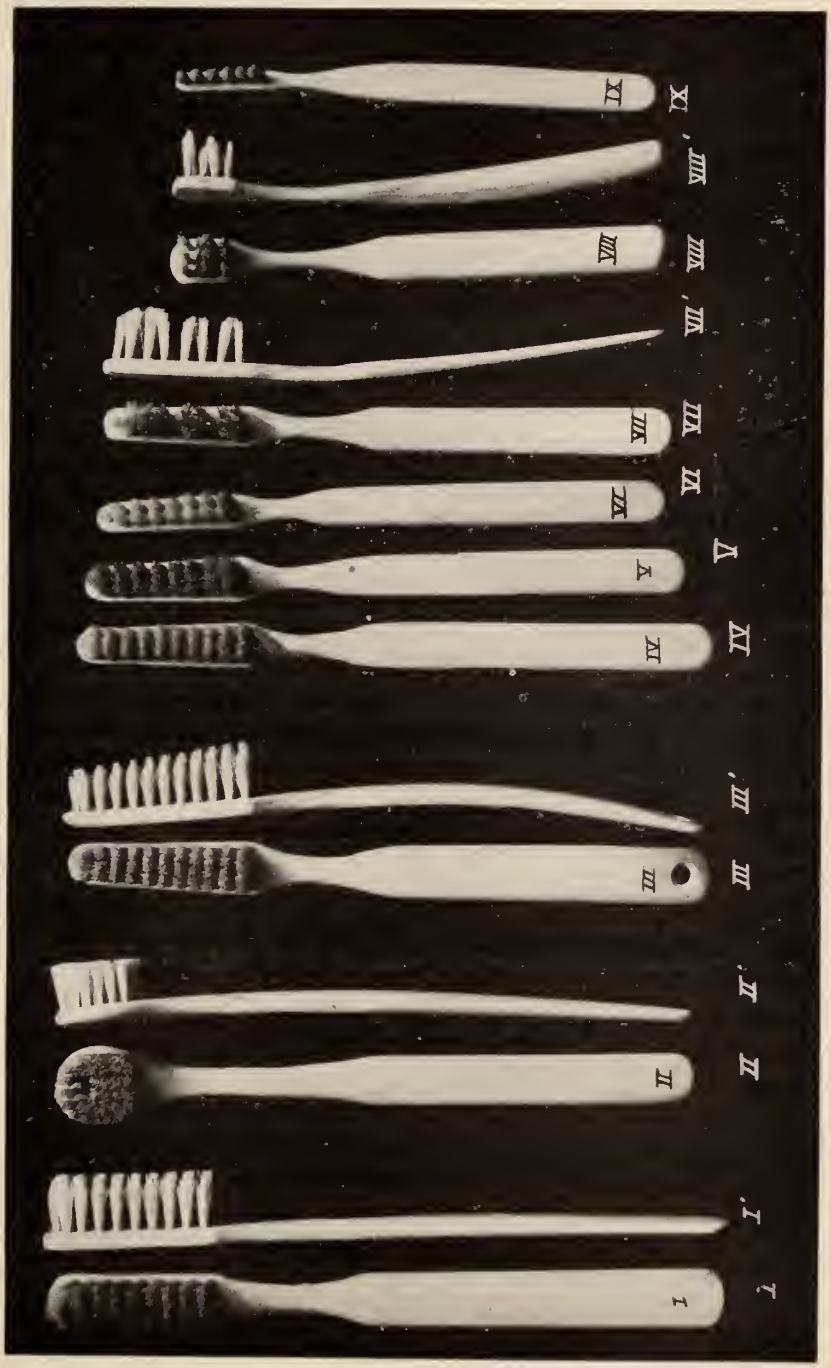
No. 5 is a very good size for children from six to the time the second molars are in place, when No. 4 should be substituted.

No. 7 is called a pyorrhea brush, but in the author's opinion, it is of value in any tooth arrangement or condition where there are crevices or small spaces existing between teeth, as are found where there is destruction of soft tissue or alveolar process.

No. 6 is for children from two years of age to the eruption of first permanent molars.

No. 8 is for shelf bridges or lower molars with a decided tip lingually.

No. 9 is the child's first tooth brush, and can be used to advantage up to two years of age. It is also useful for adults in brushing the surfaces of roots exposed by gum recession,


I, I, II, II, III, III, IV, V, VI, VII, VIII, IX, X

where but little friction is allowable and yet where a small amount is necessary to health and cleanliness. The roots of the teeth being less dense and hard will wear away with the same amount of friction given the enamel, and so it is necessary to explain this to the patient and to warn him against vigorous brushing of those surfaces. The thin edges of gum tissue coming up to these surfaces are in danger of being irritated by a brush used for general brushing, while they need massaging and stimulating instead. All of these brushes can be used to best advantage with the circular motion, excepting Nos. 7 and 8, which should be used with a rake movement, upward on the lower teeth and downward on the upper teeth.

The quality of bristle should be what the manufacturers call medium. This is not too stiff for healthy gum tissue which is of very low grade sensibility, and the reason a patient usualy chooses a brush with soft bristles is because his gums are sensitive and bleed easily, which are sure indications of an unhealthy condition. It is necessary to recommend brushes with the medium stiff bristles because it requires friction to remove coatings or deposits, and soft bristles merely wipe a surface, and do not produce enough friction or stimulation. For this reason, too, one should always have two brushes of each kind which his case requires so that by alternating them they will have ample time to completely dry out between times of using. In order to facilitate thi drying and to avoid the back of the brush being soaked or discolored, it is a good plan to absorb the moisture from the the bristles with a clean cloth.

Where there is gum recession be sure to warn patients against vigorous brushing of the exposed cementum, as it is easily abraded by too harsh brushing or by using much powder. It seems appropriate here to warn the beginner in oral prophylaxis against using a powder which is too coarse. It must, of course, be sufficiently abrasive to keep the tooth surfaces clean, yet not so abrasive as to wear tooth surface, hence one of the advantages of compounding your own tooth powder, since you can vary it to fill the needs of various patients. After one has obtained a highly polished surface of enamel it is surprising what a small amount of friction

is needed to keep the teeth clean, especially the labial surfaces of the anterior teeth which will almost take care of themselves.

It has been proven that many cases of so-called erosion have been produced by the eating of acid fruits. The author has had several patients under her care who started eroded areas by seeding grapes with the two upper central incisors and the tongue. In one instance quite marked areas on these two teeth were eroded within a period of one month. Lemon juice, even in a dilute form, attacks the enamel readily, and our patients should guard against indulging too freely in this acid fruit. During the fruit season, patients with gum recession are apt to complain of their teeth being sensitive. Acid fruits irritate the exposed cementum and these unfortunate ones should choose the fruits they eat with caution, although the warm solution of bicarbonate of soda will keep them fairly comfortable.

The most difficult places for patients to care for are the distal surfaces of the third molars, the buccal surfaces of the upper molars and lingual surfaces of the lower molars. The first difficulty can usually be overcome by carrying the dental floss back over those teeth and polishing the distal surfaces. The other difficulties can usually be met if the patient is taught to carry the brush high enough (or low enough, as the case many be) to feel the bristles on the gum tissue. In this way they have a guide to work by and are sure to care for the surface next to the gum margin, which so far as the health of the gum tissue is concerned is most important.

Dental floss should be used at least once each day and then just before retiring. When you have convinced your patients of the importance of this you will be surprised at the number who will tell you that they have to use it after every meal in order to be comfortable. This can do no harm if properly done so as not to injure gum tissue, and the mouth will certainly be much more wholesome, and the liability to decay of proximal surfaces much lessened. You must teach each patient how to use the floss with care and to explain to them its purpose, that upon the dental floss depends the care of two surfaces of each tooth. It is not enough to simply pass the floss between the teeth past the contact point, but each proximal surface should be polished with the floss

which should be kept well under control (this can be done by taking a firm hold of the floss with the fingers of the right hand a very short distance from those of the left, leaving the working length of the floss very short). For the patient the flat dental floss is preferable to the ordinary thread floss which has been on the market so long, as it removes food particles and is better for polishing tooth surfaces. Always have patients use the dental floss and brush their teeth before you, then there can be no question of a misunderstanding of instructions.

This may seem like undue emphasis being placed on small things, but it is because we have neglected to consider these details that we have failed to prevent such appalling conditions as we see every day in the mouths of even the intelligent and refined. It is always much easier to blame some one else, but here is a case where we must shoulder the blame and wake up to the crying need of humanity.

The specialist in oral prophylaxis has an opportunity second to none for educating the public, not only with regard to the health of the mouth, but with regard to the ordinary rules of general hygiene. By seeing our patients at regular intervals we have such a fine opportunity to study their general health, and one can, with tact, most properly inquire into some of their habits of life and suggest or emphasize simple rules of hygiene. As the oral prophylaxis specialist sees many patients as often as once each month she has more of an opportunity to observe and watch the general health of these patients than their own physician, and may as a result of observation oftentimes prevent such conditions as come about by disobeying laws of health.

The more one knows about any subject the better judge he is of anything pretaining to it. Therefore the more our patients know about dentistry the more capable they will be of judging us and our work and the more respect they will have for us. The dentist who works straight ahead with no explanation is losing an opportunity to do good for his profession. We have nothing of which to be ashamed in our work and much about which to be proud. Patients do not know the mechanical ability, skill, thought, study and delicacy of touch it requires to be a dentist, and it is our right to ex-

plain operations to them so that they will see that we are not simply "plugging holes" or "making false teeth."

It is the especial privilege of the oral prophylaxis specialist to explain to all intelligent patients the process of decay and tooth development. Patients ought to know the names of their teeth, something about filling materials, tooth anatomy, bacteria, and the difference between an abscess and an ulcer, also between nerve and tooth pulp. They should be taught that a repaired tooth is never as good as a perfect tooth, and not to be proud of a filling. Teach them to value their teeth and to take pride in them and their healthy mouths.

Oral prophylaxis is doing much for dentistry since it is raising the public's demands of us, and with their increased demands we shall certainly have to rise to meet their expectations. The oral prophylaxis patients know the value of their teeth and mouth health, and have no use for the dentist who does not. If they must have a repair they consider that the best imitation of nature is none too good, so they demand the best. By passing floss between their teeth every day in an intelligent way they discover fillings with overhanging margins, so woe unto the dentist who puts in such a filling. These patients appreciate, too, the artistic dentistry and want it when it can be had.

The author is confident that every dentist who has conscientiously and intelligently practiced oral prophylaxis will say that it has changed for the better his attitude toward his profession, and raised his ideals so that his work is now more of a pleasure than a duty.

In oral prophylaxis we have made mistakes because we are in an undeveloped field of dentistry and there is much yet to learn, but these mistakes are so small, compared to the good that has resulted, that we know we are in the right. So give us a helping hand, at least a word of encouragement, and it will be appreciated.

## UNBANDED VERSUS BANDED CROWNS.*

By Richard L. Simpson, A. M., D. D. S., Richmond, Va.

Throughout my remarks the terms "banded" and "unbanded" refer to crowns having pins in the roots and some form of porcelain, for the sake of appearance. For fear some may misunderstand me, I want to state, by way of parenthesis, that I believe the gold shell crown, properly made, is the best and strongest substitute we can supply for inconspicuous places. To be so, it is, in a great number of cases, necessary to insert a pin or pins in the root and build it up with amalgam. These pins make the whole root bear the strain, and prevent the crown's breaking off and carrying the coronal part of the tooth with it. The shell crown's strength is in the cusp, not in the band. For this last reason, in bridge work, the dummies must be attached to the cusps of shell crowns as well as to the bands.

To me the greatest incentive to incessant work is the thought that life is short and there is so much to be done. My days are always too short. Then when I realize that many days of my life have been spent in doing useless things, things that could have been done more quickly, with less pain, with less nervous energy, and at the same time done better and made more durable, you can more fully understand why it gives me pleasure to urge upon you a system of crowning teeth that will enable you to accomplish more in a day, do it with less pain, do better and more beautiful work, and with far less loss of nervous energy.

In our efforts towards perfection, we too often forget that complication does not necessarily mean excellence. This is especially so in crown and bridge work, and I am convinced that our professional skill and ingenuity have been the cause of many wasted hours, wasted in doing what is useless.

The crown which I shall advocate as the strongest, most hygienic, most beautiful, is at the same time the most simple. To get your attention centered, it is simply a pin in the root, gold plate over end of root, and a facing of your favorite selection. There is no need, whatever, or intelligent excuse for a banded crown. Such an admission on my part calls

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

for some courage, since any early recognition I may have had accorded me was on account of the banded crown. In fact, one of our latest text books refers to my anatomically banded crown (hat-brim method) as "one of the most useful variations." In spite of pride of achievement, truth demands that I make the statement at the beginning of this paragraph, viz., there is no need whatever, or intelligent excuse for a banded crown. Fact is fact, stated or unstated. The most enthusiastic advocates of the banded crown claim only two points of excellence, viz., prevention of root-splitting and more secure attachment. This contention is like paying $50.00 to collect $10.00, a waste of time, money and nervous energy. If we had no substitute for the banded crown, there would be no need for argument.

Before taking up the unbanded crown, let us be stimulated by the glaring defects of our enemy:

1. Difficult to prepare root,
2. Painful to prepare root,
3. Difficult to make band,
4. Painful to make band,
5. Difficult to adjust in bridge work,
6. Unnecessary consumption of operator's time,
7. Unnecessary consumption of patient's time,
8. Unsightly (as ordinarily made),
9. Irritating to gum (as ordinarily made),
10. Adds no inherent strength to crown,
11. Adds only slight strength of attachment,
12. Adds no protection to root not more easily secured.

So you see there are ten points against it and two in its favor, and these two are only assumed, because they can be secured more easily, with less pain, and more quickly, by other means in the unbanded crown. 1 to 7 needs no discussion. They are self evident. 8 and 9 are also true, but can be overcome by making reinforced or anatomical bands, not hoops. The anatomical shape and accurate festooning will enable the gum to cover the labial part, and remain in a healthy condition, but to make such requires expert skill and Christian perseverance. 10 is easily proven by cutting off the band of any crown or bridge, after which the remaining part will be the exact strength of the original. 11 is also proven by the fact that very short shell crowns are hard to

keep on, and pins have to be soldered on in the greater number of cases. Assertion 12 will bring out the greatest thought and discussion because those who have used banded crowns do so believing that the results justify the difficult means. I am equally as earnest in asserting that their results would have been as good, or better, if the bands had been left off in every single case. They claim that the band keeps the root from splitting, and they have ingeniously abandoned the labial half of the band, knowing that the lingual half is the part that really carries the whole root forward. Good reasoning, but not carried far enough. Bands lead them into error, and so great is their faith that they even shorten their pins, depending upon the band. The band is not the foundation of crown work. The pin is the foundation.

Pin in the root—plate over end of root—facing of your favorite selection.

Pin of iridio-platinum, round, size 14 or 15.

Iridio-platinum, because it retains its stiffness after being soldered, and does not oxidize, thus assuring a perfect attachment to other part of crown. Cheaper metals, such as platinoid, iridiumoid, or any other German silver compound, will not do, for the converse reasons. Round, for the convenience of purchasing, ease of shaping to fit canal, ease of shaping canal to fit the pin, minimum cement, maximum strength (the last two are because it nearly fills canal). Square or rectangular pins allow two much cement, lose strength at the expense of shape, and to be of equal strength necessitates too much destruction of root. "A little learning is a dangerous thing." In earlier days some one started the idea that square or rectangular pins are stronger than round ones. And so they are, but only where their weights are equal.

Figures 1, 2 and 3 represent the same size canals filled with round, square and rectangular pins, respectively. A glance shows you the relative increase of cement space. Your common sense alone shows you that you cannot increase the strength of a round pin, Fig. 1, by cutting off its sides to make it the shape of Figs. 2 or 3. By so cutting you not only weaken it, but in the case of Fig. 3, render it liable to split out the section of root directly in front of its narrowness. Curved taper in shape (Fig. 4) because that is the shape of the root; because it allows minimum cutting of root; because

of ease of insertion of bridge on divergent or convergent roots; and because of strength and size where most needed. The greatest strain on the pin is just above the juncture with the coronal part (Fig. 4, a). Occlusion crystallizes the metal here, rendering it liable to break, and excessive strain bends it here.

Size 14 or 15, for the reasons just given, and because experience has proven that smaller sizes bend, and also form insecure attachments. Larger sizes necessitate unnecessary cutting of root and unnecessary expense. Size 14 or 15 is large enough for all purposes. To be retained by the cement

Fig. 1

Fig. 2.

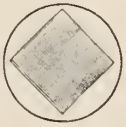
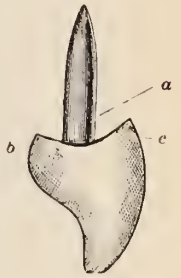


Fig. 3.

Fig. 4



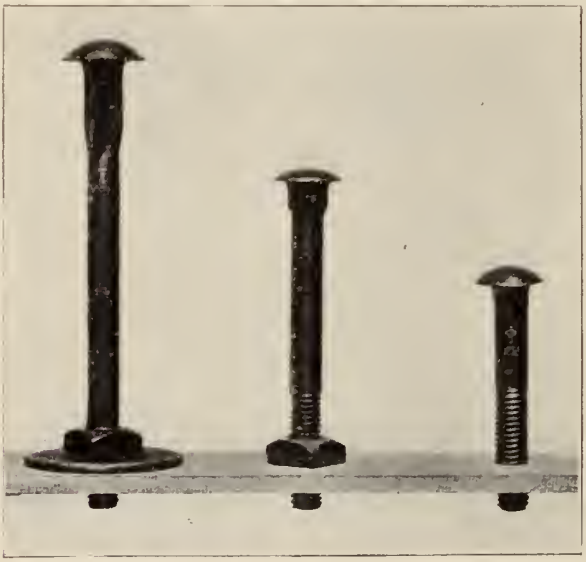

it must be roughened. The best way to do so is to hold it in a pin vise and shape it with a rubber plate file, which leaves it with sufficient roughness. Nicking is injurious in that every nick is a notch to encourage a break.

Length means strength. Strength means permanence of attachment, and root protection. We know that the deeper into the ground a fence post is placed, the more secure it is. So, also, the deeper into the root we put the pin, the more secure becomes the attachment, and the whole root bears the shock of any strain. Length and size give all the attachment necessary. A single crown should have a pin at least as long as the facing. Leverage is thus equally divided between crown and root. A shorter pin makes the leverage in favor of the crown, and the root is liable to be split. Give all the advantage to the root, since by this method it can be so easily done, and does not add disadvantages. Do so, as another crown can be made, but a split root is a serious problem. In bridge work, strain against the root is still further increased, and extra length of pin means extra

strength, making the whole root bear the force instead of putting it on the part of the root at the gum line. An eighth of an inch more pin length adds as much strength as any band.

The plate should be of gold, 24k, 34 gauge, because it is easy to adapt and forms no blue line at joint, as does platinum. Your attention is called to Fig. 5. This is a piece of board with three bolts of equal size screwed into it. The bolts are of regularly increasing length. Bolt A is the shortest and is simply screwed into the board. Bolt B is also screwed in and has a nut screwed against the board. Bolt C

Fig. 5



A B C

is not only screwed in, but has a washer against the board and a nut screwed down upon it. It takes very little pressure against A to split the board. B is longer than A, and therefore the leverage in its favor is greater, but in spite of this, more force is required to split the board than was used on A. The nut overcame the increased leverage. For C, the longest bolt, decidedly more force is required. In fact, when the washer is of the same size as the width of the board (as exists in the mouth) the tendency is for the wood to twist in two rather than split. In the mouth no such exaggeration of lever-

age exists. This experiment and experience prove that where we have a long pin of ample size, and a plate over the root end, we have all the strength necessary, and bands are simply useless encumbrances. Sloping the root, as is usually done, still further increases the strength, by taking the force off the front half of the root and transferring it to the back half. To make this experiment still more applicable it is only necessary to call your attention to the resemblance between bolt A and an ordinary pin in the root; to the resemblance of bolt B to a Davis, or S. S. W. detachable pin; and to that of bolt C and a pin and plate crown. But besides all this, bridge troubles are not so much from split roots. Upon a properly constructed pin and plate you can mount any facing your experience teaches you is best. For single crowns, there is nothing, to my mind, stronger, more hygienic, more beautiful and more easily repaired, if necessary, than a Davis or S. S. W. detachable pin crown mounted upon a so-called double plate and iridio-platinum pin, base or cast gold base (see clinic). For saddle bridges, the same teeth are used. For ordinary bridges, Steele's facings have been a great comfort, and would be more so if the cuspids and bicuspids were more like the natural ones.

Just where tooth and gingival margin join, both lingually and labially, nature has placed on the teeth a slight fullness (Fig. 4, b and c). I call its protected area a Snug Harbor, because in it gum finds protection from impact of food, does not recede, and remains in a hygienic condition. Usually unbanded crowns do not necessitate its removal but if it should be removed, by all means restore it in your crown. In adapting banded crowns this fullness is or should be always removed, and the failure to reproduce it on the band is one of the chief causes of recession of gum or gingivitis around a banded tooth. This even applies to shell crowns. For the methods advocated are claimed the following advantages (comparative):

1. Easy to prepare root,
2. Painless to prepare root,
3. Easy to make crown,
4. Painless to make crown,
5. Easy to adjust bridge,
6. Saves operator's time,

7. Saves patient's time,
8. No display of gold,
9. No irritation to gum,
10. Maximum inherent strength,
11. Sufficient strength of attachment,
12. Sufficient protection to root,

Twelve points in its favor, and none against it.

Don't hesitate! Have full confidence! Let me persuade you! And as delicate gum finds rest in its snug harbor, so also will the principles here outlined be to you a snug harbor.

## CARE OF THE TEETH OF THE POOR.*

By W. I. Jones, D. D. S., Columbus, Ohio.

Two thousand years ago Christ uttered these memorable words: "The poor ye have with you always." They are still with us, an ever present thorn in the side of the merry makers, an everlasting burden to civilized society, but in those two thousand years great progress has been made. They are no longer considered as outcasts and slaves, but as unfortunate brothers. Schools are everywhere for their mental and moral development; homes are founded for unfortunate homeless; hospitals maintained for the care of the sick and injured; township physicians are for those in country districts too poor to have a physician, and in the cities, district physicians are furnished for those unable to employ a family physician. Almost from every standpoint has society seen fit to care for his physical and moral health, but from the dentists' viewpoint he has been sorely neglected, and the object of this paper is to awaken in the dental and medical professions a keener interest in the dental welfare of the poor, especially the children of the poor.

Several months ago a lady patient of mine who is interested in settlement work, was in my office, and she told me during our conversation that a few weeks previous to that time she had had a number of the little girls from the settlement house over to her home for dinner, and she said that one thing

*Read before the Northern Ohio Dental Association, June, 1908.

that struck her as being unusual was, that their conversation so often turned upon their teeth. They could not enjoy their dinner as they should, because of aching teeth and sore mouths. Can you imagine a more pathetic picture, little children suffering constantly from a disease that is the most prevalent that attacks man? And why? Perhaps the primary reason is because of the ignorance of the parents. A second, and more effectual reason is their inability to pay for the services of a dentist; and a third, the lassitude of the dental profession in educating the public, and even a part of the medical profession, in the importance of the care of the teeth and mouth.

I asked for the privilege of examining the teeth of the children in this settlement. It was pointed out to me that they did not have the legal right to conduct a physical examination of any of the children, but they said they would be glad if I would give them a lecture on the teeth, and they suggested that I might, after gaining the confidence of the children, examine their mouths. This I did, and after talking to them for a short time about the teeth, and after explaining to them that micro-organisms and bacteria, which we called bugs for the sake of simplicity, might crawl around in the mouth and eat up the teeth and tonsils, just the same as that unspeakable bug might live in the hair and fairly eat up the scalp, I succeeded in persuading twenty-five out of the forty-five to allow me to examine their teeth. Twenty-four out of that number needed the services of a dentist. Other institutions visited only reinforced conclusions arrived at, that the treatment of dental diseases is a public necessity.

I next sought to examine the teeth of the children in the public schools, and called upon the superintendent. He admitted the advisability of medical and dental inspection of school children, and advised me to see the hygienic committee of the school board. The chairman of that committee is a physician, and heartily in accord with any movement looking to the physical improvement of school children, and would gladly assist in furthering the work, if I could secure the consent of the whole board, but even then it would be necessary to proceed very cautiously for fear of exciting the ire of some fond but ignorant parent, who might think it was being done for personal gain, and that his child was being molested.

This is especially true in districts of the city where foreigners predominate. The futility of the effort was seen when the city law department gave an opinion in a paper read before the Columbus Academy of Medicine, by Mr. J. L. Davies, that the board of education may adopt such reasonable rules for the medical inspection of the pupils in the public schools as are necessary to the life and well-being of the school, and that beyond this limited sphere they had no right to act, and in order to secure medical or dental inspection of the public schools it would be necessary to have further direct statutory authority. After reading this opinion, I gave up the attempt at inspecting the schools.

The medical profession is now conducting a campaign of education looking towards the introduction of a bill into the legislature that will empower school boards to compel medical inspection. Under our present laws it is impossible to compel the dental care of children, as is done in a great many of the cities of Germany, where there is a systematic examination of children's mouths. The parents are notified of the child's condition, and if unable to pay for the work himself, is compelled to send it to the free school clinic, where the work is done at the city's expense. Though admittedly behind us in dentistry, Germany is alive to the dental needs of her children. Even Russia is awakening, and is establishing free dental clinics where school children may receive the care so necessary, not only to their peace and comfort but to their health and longevity.

Haven Emerson, M. D., of New York City, writing in the New York Medical Journal, says: "I had the opportunity of examining the teeth of 2,301 applicants for the Sea Breeze Health Home at Coney Island, under the auspices of the New York association for improving the condition of the poor. The rapidity with which the examinations were made, and the lack on the part of the examiner of technical skill in observing dental defects, are responsible for at least a very conservative estimate. Of the 2,301 applicants examined, 189 were infants, 1,478 were children from one to fifteen years, and 634 were women and girls over fifteen years. Of the 1,478 children, 273, or 18.8 per cent had no defective teeth, leaving 1,200, or 81.2 per cent. Among these 1,200 children I found 5,996 decayed teeth, almost five apiece, or an average

of 4.7 decayed teeth for each one of the 1,478 examined. Of the 634 applicants over fifteen years old, only 19, or 3 per cent, had no defective teeth, leaving 615, or 97 per cent, in whom 4,022 teeth were found to be decayed. This makes an average of 6.5 decayed teeth for each of the 634 examined. There were also found in this group, 1,655 teeth missing, and in addition, 1,444 artificial teeth, making a total of teeth which had been removed, presumably for advanced caries, of 3,099, or an average of 4.8 for each one of the 634. Combining the numbers of those removed and those at present decayed, we have an average of 11.3 teeth decayed, or 28.8 per cent of all the teeth of 634 adults, severely enough diseased to be more or less permanently ineffective.

I venture to suggest that one way in which the prevalence and increasing incidence of respiratory disease may be checked will be by a prevention and correction of dental diseases.

To summarize my ideas upon this subject, I may say that carious teeth are so numerous among the tenement population, and the manifest results of digestive disturbances caused thereby are so far reaching in their effect upon the welfare of the individual and the state, and the danger of communication of infectious diseases is so much increased by the presence of unclean mouths, that prophylaxis and treatment of decayed teeth should be undertaken on a comprehensive scale as a public necessity.

Dr. Lawrence W. Baker, in the Boston Medical and Surgical Journal, reminds us that diseased teeth are a cause of other diseases of the human body, and that the control of these dental diseases is a factor in preventive medicine worthy of attention, and says that dentists should be placed upon the staff of medical inspection of the public schools, for the condition of the child's mouth is just as important to its health as the condition of its throat and nose.

Dr. Wadsworth, in the Journal of Infectious Diseases, October, 1906, says:

"From the hygienic standpoint the secretions of the mouth constitute the chief, if not the only, source of respiratory infection, and the infectious material is transferred from one person to another, in some instances through the air, as

from sneezing or coughing, but to a much larger and more serious extent directly by personal contact, or the use in common of the various accessories of life."

An inspection of the mouths of the school children of Malden, Mass., found 75 per cent of the children affected with carious teeth. Dr. Zederbaum, in his investigation in Michigan, shows that the same alarmng disregard for oral hygiene prevails there as well as among the cultured New Englanders.

Now we might go on definitely multiplying evidences, showing the necessity for the better care of the teeth of the poor, and especially the children of the poor. Dental diseases are common and cause much physical suffering, and the needs of the poor are great. What are you going to do about it? I would suggest that expert dentists be placed upon hospital staffs. Dental societies should put into circulation booklets on oral hygiene and the care of the teeth. The dental profession should provide lectures for schools, settlements, teachers' institutes and other educational societies. All state benevolent and correctional institutions should have resident dentists who would undoubtedly render a far greater service to humanity than some of the ornamental officers that are maintained at public expense.

A movement should be set on foot for the purpose of securing to the poor in the country districts, township dentists, whose services will be paid for by the township trustees, the same as the township physicians. In the cities, boards of health should appoint district dentists, who may work in fields that are truly ripe for the harvest, and where the reapers are few. The medical profession should co-operate with the dental in teaching the laity the dangers arising from wide-spread, prolific and virulent mouth infection, for that eminent authority, Dr. Osler, is responsible for the statement that in the whole realm of hygiene, there is not one thing more important to the public than oral hygiene.

## BARRELS AND BUNGHOLES AT THE STATE MEETING.

By H. C. Sexton, D. D. S., Shelbyville, Ind.

Said Rabelais, the great Pantagruelean Frenchman: "Many men pass all their lives in a barrel and only look out at the bunghole." This remark was brought forcibly to my mind by the following: At our recent state meeting only those dentists were admitted who were either members or paid for the privilege, the same as members. In past years no assessment had been levied on visiting dentists from the state, which was an obvious injustice to the members, who each year settled the bills. Three young dentists of my acquaintance, non-members, who in previous years had attended at least the exhibits, walked up to the door, but were stopped by the attendant in plain clothes. They wore no badges. A badge would cost them two dollars. They hesitated, talked it over, then turned and left.

And so the apropos remark came to my mind, "Many men pass all their lives in a barrel and only look out at the bunghole."

The most important thing in the whole wide world to a man is that man's opinion of himself. Those men's self-respect must have received quite a jar that day. They attempted to grasp a benefit, that others were paying for, without contributing one penny themselves. They recognized the benefit else why were they there? Yet they were willing to filch it. But am I not mistaken in my verb? Perhaps, like one great authority, I should say, "The wise convey it call."

Such was not the intention of these young men, I am sure. The barrel and the bunghole were all to blame. What a miserable barrel! What a measly little bunghole! After a few years of such living, sad to say, they will be mentally deformed for life, for the mind is as susceptible of deformity as the leg. You know Milton has said:

> "The mind is its own place, and in itself
> Can make a heaven of hell, a
> Hell of heaven."

A great philosopher once said that many men's lives reminded him of the story of a traveler out west who entered

upon a broad sunlit highway, fringed with beautiful trees, thinking it must surely be the approach to some grand palace; but the further he advanced the narrower grew the road, until in the end it turned into a squirrel track and ran up a tree. I fear me the life paths of the young men of whom I speak will turn out to be nothing but squirrel tracks, possibly lined with anterior gold crowns, but squirrel tracks just the same.

What we need in this world is a broadening philosophy, a philosophy that will make us wise. You know it is not learning that makes us happy, but wisdom—wisdom to so live that we earn our own self-respect. Without that the world tastes bitter; with it life even in a hovel is a blessing.

But here I am jumping upon those poor young men whose only fault was blindness, or at the worst, stupidity. Have I no barrel and bunghole of my own? Are we association members entirely free from them? Have we no motes in our own eyes?

Why, at the critical moment, as those young men stood wavering before the door, did not one of us step up to them, appeal to their sense of justice as to the equity of the rule, urge them in the name of good fellowship to join, help them to get rid of that miserable barrel? In other words, why did not some one do a little missionary work? There is only one answer to the question. It was because of the fatal aloofness of society members toward non-members.

If but one of them had been persuaded to become a member, then he who had accomplished the work could have gone home well pleased with himself, rejoicing as in a good deed well done. It was that exquisite artist in words, Robert Louis Stevenson, who said: "I know what pleasure is, for I have done good work." Think of that! He had done good work. Not work that paid him a great deal of money, but work of which his soul approved.

We all realize what it means in dental practice to feel better pleased with ourselves over a well planned, skillfully executed piece of work that puts two dollars in our pocket, or even nothing, than over another piece of work that nets us twenty. If this is true of us as individuals, then it would be true of us in the mass—as an association.

In regard to the new members, we are not doing good work, and no wonder we take no pleasure in it. We negli-

gently take what fruit falls into the basket, but we do not labor to pick the fruit. Two-thirds of it still hangs on the tree, some of it already rotten, and in time all will rot, yet we sit in the shade and wait for it to fall. Talk about barrels and bungholes! Are those three young men any worse than we?

I shall end with a fable. Here it is:

Once upon a time in the long, long ago (all fables, you know, begin thus) there was a man who went into a pasture to milk a cow. He needed the milk badly for his own sustenance. He was poor and thin and scrawny. People had little respect for him; he was too small and weak. With the milk of the cow he could become well and strong and fat and would command the respect of the world. But, strange to say, he did not at once hasten with his pail to the cow. He sat down in a fence corner muttering, "If I but wait long enough the cow will back up here and then I can get the milk without the exertion of walking across the field." That happened long, long ago. The man is still sitting in the corner with an empty pail. In all these many years the cow has never once backed up to be milked.

In my opinion that man represents the average dental association, and that unmilked cow stands for the profession at large. The moral is this: Don't sit down in a fence corner and wait for the cow to back up and be milked. Go after the cow.

## ANNUAL ADDRESS OF THE PRESIDENT.*

**By Edward Eggleston, D. D. S., Richmond, Va.**

In compliance with a provision of our By-Laws, the duty devolves upon me of presenting to you an address on this occasion. My conception of the object of this message is that our members be familiarized with the affairs of our association, and at the same time that suggestions be offered and recommendations made concerning the future conduct of this association.

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

With this idea in view I shall attempt to give a brief account of my stewardship, a short history, as it were, of the affairs of this corporation, and the way the same has been conducted during my administration, and after so doing I shall bring to your attention certain matters which seem vital, not only to the future success of this association, but also to our professional standing and advancement.

As you all know, I have served in this capacity for two terms, owing to the fact that in 1906, at our annual meeting, held at Old Point, we concluded to combine our efforts in 1907 with those of the Jamestown Dental Convention.

After meeting and transacting such business as seemed imperative, we merely re-elected the same officers for another year, a procedure not only constitutional but for which there is more than one precedent in the history of this body.

I consider it both proper and desirable in this connection to run over in a cursory manner our association's relation to the Jamestown Dental Convention.

At the Old Point meeting of 1906, a day or two before my election, we appropriated to that cause the sum of $400.00, which represented practically our entire reserve fund. I did not consider it wise, and so expressed myself at the time, but a great majority of our members present voted in the affirmative.

Later on we concluded to tender this convention a banquet, and I assumed the responsibility of appointing a committee to carry out this purpose. When we got to Jamestown there was some little uncertainty existing in the minds of your officers as to the wisdom of attempting to have this entertainment in view of certain circumstances, which seemed to militate against it, among them was the fact that our treasury was already completely exhausted. I called a session of this body for the sole purpose of ascertaining the will of our members under the conditions named.

You voted to have the entertainment at all hazards, and, instructed the committee to endeavor to raise the necessary funds by private contributions from our members. Your committee went to work, under the chairmanship of Dr. Chas. A. Mercer, and no stone was left unturned in our efforts to tender a royal reception to our guests. Notwithstanding the fact that this further appropriation of money,

although both generous and hospitable, did not seem prudent and expedient to me, the expressed will of this association regarding its own affairs has been law to me since you honored me with this trust. Therefore I co-operated to the best of my ability with the committee which I had previously appointed, and by virtue of their arduous labors the entertainment was a splendid success, and one which did full honor and credit to this association, as no doubt most of those present well remember.

Dr. R. L. Simpson, who was elected treasurer of that committee, collected by private subscription $231.50. The entertainment cost us $294.50, which was $63.00 more than the sum total of the contributions, which sum was advanced by Dr. Simpson himself, who must be reimbursed at this time.

Furthermore, our members each paid $5.00 to enter the Convention Hall, so that all told we contributed, either as an organization or as individuals, to the success of the Jamestown Dental Convention, the following sums: Appropriated from our treasury, $400.00; contributed to entertainment, $294.50; paid in initiation fees, approximately, $515.00, which sums aggregate $1,209.50.

Now we come to consider the most vital matter which dentists, or members of any other branch of the healing art, have ever confronted. I refer to the fact that dentists today are neither educated, nor recognized as specialists in medicine and surgery, although it is certain no one can deny that they are exactly that. We must stand out boldly for the recognition of dentists, or oral specialists, as legitimate specialists in medicine and surgery, first by an act of the legislature and, secondly, by a revision of our system of education. The most remarkable fact recorded in the history of any branch of the healing art, is that we, who have full charge of the oral cavity, and the various diseases, both local and constitutional, which manifest themselves there, have for more than half a century remained content, or apparently content, to be classed as mechanics, or artisans, and as doctors only in name, while every other branch of the profession has been recognized as a legitimate specialty of medicine or surgery, even including the so-called osteopaths. Some who have ulterior motives for trying to prevent this recognition by any possible method of side-tracking the movement, have

tried to advance the argument that it must be postponed, or that we must ask the consent of the National Association of Faculties, that it cannot be done by any local legislation.

That argument can be answered by simply asking the question: What did the osteopaths do when they went before the legislature of Virginia in 1905, asking recognition? The Virginia legislature recognized every one of them who had a license to practice, whether they had a college degree of any kind or not, as legal medical practitioners, or practitioners of the healing art. How can any man in the face of these facts claim that we, who have charge of one of the most important localities of the human organism, cannot ask and receive, at the hands of our legislature, as much as they (the legislators) have conceded to the osteopaths?

The situation is not only embarrassing to a self-respecting man, but it militates in an untold measure against our service to the public and against our own advancement. We cannot hope to secure the high esteem of the public, and the intimate co-operation of other branches of the profession unless we are recognized as a specialty of that profession.

In this connection I am forcibly reminded of the condition of the thirteen American Colonies during the period immediately preceding the outbreak of the Revolutionary War. There were certain rights which the people in this country recognized as being their natural inheritance, but which were strenuously denied them, by the mother-country, solely because Britain had ulterior motives for her oppressive conduct. There were men who argued, immediately before our revolt, that we should wait patiently for future developments, in the hope that our oppressors (notwithstanding their personal interest in opposition to the colonies as they saw it) would some future day conclude to grant to us our rights without any action on the part of the colonies. Those who really desired to prevent the independence of the colonies, but who realized the unwisdom of boldly declaring their position, said: "Some more convenient day we will contend for our rights, but not now." A subtle scheme to defeat an object, but one clearly descernible to an analytical mind. Then rose up in opposition to these internal enemies, men like Henry, who declared: "Why sit we here idly crying peace, peace, when there is no peace? Shall we sit supinely by and

see our enemies bind us hand and foot until we have lost all powers of resistance, or ability to defend and maintain our natural rights?" Our situation at this time is exactly a parallel case in many respects. We should immediately take warning, and profit by the records of history.

True, indeed, the difficulties are great, and our opposition should not for one moment be underestimated, but we have a better opportunity today than we will ever have again in the future, to demand and receive what by rights belongs to us, and who can say us nay when we propose to meet every requirement demanded in the education of the general practitioners?

Realizing these obvious facts, we Richmond men set to work to see what could be done to bring about our recognition by the law, by the other branches of medicine and surgery, and, most important of all, by the people themselves. To this end our city society appointed a committee instructed to work for our full recognition and for the full medical education of future dentists.

Later on when our plans were pretty well formulated we got instructions from the city society to take this matter before the State Association, and ask that body to appoint a committee to co-operate with us for the accomplishment of the great work which we have in hand. We brought this matter to the attention of the State Association at Jamestown, and this body instructed its president to appoint a committee of five to co-operate with the committee of the said city society. It further declared: That the two committees should amalgamate themselves and act as one, for the purpose of securing the passage of a bill recognizing dentists as legitimate specialists of medicine and surgery, and requiring that after a certain date (so as not to interfere with the rights of those who had entered the schools) that all men entering the practice of dentistry should do so on the basis of a full medical education, and, with two practitioners of dentistry added, they should pass the regular medical board just as all other specialists do. This committee worked faithfully and enthusiastically and will report to this association the progress of their work at the proper time.

I will state here that many members of the legislature said to me in person that they could not understand how

anybody could offer a reasonable objection to our recognition when we proposed to qualify and ask no favors.

It is our hope and aim to gain our object through the medical schools, and any dentist should be proud to occupy a chair, and instruct the student, in a school recognizing and educating its dental men to be full equals of other specialists.

Of course, if it becomes necessary, we can easily establish separate schools, but I do not believe that necessity will arise.

I believe, with your firm backing and the excellent work of the joint committee continued, that it is not only possible but extremely probable, that at the hands of the coming legislature we will, one and all just as we now stand, receive the recognition which we, as practitioners and human benefactors, so richly deserve. There is one fact which I desire to emphasize, one that cannot be too forcibly impressed, which is, that the success of this movement is very largely dependent upon the action and support of this association. Your committee is harmonious, and prepared to do the work, but the moral support of this association is absolutely essential. With this, as I have said, although I warn you that we have certain opposition, I do not believe we can be defeated before the next legislature.

We should conserve our finances from this time forward in order that we may have sufficient funds when the next legislature meets, to defray the necessary expenses of putting through our bill.

Any further information on this subject will come before you in due time under the head of Reports of Committees.

Now I have a few general recommendations to make for the future welfare of this association, and I trust the committee appointed to consider this paper will examine these carefully, and if they seem well founded will recommend the adoption of the same in their report.

To begin with, I recommend that a committee be appointed, instructed to carefully revise and amend our by-laws and code of ethics in such particulars, and to such extent, as in their judgment will make the same most useful to this association under present conditions.

I recommend that the committee on legislation be continued (until our next annual meeting, and until their work is completed). I recommend that the committee be increased

to include the present members form the Richmond City Society as a part of the committee of this association. This action will facilitate the work of the committee.

I recommend that the committee on clinics be made one of our standing committees. You will remember we have no such standing committee, and acting under our by-laws, I deemed it necessary to create one for this meeting.

The committee on old and curious dental instruments should be abolished. It is unpleasant to any practitioner to be selected to serve on that committee, and it is equally unpleasant to the president to detail men to serve on a committee of that character. It has been my plan to select for that committee good-natured and broad-minded men so they would not feel hurt at being appointed on a committee that would make it appear that they were entirely out of date.

After mature consideration, and with the advice of men from other state associations, it is my conviction that our initiation fees and annual dues should be increased; the former to $5.00 each, and the latter to $3.00 per annum. Dr. Thomas Hinman, of Atlanta, Ga., informs me that he has had much experience with the workings of state associations, and that it has been proven that $5.00 dues is best, that the meetings are larger and more animated and that they have sufficient finances to pay the expenses of clinicians, etc. In making the recommendation, I have taken a middle ground, and recommend that our dues be increased $1.00 per annum. It is my opinion that this will greatly improve the attendance and add to the interest of our meetings.

I have one more recommendation to make, and in order to be sure that I am not misunderstood, I wish to make a preliminary statement.

During my administration, your executive committee, who at present have more authority the the president himself, have not only worked faithfully for the success of this meeting, but as I have already said, have been generous enough to permit me to exercise authority at times, which really belonged to them. I make this statement because I am going to recommend that a little of their authority be taken away from them. In our national government, our state government, and almost every form of government, there is an executive head, and it is my conviction that this association

should have an executive head. The president should have authority to control the affairs of the association during his brief term of office. The executive committee should be his advisers, and should be required to execute the plans for our meetings according to a program laid down by the president. Then everybody would look to the president alone for a successful meeting and if it was deficient he alone would be compelled to bear the odium. Therefore, I recommend to you that in the revision of the Constitution and By-Laws you instruct your committee to increase the authority of the president to this extent, and that in case of sickness or other disability of the president that the first vice-president should have full authority to act, etc. Our present system of government involves a certain amount of uncertainty as to whose business it is to look after its various affairs, and my sole object is to concentrate it all, so that there may be no uncertainty as to where the responsibility for a successful meeting rests.

As this is my last opportunity, I wish to thank you one and all for your uniform courtesy, your hearty and loyal support and your generosity in allowing me to exceed the duties of the president in my efforts to make this meeting a success.

When I entered upon the duties of this office I resolved to promote in every possible way the social features of these meetings, to work for harmony, good will and brotherly love among all our members, and I have the great pleasure of declaring that to the best of my knowledge and belief such feelings have never been more uniform among us than at the present moment. I will always remember with pride and gratitude the fact that you imposed in me sufficient confidence to elect me to the highest office within your gift. I shall retire from it with nothing but the kindest feelings for you all.

The welfare of the Virginia State Dental Association will ever remain close to my heart.

# HISTORY OF DENTISTRY IN VIRGINIA.*

By Geo. F. Keesee, D. D. S., Richmond, Va.

Many men of many minds have taken in hand to furnish information for their less informed contemporaries and colleagues of what was a true account and history of the origin of dentistry. These writers have traced back to Egypt and Greece, many years before the Christian era, as the source from which sprung the rudiments of the dental art.

By a connecting chain, link by link, they have traced the close relationship, which, even in those early days, bound medicine and dentistry as twin sisters, working in the healing art.

In a paper read by Dr. Geo. H. Chewning before the Virginia State Dental Association, 1878, I get the information that Galen, about 160 A. D., gave his description of the practice of extracting teeth, and for the healing of diseases of the oral cavity, and prescribed formulae for dentifrices and washes. In its westward progress in 1728, a dental surgeon, Fauchard by name, published a work systematizing the various procedures in the practice of dentistry, and gained such celebrity for himself that, at the present time, we look back to him as the Father of Dentistry.

Some of those of note in the eastern hemisphere, either from a sense of humanity, or in quest of gain, migrated westward, and, crossing the ocean about 1780, were scattered in the New England states, and as preceptors attempting to instill a knowledge of dentistry. On his native shore, Dr. John Greenwood was the first American dentist, and soon enjoyed a lucrative practice.

Moving southward, the scintillation of the sparks of knowledge continued to be cast out, and almost by intuition, the fire was beginning to burn in the hearts and minds of men; and Maryland developed a score who yearned for higher ideals than had ever yet been set up, and, as the result, in 1839, founded the first college for the teaching alone of dentistry and its collateral branches. Among its first graduates was a Virginian, Dr. W. W. H. Thackston, who, from that day and during the remaining years of his life, ranked as the

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

Lord Chesterfield of southern dentists. With the fire and enthusiasm which always characterized him in his earnest endeavors to plant the standard of his first love a step beyond, it is to be presumed that he was one of the charter members of the first state society which was organized December 12, 1842. It is not possible at present to say how long this society maintained its organization, but surely for several years, and had for its first officers, Dr. Lethbridge as president, and Dr. John McCabe as secretary.

Notable among their contemporaries were Drs. Joseph R. Woodley, John McConnell, F. B. Chewning, James Johnston, John G. Wayt, John Mahoney, George W. Jones, Lee, Talley and Early. These, with a score of others, maintained a standard which was as a boon to the state in the giving of relief and comfort to the people. Whilst these were men of ethical minds, yet even in that early day there blossomed and bloomed the "quack," for Mr. Modecai, in his book, "Richmond in Bygone Days," tells of one Peter Hawkins, a tall raw-boned negro, who, about 1812, advertised himself as a "Tooth drawer," and rode about the streets as a movable dental parlor man. His "pullikens" were carried in his pocket when he rode, and his dexterity was such that he has been known to extract teeth without dismounting. The barber, too, varied his tonsorial abilities by the twisting out of molars. Their days have not yet been numbered.

In 1842, Drs. Chapin A. Harris and F. B. Chewning, two of the leading men of the profession of that time, were united in a co-partnership in the city of Richmond, and claim to have been the first to have inserted dental plates on the principle of atmospheric pressure. Also here it was that Dr. Harris drew the patterns and had made his first forceps, eight in number, for extracting; and also wrote his "Practical Treatise on Dental Surgery." Although the fire had smoldered in the organization of 1842, yet there were latent brands that could not be quenched, but caught new inspiration in 1870, and under a call there assembled in Richmond, November 3, of that year, a few whose ambitions could not be realized by their isolation from their fellow practitioners, but who craved for that contract which makes us brothers akin. But few in number, yet under the leadership of its first president, Dr. J. F. Thompson, of Fredericksburg, there started out on its

mission, the Virginia State Dental Association, having for its object, as stated by Dr. Thompson on assuming the chair, the elevation of the profession and the better protection of the same by appealing to the state legislature. How well these objects have been attained may best be described by referring to the status now occupied by the dentist in the eyes of the public, being regarded as the equals of other professions; and having a dental law which excites the admiration of almost every state in the Union, this latter being the outcome of the persistent and earnest efforts before the legislature of Drs. Chas. A. Mercer, J. Hall Moore, J. R. Woodley and W. W. H. Thackston. The needs and demands of an exacting body of dental students have brought into existence in Richmond, within the past fifteen years, two well equipped dental colleges, whose graduates have, before the dental examining boards of the several states, exhibited a percentage equal to that of the best.

# EXCHANGE OF PRACTICAL IDEAS

[This department being an exchange of practical ideas, it depends upon our readers furnishing material to keep it going. Just a few practical ideas from each subscriber will make it of mutual benefit and practical worth. Are you willing to do your share? Help the good cause along by sending the editor a few practical suggestions. Send something today. Address Dr. L. P. Bethel, 1255 Neil Ave., Columbus, Ohio].

## PRACTICAL HINTS.

By A. P. Kilbourne, D. D. S., Stewartstown, Pa.

I have used contour fillings on posts for many years pins from those broken teeth that have been accumulating? Don't crack them (and your fingers) on the anvil. Just heat teeth well under blowpipe and drop in cold water. Most of the pins can then be pulled out with pliers.

How much easier that gasoline blowpipe would be managed if we could only do away with one of those pieces of rubber hose that are always getting twisted just when we are "just ready to flow the solder."

Try this: Drill a hole in the blowpipe just back of the air valve, solder in a piece of tubing. Attach short piece of rubber hose to tubing and connect with air pipe of blowpipe. Stop the air valve on the generator and leave blowpipe connected with generator by gas hose only. You will get the same pressure as before and the blowpipe handles so much easier. I have used mine about six months since remodeling and have no desire to go back to the "two hose" way again.

A coarse garnet disk can be made to cut away those mesio and disto-lingual angles when grinding a stump for a shell crown. It will adapt itself to the curve of the tooth at this point, and reach where a stone can not be made to go.

In backing a tooth—after placing backing on tooth, remove and anneal, replace on tooth, cut pins off or bend down, use hard pressure with ball of thumb on backing and it will go to place at all points at once. Keep the burnisher off unless used very lightly and only on extreme margin of backing.

Repairing broken facing—have used method mentioned by Dr. Spooner (August issue Dental Summary) of repairing broken facing by use of Ascher's enamel, in two cases. Lasted about six months. Had trouble to keep "enamel" dry while setting, was cause of their short lives.

Here is one for repairing plate when time to vulcanize can't be had. Block tooth off plate. Cut dovetails in rubber, place tooth in position and pack with amalgam.

Gold-casting machine—I made a gold-casting machine as described by Dr. Reaben in August issue of Dental Summary, but had trouble with the carbon crucible, so I made a brass form, slightly cone shaped, having a flat base and with hole drilled through the center. To use, pass wire through the hole so that cone side is toward the wax impression. Invest as with the crucible. When investment has set remove wire and "pop" the form off with the point of a knife and use the depression in investment for crucible.

## CAST CONTOUR FILLINGS ON A DOWEL.

By M. A. Payne, D. D. S., Wabash, Ind.

Having used contour fillings on posts for many years for badly broken-down teeth in those cases where crowning is undesirable, and porcelain, because of the stress of mastication, is contra-indicated; a great many methods have been used, but for expediency, appearance, adaptability, etc., I find the following method surpasses them all:

The pulp has been, or should be, removed. The cavity is so prepared that no weak corners or overhanging enamel is left standing. Such preparation usually affords plenty of space for the necessary manipulation. A dowel, preferably of clasp-metal wire, gauge 16 or 18, is adjusted in the canal, protruding enough to enter well into the filling. Inlay wax is pressed into the cavity and contoured exactly as you desire

the filling. The bite will assure you that occlusion is proper. The wax filling with the post attached is carefully removed and taken through any process of casting. Any further necessary attention to the cavity should be given at this time, the filling partly polished and cemented to place and later given the final polish. You will not be disappointed in the lasting qualities of such a restoration, and the patient can be assured of its great durability. It is especially useful in bicuspids, cuspids and incisors. Such a filling also makes a splendid abutment for short bridges.

# SUGGESTIONS

## SHOULD PROFESSIONAL MEN PAY COMMISSIONS?

The question of commissions among professional men is one that should require no space for discussion in dental literature, for to give commissions should be beneath the dignity of any professional man. We regret, however, to find that conditions are such in certain parts of the country as to justify the expression of an honest opinion on this most demoralizing subject.

This is an age of specialism. Men are specializing in dentistry as they have been in medicine for a number of years. When a practitioner gradually drifts into the practice of a specialty, the question which naturally arises is, "How can a sufficient number of patients be obtained to maintain him in the special work?" The one unequivocal answer should be to render the very best service possible, be he engaged in orthodontia, the treatment of pyorrhea, the extraction of teeth, or any other specialty. There is room at the top in any walk of life and no practitioner should engage in a specialty unless he has thoroughly prepared himself to do the work; and having done this any man or woman can succeed if he is honest, capable and deserving.

Those specialists who give commissions endeavor to justify the act by arguing that the dentist who refers the patient spends more or less time in having the patient go to the specialist and, therefore, has earned his commission. This is, indeed, a thin curtain behind which to hide. Take, for example, the case of a child in need of orthodontic work in a family all of whom are patients of a general practitioner. If the latter has not the ability nor the time to regulate the teeth for that child, he owes it to the family to refer the case to a specialist who is capable and honest; and, furthermore,

if he feels that he has rendered a service to the patient in the way of consultation and advice, for which he is entitled to a fee, he should be man enough to demand the fee himself and not expect to get it in an underhanded way through the guise of a commission from the specialist to whom the patient was referred. In plainer English, let us say that if the dentist does not possess the courage to tell the patient that he owes him a fee, it is a graft in its most flagrant form to accept it in any other way. Both the specialist and the dentist who accepts the commission are equally guilty; for, as Dr. C. N. Johnson says in an editorial in the August number of the Dental Review: "This bid for patronage on the part of a specialist is equal to a tacit acknowledgment that he has not the ability to win his way on merit."

In a letter to the alumni of the Angle School of Orthodontia, Dr. Norman W. Kingsley said:

"Bear in mind that you are engaged in a profession, not in a trade. The education, culture and customs of civilization all accord superiority to the learned professions and require that they be conducted with dignity and in a manner to avoid reproach. There is an unwritten code of ethics among honorable men which you will not violate, but while your vocation is beneficent and humanitarian in a large sense, it is also a business and must be so conducted as to bring a remuneration equal to a similar education and ability in other occupations in your environment. You are entitled to fees that will maintain your social standing with the better class of your neighbors. You must get these fees by your recognized skill. You must obtain patients on your merits and not under any circumstances by offering or paying commissions to any one whatsoever. Commissions offered to a professional brother means bribery, detested by all honorable men. Commissions exacted are equivalent to the demand of the road agent of the plains—"Stand and deliver." Commissions paid by you mean cowardice. You yield to a "blackmailer" under the threat of injury. You yield to the demand from your professional brother under the implied threat of a loss of bread and butter. It is nobler to go hungry than buy bread at the sacrifice of professional dignity and honor."

This question of commission-giving is not confined strictly to dental specialists; for it is known that some dentists, unworthy of the name, are giving commissions to druggists, starters in office buildings, etc., for referring patients. It is a sad commentary on the medical profession that many surgeons are splitting the fee for the same purpose.

It is a still sadder commentary that many needless operations are performed because a liberal fee is in sight.

The local societies should take up this matter with all the energy at their command and erase this blot on the fair escutcheon of dentistry. Let us remember the words of an unknown author that "self-control, self-reliance and self-respect are three things that make a man a man."—Editorial in Dental Digest.

## COMMISSIONS AMONG PROFESSIONAL MEN.

**C. N. Johnson, Chicago.**

If there is any one thing more degrading than another in professional relationships it is the practice of paying commissions. That is for a specialist to pay a general practitioner a commission for patients referred by the latter to the former. It is in every way wrong, misleading and wholly demoralizing. If one dentist refers a patient to another for service it is only because of the fact that the other can perform the service in a more competent manner or has more time. It is in reality a favor to the general practitioner to have some one who will take care of cases that he is not equipped to care for or has not the opportunity.

The patient is supposed to pay the specialist precisely what the service is worth and no more, but if the specialist pays a commission to another practitioner it of course must come out of the patient's pocket, who is thus made to pay two men for the service of one. This is taking a mean kind of an advantage of the patient and it is so wrong in principle that it ought to have no place in professional procedures.

The practice of graft in the business world has been sufficiently condemned in the public press and by all right thinking people. The principle has been attacked in our courts of justice till the very name has become a stench and a by-word. What then shall we say of such methods in professional life? Simply that they are abominable and in every way degrading. This bid for patronage on the part of a specialist is equal to a tacit acknowledgment that he has not the ability to win his way on merit.

The profession of dentistry has not been slow to support legitimate specialists when they have had merit and there is no excuse for offering commissions except the unworthy one of policy and greed.

Two men combine to do a definite wrong whenever a commission is paid for professional service—the specialist who offers this alluring bait to the general practitioner for his "influoence," and the general practitioner for accepting something for nothing and something to which he has, by any kind of reasoning, not the slightest right. And be it said both men are equally guilty, the one who offers the commission and the one who accepts it. Neither can be as good a man nor as honest nor as professional as if he held himself above this kind of practice. No man ever reached out his hand and accepted a commission from a specialist without being demoralized by the act, and no man ever reaped a permanent reward from such methods.

It besmirches alike the one who pays and the one who accepts, and leads inevitably to a disintegration of character which reacts materially as well as mentally. It enriches not the purse and makes poor indeed the spirit of the participants. It is wrong in principle and should be frowned on by every true professional man as unworthy recognition in our ranks. Dental Societies are taking up the matter and no specialist who offers a commission can hold membership in them. The spirit of professionalism is dominant after all and while there may be a few who still thoughtlessly indulge in this practice it will eventually be stamped out of our professional life. It must be.—Dental Review.

## REPAIRING A HOLE IN A CROWN.

**G. W. Johnston.**

It is often necessary to repair a large hole in the occlusal surface of a molar crown. This may be accomplished successfully in the manner described below: Remove the crown and scale off any cement that has adhered to the root, and drill out the cement in the crown. Replace the crown in position on the root and press wax into the opening in the

crown, being careful to leave enough extending occlusally to take an imprint of the opposing cusps. Take a bite in this wax and remove crown with wax intact. Flow plaster into the crown, and when it is set remove the wax. If the hole does not include too much of the occlusal surface the operator may retain in his mind the approximate form by studying the impression in the wax before removing it. If the hole includes a large portion of the occlusal surface the cast inlay method may be adopted. In the first instance make a matrix of the cavity and flow gold into it, building it up to the occlusal form as accurate as you can. In the second instance cast a gold inlay, place it in the cavity and attach to margins with solder. This will provide bulk of metal to insure the crown from failure due to the first cause of the hole. The occlusal surfaces of gold crowns are usually made too thin.—Review.

## A METHOD TO STRENGTHEN AND SUPPORT A LOOSE TOOTH.

**O. H. Simpson, Dodge City, Kansas.**

For several years I have been employing in my practice a method that has been very satisfactory to me, and is the only thing I know of that will remedy the condition, where a shell crown proximates a loose tooth, and food continues to fill the interspace, thus irritating the gum, as is so often the case

FIG. 1

FIG. 2

between first and second, and second and third upper molars. The same result can be accomplished by crowning both teeth and soldering the crowns together; although I have made crowns fit so tight between teeth that they were very uncomfortable, and found that in a short time the food would work

between them; but in case the adjoining tooth does not need crowning, there is no other method than the following that I know of:

After the shell crown is made, solder a spur of 24k. gold on the proximal surface of the crown, as shown in the model (Fig. 1). Place the crown in place on the stump, and bend the gold spur back over the grinding surface of the loose tooth. Carefully remove and reinforce with solder. The result is shown in Fig. 2.—Dental Brief.

## NEW STERILIZER.

At a meeting of the "Societe Odontologique de Geneve," Mr. Gardet introduced to the profession a new sterilizer for hypodermic syringes and also mentioned this research and discovery of an ideal liquid disinfectant for both syringe and needles, which has no injurious effect on the metal. This solution is as follows:

| | |
|---|---|
| **Lime water** | **1 litre** |
| **Trikresol** | **20 grammes** |

Lime water is obtained by dissolving 2 grammes of calcium hydrate in one litre of distilled water; allowed to stand a day or two and occasionally shaken, after which it may be filtered and the trikresol added.—American Dental Journal.

## AMALGAM.

**M. Ward, Detroit, Mich.**

More mercury than we should leave in the filling should be used to put the alloy into solution.

At no time during the mixing of the alloy and mercury should the mercury be in such proportion as to make the mass sloppy. If it be in such proportion it is said to be in excess.

The effect of a slight excess of mercury upon an alloy that shrinks is to increase the shrinking.

The effect of a slight excess of mercury upon an alloy that expands is to increase the expansion.—Dental Cosmos.

## BICUSPID RESTORATION

A. J. Cottrell Knoxville, Tenn.

The following method of restoration, which is a cross between the Richmond crown and an inlay, is, in the opinion of the writer, the most practical yet suggested. It may be made by casting or by soldering, but owing to the great difficulty in getting an accurate wax model the soldering seems preferable. Take for instance a case with the buccal wall broken away. Remove the irregularities in the remaining wall, giving the base such a shape that the finished piece will be firmly seated, and extend the bucco-cervical wall slightly under the free margin of the gum. Slightly shorten the palatal wall (Fig. 1), giving its end a semi-tenon-like shape (see a, Fig. 1), this to be firmly engaged by the finished piece.


Fit a platinum pin to one root canal, then burnish a platinum matrix to the prepared tooth, being careful to burnish it well over the prepared end of the palatal wall, push the pin through the matrix and into the root. Then with a cone of paraffin wax, the point being slightly warmed so that it will adhere to the matrix and pin, thoroughly swage the matrix to the face of the root and wall, being careful to carry it well over the prepared end of the palatal wall. Remove the wax, matrix and pin together; invest, solder the pin and reinforce the matrix (see Fig. 2). Notice the extra amount of solder placed at the point (a, Fig. 2); unless this were done it would be very difficult to carry the solder well over this point in the invested piece. Place the matrix in place on the tooth, again burnish the edges, take a plaster impression and wax bite, make a model, mount on the articulator, grind and fit the facing, back with platinum, wax together and build up

with inlay wax, carve the cusp, swage the metal cusp from platinum foil, fit it in place and proceed as with any other soldered inlay. It is imperative to use platinum in the construction of this restoration because of the great heat required to flow the solder into the deep box-like receptacle presented in the invested piece. Fig. 3 shows the completed restoration. Fig. 4 shows the restoration in place. For restoring the palatal cusp the procedure is the same except that the extremity of the buccal wall is simply given a fine bevel as in A, Fig. 5, and the entire restoration made of gold solder as in Fig. 6.


The restoration in place is shown in Fig. 7, giving the appearance of a tipped facing. As stated in the beginning, these restorations may be made by casting, but owing to the difficulties presented in the effort to hold the wax model firmly while carving, and by the fitting of the facing and pin, the writer gives preference to the method described. The gold also may be cast into the platinum matrix, but in this case no solder should be used.—Dental Brief.

## RETAINING FRAIL WALLS BY NON-COHESIVE GOLD LINING.

**Langdon S. Chilcott, Bangor, Maine.**

Dr. Langdon S. Chilcott, Bangor, Maine, demonstrated a conservative method of retaining frail labial walls of enamel and covering cervical walls by the use of non-cohesive gold lining and by finishing the semi-cohesive gold. It is not

necessary to get angles or retaining pits to start the filling with. The cavity is excavated in the usual manner, being shaped in such a way that the gold is, of course, held in mechanically. The non-cohesive gold is either folded or rolled so as to give, in most cases, fifty or more thicknesses of No. 4 foil when placed in position. The ribbons, or the ropes, as the case may be, are cut into lengths a little more than the depth of the cavity, and placed into the cavity in such a way that the cut ends will extend slightly over the edge; the entire wall of the cavity, if possible, is lined in this manner, the gold being well condensed against it. The remaining portion of the cavity is then filled with some semi-cohesive gold, and the filling dressed in the usual manner.

The whole method is entirely simple, and the advantages consist in better adaptation to the walls than is possible with cohesive gold alone. It can be used in more frail cavities, and with a better finish than most of us can attain in using non-cohesive gold alone. The clinician does not claim to have originated this method, although he has used it for a good many years.—Dental Cosmos.

## WITH REFERENCE TO THE TENDENCY OF INLAYS TO BECOME UNCEMENTED.

**M. V. Hopkins, Detroit, Mich.**

I believe the two principal reasons, as I believe most every one will agree, are the faulty cavity preparation or faulty cementation. I do not believe that saucer-shaped cavities, with no form or depth, can be filled successfully with either porcelain or gold inlays. A few years ago it was advocated that if you put enough pressure on a porcelain inlay it should be retained in any shaped cavity; but I now believe that it is absolutely necessary to have a certain amount of form and seating retention for all fillings. The cavities with which I have had the most trouble in cementing inlays are cervical cavities near the gum line, where it has been next to impossible to have that cavity absolutely dry when the cement is introduced. The cavity walls may appear perfectly dry, but if there is a bit of moisture under the gum the cement

is liable to cleave from the walls of the cavity. I liken it to plaster which has set on a glass slab; when it is dry it is exceedingly hard to detach from the slab, but let us put a little moisture on one side and it soon loosens. I believe that cement is loosened from the cavity in the same way, and that this moisture infiltrates under the cement, as it seems to be in those cavities where it is very difficult to keep the margin perfectly dry when the cement is introduced that we have the most trouble.—Dental Register.

## THE USE OF THE MATRIX AND POST IN BUILDING UP WITH AMALGAM, BROKEN DOWN TEETH.

**R. E. Sparks, Kingston, Ont.**

Recommended a matrix made of banding or thin plate, soldered to the size of the restoration required; the head of the post coated with tin.

Advantages—A perfect antagonism obtained by bringing the opposing teeth in contact with the soft filling, the matrix may be left in position until the filling becomes thoroughly hard, a perfect attachment of the amalgam to the tinned head of the post.—Dominion Dental Journal.

## CONTOUR AND POLISH OF FILLINGS.

**B. W. Neave, N. S. Wales, Australia.**

In polishing the lingual or buccal surfaces of a filling, there is not much difficulty experienced. I find of great service to me the ordinary dix mandrel for the right-angle handpiece, and this is one of my most valued assistants.

When one comes to the gingival border of an approximal filling, however, more trouble is met with, for we have to take extreme care to keep the point of contact as perfect as possible. Here I find I am most succesful in the use of the polishing strips, generally halved down their length, and threaded between the teeth, getting the cervical margin pol-

ished before anything is done elsewhere. Sometimes one meets with a cavity, extending so low down on, say a bicuspid, that in place of the approximal surface of the tooth being convex, it is concave owing to the tendency to bifurcation of the root. This is a very difficult part to finish perfectly, perhaps most satisfaction being obtained from the use of approximal gold trimmers. Here the careful use of a properly bent matrix is the best assistant one has, or, rather, the best preventive to any excess along the gingival border.

When the occlusal surface is much involved, the result is much more artistic if the various sulci are strongly marked, besides leaving a more naturally roughened surface for mastication. The cusps, however, during polishing, frequently become reduced, much to our dissatisfaction, when we try to smooth the whole surface, grooves and ridges alike.

The more fillings I insert, the more I feel that sufficient care must be invariably taken in both contouring and finishing each and all of that class of work which leaves our hands. Failure to recognize this fact can not be excused in any conscientious worker, and if in this paper on such a subject, I have said anything which will encourage one in the painstaking handling of his patients, or turn another from the error of his ways, it has not been written in vain.—Australian Journal of Dentistry.

## IMMEDIATE STERILIZATION AND FILLING OF SEPTIC PULP CANALS.

F. W. Barbour, St. John, N. B.

The rubber dam being applied, the contents of canal are removed mechanically, several applications of full strength sulphuric acid applied for two or three minutes, each being neutralized by saturated solution of bicarbonate of soda. Ten minutes of five per cent of formalin solution completes sterilizing, the canal being filled with some form of antiseptic material; in most cases the clinician uses a proprietary preparation. Results of ten years have been highly gratifying, not more than one in fifty being succeeded by soreness; and but two or three cases have ever been followed by return of septic conditions, so far as known.—Dominion Dental Journal.

## RESTORING A CROWN ON A BROKEN OR DECAYED TOOTH, WHERE AN ALL-GOLD CROWN IS IMPOSSIBLE.

**Louis P. Dotterer, Charleston, S. C.**

After properly trimming the circumference and treating the canals, fit a gold band, knuckling against the adjoining teeth and occluding with the tooth in the opposite jaw, drill holes in the canals and fit screws as long as practicable; protect these against moisture and mix oxyphosphate of copper to form a thin cream. Smear some of this around the inside of the cervical border of the gold band, on the ends of the screws, and in the canals. Place the screws in position and then the bands. All of the surplus cement extending inside the band will fill about two-thirds of the same. When set, the occluding third can be filled with amalgam worked as dry as possible. A little thin oil over the gold will protect it against the mercury. Round any sharp edges and polish at the subsequent sitting.—Dental Cosmos.

## LINGUAL CONCEALED ABUTMENT ATTACHMENTS FOR ANTERIOR BRIDGES.

**Dr. W. O. Fellman, Chicago, Ill.**

Preparation of incisors and cuspids is as follows: Mesial and distal surfaces are disked off flat and lingual is ground enough to get space for sufficient thickness of the attachment. Then a groove is cut with a fissure bur on mesial and distal surfaces in long axis of tooth. These two grooves are connected near incisal edge with a transverse groove. An impression is then taken with gutta-percha. The tooth must be prepared so the impression will draw from the tooth perfectly; make a model with Melotte's metal and burnish matrix and stiffen with 22-gauge iridio-platinum wire tacked with 22k. solder.

Bicuspids differ only in the fact that the lingual cusp is cut off and replaced in the inlay attachment. Molars are prepared by disking the mesial surface from below the gum line

sloping toward the occlusal; mesio-lingual and mesio-buccal cusps are cut off and groove cut, bucco-occluso-lingually with a knife-edged stone. The bulge on buccal and lingual to the groove is ground off so impression will pull off and matrix will fit perfectly. Matrix is stiffened with the wire and cusps are restored with gold and solder. This makes a strong inlay abutment with margins of inlay in immune areas.—Dental Review.

## CROWN AND BRIDGE WORK OF THE FUTURE.

**J. Q. Byram, Indianapolis, Ind.**

Again, venturing a prophesy for the future, let me suggest what I think will be the composite of typical and ideal methods.

For single crowns the all-porcelain, hollow, or "jacket" crown is undoubtedly one of the most practical and cosmetic means of restoring the anterior teeth, and while it will probably come into more general use than it is at present, still the high order of skill required, and the fact that such a type of construction is not universally applicable, will necessarily limit the field of its usefulness.

The use of replaceable porcelain teeth without platinum pins, to be subsequently attached by cement, for individual crowns and also for dummies, or substitutes for the natural teeth in bridge work, must be considered as the solution of the problem of discolored and fractured facings, for the reasons mentioned, and hence is undoubtedly destined to become the practice of the future, as soon as we can prevail upon the manufacturers to supply our wants and needs in this direction.

With porcelain teeth suitable for this purpose—and we will get them some day—we will thus have two general types of construction for single crowns, types which will embrace a field more or less universal in application and general usefulness, for all teeth within the range of vision. Combine these with the ordinary gold shell crown made to fit and to occlude properly, and applied to teeth so removed from the range of vision as to eliminate any objections from a cosmetic viewpoint, and we find a limited number of types, with an almost unlimited range of application.

Having also one general type of dummy for bridge work which will be equally practical, esthetic and applicable in the construction of dental bridges, then we will need but to consider what shall be the type of attachment to the supporting teeth, and I am of the opinion that three general types will ultimately answer our purposes in a very large majority of cases. The replaceable porcelain crown with cast base for anterior roots, where the substitution of the entire crown is indicated; the gold telescope crown for posterior roots, where crowning is demanded, and the inlay where all or even a sufficient portion of the crown of the natural tooth remains, and these attachments are equally applicable to "removable" as well as to "fixed" structures.

Thus may the construction of crown and bridge work be revolutionized, and, therefore, since we have these splendid possibilities ahead of us, must its practice become less empirical and more systematic, practical, cosmetic and successful. —Items of Interest.

## PERMANENT CURE OF PERSPIRATION OF THE HANDS.

Kromayer reports three cases in which hyperidrosis of the hands was cured in two, and reduced to a slight degree of perspiration in heat in the other, by exposure of the hands to the action of the X-rays. He believes that the X-rays may be considered, in the true sense of the word, a radical means of cure of hyperidrosis.—New York Medical Journal.

## SURE METHOD OF SECURING ACCURATE FIT OF COPE FOR PORCELAIN SHELL CROWN.

**Dr. M. R. Harned, Rockford.**

Having prepared tooth with shoulder slightly beneath gum margin, fit loosely a band at neck of tooth gingivally from shoulder; cut platinum foil 1-1000, length of band and sufficiently wide to be sure to lap well over top of tooth and

extend under gum; roll up and slip within band and turn the edge over edge of band to go under gum; slip on the tooth. This will hold margin of platinum safely above shoulder; crimp platinum in to tooth and slip small rubber ring (cut from tubing) between band and platinum, shove firmly down to shoulder; burnish platinum over end of tooth, remove rubber ring and band and burnish any particular places you desire to touch up.—Dental Review.

## MASTICATING SURFACE OF AN INLAY.

**W. M. Cooper, Frankfort-on-Main, Germany.**

The inlay which is obliged to stand the stress of mastication, requires more care and attention after insertion than a gold filling; being of so hard a substance, it does not wear off, as do the natural teeth and gold, and must be tested from time to time with articulating paper, and polished to the normal contour, or there comes a time when they are doing more than their share and carrying the stress of mastication, and displacement or breakage is the result.—Dental Review.

## TANNIC ACID FOR PYORRHEA ALVEOLARIS.

**M. Kner.**

In connection with pyorrhea alveolaris, neuralgic or rheumatic pains are sometimes met, which affect one or more teeth and yield to no remedy, so that the patients often ask to have the teeth extracted. In such cases a concentrated solution of tannic acid—that is, one part of tannic acid to five parts of spts. vini rect. (dilute alcohol)—should be applied. With this solution the edge of the gingivae is painted several times on the sensitive side, whereupon the pain will disappear. This solution generally acts better than silver nitrate or any other remedies. The teeth also become firmer.—Wiener Med. Presse.

# EDITORIAL

## POPULAR DENTAL EDUCATION.

Some ten or fifteen years ago the editor of this journal, realizing the need of educating the public in dental matters, read several papers before various dental societies, one at the American Dental Association, urging the profession to take up the matter in an ethical way, and put into practice the dissemination of dental knowledge to the masses. Several means of doing this were given: through pamphlets or by articles published in the public press, all articles to be prepared by a committee from the American Dental Society, or through talks to school children, teachers, etc.

No action was taken at the time. Perhaps the time was not yet ripe. But it is gratifying to know that the National Dental Association, at its recent meeting in Boston, decided to publish a pamphlet containing dental information for general distribution.

There seems to be an awakening to the importance of teaching the laity more about their teeth. Not from a pecuniary point of view, but from a standpoint of physical health to the present and rising generations. Lectures before mothers' clubs, at teachers' meetings and in the public schools are not uncommon at the present time, and we predict that within a comparatively few years there will be few cities or towns of any size in the United States where the people are not receiving instruction in dental matters.

Talks to school children seem to be the most feasible method of imparting dental information, and we take pleasure in calling our readers' attention to the article in this issue of the Summary, "Dental Education in Our Schools with Stereopticon," by Dr. A. C. Runyan. It is timely, and on a most important subject, and will serve as an excellent guide for any

who may desire to take up the good work. There is an advantage in using such aids as the stereopticon, for it makes the image real to the scholars and is much more impressive than hand drawings, charts, etc., or a talk without illustrations. It seems to the writer that no dental society can do a greater service to the profession and the public than in preparing several sets of suitable lantern slides to illustrate talks before schools and teachers, and loan these slides, under certain conditions, to members, or others, who will make legitimate use of them.

In these days of "Nickel-odeans" and other moving picture amusement places, stereopticons can be found in nearly every city and town, and undoubtedly arrangements could be made for the occasional use of such a stereopticon in the school for illustrating any special talk on dental matters.

Few dentists feel that they can take the time or be to the expense of getting up a series of suitable slides for simply one or a few talks, and the matter is dropped. Now if each state dental society would provide a series of slides as we have suggested, for the use of its members, or other worthy and ethical dentists, who can tell how rapidly the gospel of good teeth would spread, and how much additional good dentists would be doing for humanity.

# NEW PUBLICATIONS

**A Practical Treatise on the Technics and Principles of Dental Orthopedia,** including drawings and working details of the appliances for all forms of irregularities of the teeth, by Calvin S. Case, D. D. S., M. D., Professor of Orthodontia, Chicago College of Dental Surgery, formerly Demonstrator of Prosthetic Dentistry, University of Michigan; Professor of Orthodontia, W. R. U., and Professor of Prosthetic Dentistry and Orthodontia, C. C. of D. S. Author of "Facial and Oral Deformities," "The Development of Esthetic Facial Contours" in the American Text-book of Operative Dentistry, etc., Member of the International Dental and Medical Associations, National Dental Association, Illinois State Dental Society; Honorary Member First District Dental Society, New York City; Honorary Member of the Odontological Society of New York City, and Member of all Chicago Dental Societies. Published by the C. S. Case Company, Chicago, 1908.

The author states that this work is not intended as an unabridged treatise on the principles and practice of orthopedic dentistry, but it is one that is especially designed for teaching the technics and practical principles of correcting dental and dento-facial irregularities in colleges where thorough training is desired. It will also be found convenient and instructive as a reference book in practice.

In the presentation of the work the author has endeavored to systematically arrange the different branches in the sequence that would develop in the natural demands of training and practice.

It commences with the commercially prepared material and carries the work through the several progressive stages to the final construction and adjustment of regulating apparatus and retaining appliances.

It deals concisely with the general and special principles relative to the application of force, diagnosis, classification, causes, treatment and retention.

The description of specific methods of correction commences with simple and complex irregularities that are most common in practice, and progresses through the character-

istic types that are susceptible of classification, with a view to a systematic arrangement especially useful in teaching, and also useful to those who contemplate operations of regulating.

An important feature of the work is the employment of the half-tone illustrations, selected from the author's practice, to illustrate, from a practical standpoint, the several classes of dento-facial deformities, and the results of correction.

The book is divided into six parts, each having several chapters devoted to the practical consideration of such topics as appropriately come under these several headings.

Part I treats of the technical preparation of stock material and implements, methods of construction of dental bows, bars, jacks, etc., methods of taking dental and facial impressions and forming of casts, and practical construction of regulating bands.

Part II treats of the principles of orthopedia, mechanics of movement, anchorage, force and its application. The author here describes all the anchorage obtainable and the results to be expected from each, entering fully into a detailed account of the forces thereby utilized. He speaks of the application of force, physiological movements of teeth, screw force, misapplication of force, elastic force, bending of bars and bows, assembling of bows and seating of nuts, and hygienic requirements. In this chapter he warns operators against too rapid movement of the teeth. He speaks also of the harm resulting from the unskillful and inconsiderate use of wire ligatures, and adds: "I do not wish to be understood as claiming that they have not a valuable place among the many other means of applying force for the movement of teeth, for they certainly have, in those instances where they are applicable and are used intelligently. Dr. Angle deserves great credit for their introduction and I have no doubt will voice me in this warning note against their indiscriminate and inconsiderate use."

Part III treats of the Principles of diagnosis and treatment. The arrangement of the teeth and alveolar process are anatomically considered, and the typical and atypical occlusion of teeth in relation to the correction of irregularities. Principles of occlusion and dento-facial relations, the

importance of preserving deciduous and permanent teeth, the question of extraction in orthopedic dentistry, dento-facial diagnosis, etc.

Particular attention is called to the need of an intelligent diagnosis, based upon the dento-facial relations and not upon occlusion alone.

Part IV is devoted to grouping or classifying malocclusions of the teeth and their arches.

Part V treats of the classification of dento-facial irregularities and the treatment.

Dr. Case divides irregularities into seven classes:

In Class I is placed every type which is characterized by a maleruption of the cuspids.

In Class II every type of upper protrusions with lower normal.

In Class III every type of lower retrusions.

In Class IV every type of upper retrusions.

These four classes comprise the principal dento-facial irregularities met with in practice. The three additional classes are far more rare; In fact few writers on orthodontia mention them as distinct types, though in every one of these three classes are found the most marked and difficult-to-correct characters of dento-facial deformities. They are Class V, bimaxillary protrusions; Class VI, bimaxillary retrusions, and Class VII, open bite malocclusion.

Dr. Case says: "Inasmuch as each of these classes produces a distinctive type of facial outlines that is peculiar to the class, they are very properly placed as an important part of classified irregularities, with the hope that they may be recognized and differentiated from other forms which are similar in occlusion and whose treatment should be in accord to their dento-facial demands."

Part VI treats of the principles and technic of retention.

In our limited space we cannot give more than an outline of the contents of this most excellent work that abounds in good instruction and helpful suggestions. Dr. Case has for years been preparing the material for his book, and his teachings are founded on what he has found best in his long practice of orthopedic dentistry.

The book itself is a beautiful specimen of the book-maker's art. It is printed on sized paper, with large type, and is

profusely illustrated. It could hardly be more elegantly done.

It is a work that should be in the library of every dentist, and especially every dentist who is making orthodontia a specialty.

**Principles and Practice of Filling Teeth with Porcelain.**

Under the above title the Consolidated Dental Mfg. Co. has just issued a little book of 125 pages by Prof. John Q. Byram, of the Indiana Dental College. The book is the result of a series of articles on this subject, printed in Items of Interest during the past year.

The book takes up the subject largely from the technical aspect, and Dr. Byram covers, most thoroughly, the subject of cavity preparation, making of matrices, etc., and adds much of value to the color problem, which can be successfully worked out by any one into a definite rule of practice.

Dr. Byram's years of practical and experimental work along these lines makes him peculiarly fitted to write a book on this subject. The book is thoroughly practical and we feel sure that the dentist who conscientiously follows its teachings will be able to do porcelain inlay work in a manner satisfactory to himself and gratifying to his patients.

The work is profusely illustrated with good half-tone engravings showing clearly the methods of procedure. It is a most valuable book for every dental practitioner.

**General Anesthetics in Dentistry**—This is the title of a book of 300 pages issued by the John S. Noland Mfg. Co., of St. Louis, Mo., edited by William H. DeFord, A. M., M. D., D. D. S., of Des Moines, Iowa, formerly Professor of Oral Pathology and Surgery at the Iowa State University.

The author has written his book in the form of a series of lectures intending to cover his subject step by step in a pedagogic manner, while his statements are, to a large extent, elemental; they are both sufficiently general as well as specific to allow his reader the option of preference in matters of practice.

The author presents the subject sequentially and systematically by chapters, beginning with a chapter on the legal and moral right of the dentist to administer anesthetics; then the value of them; to whom they should be administered; dangers; shock; fatigue; elements of success; relative safety;

nitrous oxide; ethyl chloride; somnoform; chloroform; ether; then a couple of chapters on dangers, accidents, resuscitation, etc. It is a valuable contribution to our literature on the subject and should have a wide reading.

Every dentist, whether he uses general anesthetics or not, should own and study this book, in order that he may be intelligent in the use or advisement of general anesthesia for the relief of dental pains.

**Text-Book of Dental Pathology and Therapeutics**—For students and practitioners. By the late Henry H. Burchard, M. D., D. D. S. Revised by Otto E. Inglis, D. D. S., Professor of Dental Pathology and Therapeutics at the Philadelphia Dental College, Philadelphia. New (3d) edition, thoroughly revised. Octavo, 720 pages, with 567 engravings and one colored plate. Cloth, $5.00 net; leather, $6.00, net. Lea & Febiger, Philadelphia and New York, 1908.

It hardly seems necessary to more than call our readers' attention to a new edition of this work for it is so well and favorably known throughout the profession.

This third edition has been thoroughly revised and new material and many engravings added.

The text is divided into six sections: Section I dealing with general principles of pathology, causes of disease, general and local, micro-organisms as exciting causes of disease, disturbances of nutrition, and disturbances of the vascular system.

Section II treats embryology, anatomy and histology. The development, anatomy and histology of the jaws and teeth. The first and second dentitions, variations and attendant disorders, and malformation and malpositions of the teeth.

Section III treats affections of the enamel and dentin, such as abrasions, erosions, mechanical injuries to the teeth, stains, dental caries, exciting and predisposing causes, pathology, morbid anatomy and clinical history of dental caries and its diagnosis, symptoms and prognosis, hypersensitive dentin, therapeutics and prophylaxis.

Section IV treats of constructive and destructive diseases of the dental pulp, and methods of removal of the dental pulp and root canal filling. Also gangrene of the pulp.

Section V treats of diseases of the pericementum septic apical pericementitis, septic, purulent apical pericementitis and non-septic pericementitis.

Section VI, pericemental diseases beginning at the gingival margin; gingivitis, calculus, pyorrhea alveolaris, pericemental abscess, reflex disorders of dental origin, and infections of and from the mouth, and sterilization.

Dr. Inglis is to be congratulated on keeping the text on the same high plane as his predecessor, Dr. Burchard.

The work is authority on this subject, and dentists everywhere will welcome this new edition.

**A Text-Book of Operative Dentistry by Various Authors**—Edited by C. N. Johnson, M. A., L. D. S., D. D. S., Professor of Operative Dentistry in the Chicago College of Dental Surgery, Editor of The Dental Review. Octavo, 762 pages. Cloth, $6.00; sheep, $7.00; half morocco, $7.50. P. Blakiston's Son & Co., publishers, Philadelphia, 1908.

The object of this book is to provide the practicing dentist and student with a text-book giving the most approved and latest methods employed by the foremost thinkers and teachers of the profession. With this aim in view, the contributors have been selected with regard to their special fitness and ability to write upon the subjects assigned.

The book contains much new material of great practical and permanent value and presents in useful form much that has been published only in a disconnected way in journal articles where it is available to but few practitioners and is quite out of the reach of students.

Every effort has been made to keep the size of the volume within reasonable limits, to adjust the subjects to the space which their importance demands, to make the literary style as uniform as possible, to render the nomenclature consistent, and to elucidate the text by illustrations wherever they were found useful. In all these respects the editor, Dr. Johnson, has brought to bear a wise judgment based upon a wide experience in literary and operative work.

To give our readers an idea of the scope and character of the work, perhaps we cannot do better than to give a synopsis of contents and names of the authors of the different chapters:

Introduction. By the Editor.

Anatomy of the Human Teeth. By Charles R. Turner, D. D. S., M. D., Professor of Mechanical Dentistry and Metallurgy, Department of Dentistry, University of Pennsylvania.

Histology of the Human Teeth. By Charles R. Turner, D. D. S., M. D.

Hygiene of the Mouth. By George H. Wright, D. M. D., Former Assistant in Embryology and Histology, Harvard Medical School.

Hygiene and Arrangement of Light in the Operating Room. By the Editor.

Asepsis in the Operating Room, By A. E. Webster, L. D. S., D. D. S., M. D., Professor of Operative Dentistry and Dental Pathology in the Royal College of Dental Surgeons of Ontario; Editor of "The Dominion Dental Journal."

Dental Caries. By the Editor.

Separation of Teeth Preparatory to Operating on Cavities in the Proximal Surfaces. By Garrett Newkirk, M. D., Former Dean and Professor of Operative Dentistry, College of Dentistry, University of Southern California.

Examination of the Teeth for the Finding of Carious Cavities. By Garrett Newkirk, M. D.

Exclusion of Moisture from the Teeth During Operations. By George Edwin Hunt, M. D., D. D. S., Dean of the Indiana Dental College, Indianapolis.

Preparation of Cavities for Fillings. By A. E. Webster, L. D. S., D. D. S., M. D.

Treatment of Sensitive Dentin. By J. P. Buckley, Ph. G., D. D. S., Professor of Materia Medica and Therapeutics, Chicago College of Dental Surgery.

Filling Materials, Their Characteristics, Indications for Their Use and the Methods of Manipulation. By Alfred Owre, D. M. D., M. D., C. M., Dean and Professor of Operative Dentistry and Metallurgy, College of Dentistry, University or Minnesota.

The Construction of Gold Inlays. By John Egbert Nyman, D. D. S., Chicago.

The Use of the Matrix in Filling Teeth. By Garrett Newkirk, M. D.

The Porcelain Inlay. By W. A. Capon, D. D. S., Lecturer and Instructor of Dental Ceramics, Dental Department, University of Pennsylvania.

Inlays. By the Editor.

The Treatment of Putrescent Pulps; Acute and Chronic Alveolar Abscess, with Complications; and the Filling of Root Canals. By J. P. Buckley, Ph. G., D. D. S.

The Anesthetization and Devitalization of Pulps, Their Removal and the Subsequent Treatment. By J. P. Buckley, Ph. G., D. D. S.

The Treatment of Ordinary Pericementitis. By J. P. Buckley.

The Chemistry of Pulp Decomposition. By J. P. Buckley.

The Treatment of Exposed or Nearly Exposed Pulps. By J. P. Buckley.

The Causes and Treatment of Discoloration of Teeth. By J. P. Buckley.

Treatment of Children's Teeth. By the Editor.

The Extraction of Teeth. By Ferdinand J. S. Gorgas, A. M., M. D., D. D. S., Dean and Professor of Principles of Dental Science, Oral Surgery and Dental Prosthesis in the University of Maryland, Dental Department.

The Planting of Teeth. By C. Edmund Kells, Jr., D. D. S,. New Orleans.

Pyorrhea Alveolaris. By John Deans Patterson, D. D. S., Professor of Dental Pathology, Kansas City Dental College.

Erosion. By George W. Cook, D. D. S., Chicago.

Anesthesia. By Hermann Prinz, M. D., D. D. S., Professor of Materia Medica, Therapeutics and Pathology, Dental Department, Washington University, St. Louis.

The Management of Office Practice. By Ellison Hillyer, D. D. S., Professor of Prosthetic Dentistry and Orthodontia, New York College of Dentistry.

Orthodontia. By Herbert A. Pullen, D. M. D., Buffalo.

While all the authors have treated their subjects in a comprehensive manner, we might call special attention to the chapter on "Orthodontia," by Dr. H. A. Pullen. This chapter is the longest in the book, containing 242 pages and is a most concise and practical presentation of this important subject.

## BOOKS RECEIVED.

**A Work on Operative Dentistry**—In two volumes. By G. V. Black, M. D., D. D. S., Sc. D., L. L. D. Published by the Medico-Dental Pub. Co., Chicago.

# SOCIETY

## SEVENTH AND EIGHTH DISTRICT DENTAL SOCIETIES OF THE STATE OF NEW YORK.

Will you kindly announce the union meeting of the Seventh and Eighth District Societies, November 12, 13, 14, 1908, in the pages of the Summary, and oblige?

CLINT W. LASALLE, Sec'y.

## OHIO STATE DENTAL SOCIETY.

The forty-third annual meeting of the Ohio State Dental Society will convene in Columbus on December 1-2-3, 1908, at the assembly rooms of the Great Southern hotel. The program of essays and clinics will be such as to afford instruction to all in the various phases of present-day practice.

Make your arrangements now to be present. Come and enjoy the benefits to be derived, and renew old friendships. F. R. Chapman, Secretary, 305 Schultz Bldg., Columbus, Ohio.

## 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 at Indianapolis, beginning Monday, January 11, and continuing four days.

All applicants for registration in the State will be examined at this meeting. For further information, blanks, etc., apply to the secretary, F. R. Henshaw, Middletown, Ind.

# AFTERMATH

**Dies at the Chair.**—Dr. C. H. Paul, Omaha, fell dead while in the act of extracting a tooth for a patient, Oct. 5. Age 64 years.

**Fires.**—Dr. Scott, loss $900; insurance, $700; at Ottumwa, Iowa, Sept. 14. Dr. R. F. Leslie, Columbus, Ohio, loss $400, Sept. 24.

**Dies in Dental Chair.**—A young woman of St. Louis, Mo., died after an anesthetic had been administered to her prior to the extraction of a tooth.

**Dentist Dies from Cholera.**—Dr. G. D. Mitchell, an American dentist, died in Manila, Oct. 2, of cholera; his wife died of the disease in September.

**Has Tooth Drawn and Dies.**—Acute meningitis followed an operation of extracting some teeth for a seven-year-old boy in New York state, and death was the result.

**Young Woman Dies in Dentist's Chair.**—A young woman of Bellingham,, Mass., died in a dentist's chair of paralysis of the heart while under the influence of chloroform.

**Marriages.**—Dr. Chas. E. Grim, Reading, Pa., and Miss Emily A. Geisewite, of Reading, Sept. 17. Dr. Harter W. March, Canton, Ohio, and Miss Catherine L. Zirhut, of Canton, Sept. Dr. E. L. Todd, Dunkirk, N. Y., to Miss Gretchen Wilber, Gowanda, N. Y., Sept. 26.

**Died in Dental Chair.**—A lady of Warren, Pa., died, Oct. 8, in a dentist's chair as a result of taking chloroform. She came to the office to have twelve teeth extracted, and after being examined by a physician the anesthetic was administered. The conditions were normal while the teeth were extracted, the mouth cleansed and washed out. She was then turned on her side to aid recovery of consciousness, and death ensued from paralysis, caused by the narcotic.

**Dinner Honoring Dr. Geo. A. Bowman.**—The St. Louis Society of Dental Science gave a banquet, Oct. 8, at the Jefferson hotel, in honor of the president of the society, Dr. Geo. A. Bowman, who on that date completed his fiftieth anniversary of active dental practice.

**Cleaning Teeth is not Dentistry,** says judge. "The law does not include the cleaning of teeth in the practice of dentistry," Justice John S. Boyer, of Evanston, Ill., held, September 12, in discharging Miss Mary Leaf, who had been arrested on a complaint that she had practiced without a license.

**Missouri Doctors Must Pay License.**—Heretofore lawyers, doctors, dentists and barbers were exempt from paying an occupation license, but the new charter provides that they must now stand the tax. The amount of the license is to be regulated by ordinance, and in all probability the council will make it high enough.

**Dr. J. H. Grant Honored.**—Dr. J. H. Grant, the pioneer dentist of Palestine, has been honored by the Texas Dental Association in a singularly appropriate manner. Upon him has been bestowed the title of "Good Fellow." Accompanying the title is a gold button, presented by the association in appreciation of the doctor's services for the past twenty-five years, and a letter voicing the regard in which he is held by his associates in his profession.

**Royalty's Dentist is Buried from Del Monte, Cal.**—The funeral services of Dr. Harry Quimby, who died suddenly, Sept. 5, were held at Del Monte, Sept. 12. Interment was at El Camelo Cemetery at Pacific Grove. A large number of his friends attended the ceremonies. Dr. Quimby was a noted dentist. He had done dental work for the Queen of England and members of the Royal family for many years.

**Deaths**—Dr. Hiram Cole, Santa Rosa, Cal., Sept. 9. Dr. Barzillar R. West, Philadelphia, Pa., Sept. 16, of heart failure, aged 70 years. Dr. John Bell, of Chelsea, Mass., at Haverhill, N. H., Sept. 16, aged 71 years. Dr. I. Franklin Wardwell, of Stamford, Conn., Sept. 19. Dr. Altus T. Arnold, Leitchfield, Ky., Sept 23. Dr. Henry J. Stevens, New Haven, Conn., October 2, aged 79 years. John H. A. Folkers, a pioneer in the dental and surgical instrument trade on the Pacific coast, and until ten years ago a well known business man in San Francisco, died, Sept. 27, at his home in Brooklyn, N. Y. Dr. J. H. P. Benson, Philadelphia, Pa., Oct. 6, aged 52 years.

**Make a Charge for Services.**—"We as a profession are expected to do more for less money than any other, and I for one think it high time there is a change instilled into the minds of these people,

and as a society I would be glad to have a resolution introduced to the effect that we get paid for our services every time with no exceptions but one—the case where it is very evident that poor service was rendered (that is, below the average). We cannot always give the best of service, and because we do not it is no reason why we should not expect a fee. If we do an average service that is all any one of us can expect to do, therefore charge for it every time."—W. E. Tennant, Dental Review.

**Belgian Dentists; A Movement for Their Higher Scientific Training.**—The following report on the status of dentistry in Belgium, in connection with the annual meeting of the International Dental Federation in Brussels for the discussion of questions of interest to the profession, is supplied by Consul H. Abert Johnson, of Liege: One of the leading topics to be brought up at the meeting is the problem of instruction in the dental profession. This question will prove of vital interest to Belgium, a country that, in spite of its rapid advances in modern progress, has neglected to provide anything like adequate scientific training for dental practitioners. No official institution offering instruction in this modern branch of medical science exists in Belgium. In order to follow an advanced course in dentistry, it is indispensable for the Belgian student to have recourse, either directly or indirectly, to some foreign institution. All serious practitioners agree in the opinion that it is essential to inaugurate a system of instruction in dental science that will be in keeping with rapid advances in this science in the leading nations of the world. They also believe that it is absolutely necessary to give the maximum guaranty to their patients, and to achieve this result they are of the opinion that the best solution, if not the only possible one, is the creation of a special dental doctorate. The dentist's art has for a long time been taken up by any one that chooses to practice it, without any limits or restrictions, not having been given official recognition. At last, however, the question seems nearing a satisfactory solution, as Parliament has now under consideration a project regarding the governmental supervision of the liberal professions, which embraces dentistry.—Consular Reports.

**Robberies**—Drs. N. S. Halsey and G. W. Vanderlip, San Rafael, Cal., losses $50 and $300, respectively. Drs. Granger, Angle and McMaster, of Belvidere, Ill., gold leaf valued at $100, Sept. 20. Drs. J. I. and Dick Neptune, of Decatur, Ind., gold valued at $35 and $50, respectively, Sept. 21. Dr. A. H. Thompson and Drs. Goodwin, of Topeka, Kans., gold and finished dental work valued at $50 and $20, Sept. 8. The office of Drs. Lyon and Heatherly was also entered but nothing was taken. Dr. B. F. Kirk, of Detroit, Mich., gold pellets used for filling purposes, valued at $34, Sept. 20.

Dr. E. T. Comstock, of North Tonawanda, N. Y., gold and bridge work worth $40, Sept. 24. Drs. Moyer, Allen and Ide, of Lockport, N. Y., $10 in gold, at the Moyer office, Sept. 23. Dr. J. E. Gories, Springfield, Ohio, gold bridges and gold plates, valued at $94, Sept. 11; Dr. Philip Woolwine's office was also entered, but there only $2.50 worth of gold was secured. Dr. W. H. LeGalley, of Bowling Green, Ohio, gold bridges and crowns containing about $40 worth of gold, Sept. 26. Drs. Cecil Wilson and Chas. Taber, Bowling Green, Ohio, each lost $12 to $15 worth of gold plate, Sept. 26. Dr. A. E. Mann, Findlay, Ohio, office entered but nothing of value missing. Dr. S. E. Starr, Toledo, Ohio, gold worth $40, Sept. 13. Nearly every dentist's office in St. Catherines, Ont., was broken into, September 27, and all the gold taken that could be found. One dentist had five gold-plate patterns lying in an open place, and these the burglar took. Drs. Geo. H. Butler and Albert M. La-Fayette, of Portland, Ore., small quantities of gold, Sept. 6. Dr. Frank P. Duffy, of Riverpoint, R. I., $85 worth of gold filling, crowns and bridges, Sept. 20. Dr. F. W. Potter, Dr. C. C. Carbiere, Dr. R. H. Sheppard, of Redding, Colo., $200 worth of materials. Dr. L. G. Corzilins, Columbus, Ohio, loss $50, Oct. 14. Dr. A. R. Hengst, Columbus, Ohio, loss about $40. Dr. C. A. Thatcher, Ashtabula, Ohio, loss $25. The little safe in which was $300 worth of gold and platinum was not touched. Dr. A. C. Peebles, Ashtabula, Ohio, loss $5.00.

**Recent Patents of Interest to Dentists:**

891651—Dental tool, J. H. Abbott, Philadelphia, Pa.

891762—Dental chair, F. E. Case, Canton, Ohio.

891600—Means for attaching crowns to roots of teeth, C. A. Davis, Pasadena, Cal.

891689—Mold for making dental plates, J. W. Greene, Chillicothe, Ohio.

891543—Dental tool, E. Y. Haughawout, Cedar Rapids, Neb.

892040—Dental articulator, J. C. Fisher, New York, N. Y.

892860—Chin support, C. J. Lewis, Kanawha, Iowa.

892682—Mouth-prop, R. S. Price, Rochester, N. Y.

893155—Dental bracket table, P. W. Evans, Washington, D. C.

893345—Floss-holder attachment for tooth brushes, O. J. Monson, Chicago, Ill.

895293—Dental mirror, J. A. Wright and A. M. Nicodemus, Chicago, Ill.

893617—Artificial tooth, T. Flintoff, Claremont, Western Australia, Australia.

893665—Dental-broach covering mechanism, R. Siegel, Cincinnati, Ohio.

894702—Toothpick stand, J. Sahlin, Stockholm, Sweden.

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

# REGULAR CONTRIBUTIONS

## INLAY FILLINGS.*

**By Lewis M. Cowardin, M. D., D. D. S., Richmond, Va.**

Fillings inserted en masse and retained in place through the medium of some adhesive material constitute what are known as inlay fillings. At this time, porcelain and gold are the materials used as inlays in this class of work. From Dr. Joseph Head's statement in his article, "Cemented Inlays" (American Text-book of Operative Dentistry), it appears that this class of work was practiced in the pre-historic age. He relates that a human skull was discovered at Copan, Honduras, which probably antedated historical records, and in the central incisors of this skull, green stone inlays were found. Dr. Head does not, however, make any statement as to the date of the revival of inlay work. Dr. Marshall, in his work on Operative Dentistry, mentions this skull found at Copan, Honduras, and states that the study of the primitive history of the dental art shows that the idea of restoring portions of the teeth by the introduction of inlays is as old as the art itself; and that in the early Greek epoch, teeth were filled with metal inlays by driving pieces of lead into the cavities. Dr. Marshall also fails to mention the date when inlays were revived.

Dr. Gorgas (Harris' Principles and Practice, 1892) says that the substitution of pieces of porcelain for the portions of crowns of teeth destroyed by caries, by a process of inlaying, was suggested many years ago by Dr. Edward Maynard.

*Read before the Virginia State Dental Association, 1908.

In 1882, Dr. Herbst advocated glass inlays, made by fusing glass in molds of plaster or asbestos, gotten from wax impressions of cavities. This method gave only fair results.

In 1887, Dr. C. H. Land devised metal matrices of gold or platinum, which permitted the use of high-fusing tooth bodies, by which the accomplishment of more perfect fitting inlays was made possible. This method is in vogue today. From the date of Dr. Land's discovery, it may be said that the making of perfectly fitting inlays has been a possibility. Enough has been said to prove that inlay filling is not a new practice, and that it is perhaps as old as the practice of using gold for the restoration of mutilated tooth forms, with the hope of preserving the remaining portion of the natural tooth, as well as restoring its functionating powers.

Of the dentist it can safely be said that the highest duty demanded of him in practice is: first, to prevent diseases of the teeth; second, to restore diseased and mutilated teeth to health and form by the methods best calculated to prolong their health and functions. In his efforts to restore form, the dentist has at his command numerous materials. Prominent among them are gold, amalgam, tin and porcelain. But, as it is quite impossible, within the time allotted papers to be read here, to consider the relative value of all recognized filling materials, your essayist intends only, in the discussion he is undertaking, to consider the merits of inlay fillings. in comparison with the merits of the so-called permanent fillings inserted by other methods.

The craze for inlay work which has followed the introduction of metal matrices, the electric furnace, and, later, the various casting machines for the making of gold inlays, is in a very large degree due to the fact that, through these appliances, there has been an apparent simplification of this class of work, when compared with the doing of it by older methods. Hence, many who had felt that they did not possess the technical ability, or that they were not willing to devote the time required for doing these operations by the older methods have seized upon these new and apparently simpler and quicker methods, without realizing or properly studying the complicated problems necessary to be overcome in the accomplishment of perfect results. Through this class of men much has been, and is being, done to the discredit of the inlay

—a good thing in its place. Perfect inlays were by no means easily made by the older methods, and it is no easier to make them by the new ones. It can only be said that these new methods have enlarged the field of application, and made possible a higher degree of perfection in this work, without in the least diminishing the amount of skill and good judgment requisite for the attainment of the best results. In fact, there is no operation which the dentist is called upon to perform which makes greater, if as great, demand upon him for the highest order of skill and judgment, as the making of inlay fillings, especially those of porcelain. Perfection in porcelain work, in all its relations, and at all times, is an impossibility. Its form and adjustment may be made perfect, as far as restoring symmetry to the teeth and fitting the margins of cavities are concerned, and as long as the character of the illumination remains the same the color may be made perfect, but the tooth structure and porcelain not being homogeneous, they are never of the same refractive index. When the character of the illumination changes, there will be a difference in the shade of the tooth structure, from that of the porcelain inlay. Thus it is that the variation in the refractive indices of the tooth structure and the porcelain forestall the esthetic perfection of the porcelain inlay. However, with this imperfection, porcelain is unsurpassed by any other material in its esthetic effect as a filling. The esthetic property of porcelain is the main recommendation it has as a filling material. and should be the governing factor in deciding its use.

In considering the relative value of porcelain inlays, as compared with other filling materials, it must be done with reference to the power of each, where perfectly introduced, to fulfill the prime object for which dentistry was instituted, namely, the restoration of the human tooth to usefulness, for the greatest possible length of time—for all other considerations are secondary. This applies to inlay fillings of any kind.

To make a perfect inlay of any material is always attended with peculiar difficulties, which must influence the operator in making a decision as to which is the best material to be used in the different classes of cavities. The physical, social and pecuniary condition of his patient also have influence in this matter, and, hence, the conscientious operator is not

infrequently confronted with problems, all of which, from observation, one must conclude are poorly, if at all, considered by the average operator. What has been said here was said with the desire to fitly shape the thoughts of us present for the rational study of the subject of this essay.

Inlay fillings will be considered as a class, in comparison with other fillings which are introduced by piece-meal, such as gold, tin and the amalgams.

First, their relative value in regard to the restoration of form, as well as the preservation of the tooth stucture and form.

Second, their relative value from the esthetic standpoint.

Third, their relative value in special classes of cases.

Fourth, their relative value in lessening the tax upon the patient's physical strength, and pocket-book, as well.

In the restoration of tooth forms, inlay fillings are unsurpassed by any other class of fillings, and this applies especially to gold, as it can be cast to any form, and its solidity and toughness is greater than the like properties possessed by any other filling material. The restoration of form with porcelain inlays presents greater difficulties, owing to the shrinkage and change in form which takes place during the fusing of the biscuit. The friability of porcelain renders it inferior to either gold inlays or fillings made of gold or amalgam by the old methods, in all cases where the stress of mastication is to be sustained. Under such conditions the careful exercise of good judgment in its use is necessary in order to prevent failure in this regard.

The fact that all inlay fillings must be retained by interposing some one of the cements between them and the cavity walls, and as, up to the present time, no insoluble cement which can be used for this purpose has been discovered, establishes the inferiority of all inlay fillings, with respect to preserving cavity walls against decay, as compared with other insoluble fillings which do not require the interposition of any of the cements between them and the cavity walls in order to retain them in position. From what has just been said, and provided we are able to credit all practitioners with a fair knowledge of the characteristics of the cements and the nature of their behavior under the various conditions to which they are subjected, both in and out of the mouth—with these considerations in view, further argument in support of

this point is unnecessary. It needs, however, to be especially emphasized, when, by reference to so high an authority as the American Text-book of Dentistry, we see that the author has made a lamentable error in his tabulation concerning the characteristics of the various filling materials, by crediting porcelain inlays with the characteristics which, when considered as porcelain, they do possess, but when considered as fillings, they do not possess. Porcelain, when used as an inlay, does not, alone, constitute a filling, but only becomes a component part of the filling, and the relation it occupies to the filling as a whole determines its value as a factor in the preservation of the cavity walls against caries. The statement in the tabulation, therefore, is erroneous and misleading, because it is not the porcelain inlay which plays the important part of preserving the integrity of the cavity walls, as it would appear. On the contrary, the fulfillment of this important function falls upon the cement used for retaining the inlay.

Now, as the author, Dr. Head, says of these materials, first, with regard to the resistance to the action of the old secretions, cement is very poor; porcelain excellent. With regard to the power to prevent decay, cements partially exclude bacteria and partially prohibit the growth of bacteria; porcelain excludes bacteria and precludes growth of bacteria. It is said that a chain is no stronger than its weakest link, and it aptly applies here, with a filling composed of two or more materials, when the weakest material is exposed, as it is in the inlay filling.

Then, in considering the relative value of inlay gold and amalgam fillings, with respect to their power to protect cavity walls, it can only be done by classing inlay fillings, as cement fillings, and as it is, we feel sure that the comparative value of cement, gold and amalgam as filling materials, is so well established that further comment on them in this connection is unnecessary.

In the case of gold inlays, it is possible to burnish the gold to the margins of the cavity, so as to prevent the cement from being exposed, and in such cases these fillings would be equal in this respect to gold filling by the old method. So great is the uncertainty, however, of our being able to perfectly burnish the gold to all parts of the margins of cavities, that we must be equally uncertain as to when it has

been accomplished. Hence, all inlay fillings, whether porcelain or gold, are to be looked upon as cement fillings, in so far as their power to protect the cavity wall against caries is concerned.

From the esthetic standpoint, porcelain inlays are so superior to all other materials used in filling teeth, except perhaps, some of our artificial porcelains (cements), whether used in the form of inlays or otherwise, that it is useless to comment on their relative value in this connection.

The value of inlay fillings in special cases depends upon the peculiar nature of the ends and the difficulties to be met, the importance of which must be clearly comprehended before a decision is made. Owing to the solubility of cements, and to the fact that uncleanliness increases its solubility, inlay fillings should never be made, except in such cases where the full extent of the margins of the cavities are exposed to mastication, or are so exposed as to be easily cleansed by the tooth brush. In a special class of approximal cavities, however, such as where extensive contouring is necessary in order to prevent packing of food upon the interdental gum gold inlays are frequently almost indispensable. But in all such cases, those parts of the cavity where the margins are not easily kept clean, should first be filled with gold, tin or amalgam, to an extent that will prevent any exposed part of the cavity margin which will receive the inlay, from allowing the cement to come in contact with the tooth structure. Gold inlays, then, when used in such cases, and with due regard for the inferiority of the cement as a filling material, may frequently prove more valuable than any other kind of filling.

Are inlay fillings less taxing upon the strength of the patient? Yes, we think they are, as a rule. But we doubt the propriety of allowing this fact to influence us in favor of their use under ordinary conditions, since, when it is possible, none but the filling which best preserves the cavity walls against decay should be used.

Are inlay fillings less expensive than other forms of filling? We think not, as it is quite certain that they cannot be made by the expenditure of less time or skill on the part of the operator.

# THE TREATMENT AND FILLING OF ROOT CANALS.*

By E. Ballard Lodge, D. D. S., Cleveland, Ohio.

If an apology were appropriate for coming before a dental society with a subject which has so frequently been written upon and so much discussed as has the subject of treatment and filling of root canals, the writer would have produced his strongest argument when he said that having been for five years receiving patients from among the best and most skilled dentists for X-ray examinations of the teeth, that, of all cases presented, diseased teeth, the result of imperfect root canal operations constituted by far the major part of the cases examined.

The operations of treating and filling the root canals of teeth, and especially of the bicuspids and molars, and by this I mean the thorough sealing of these canals at their apical ends, is unquestionably one of the most trying and difficult procedures that we as dentists are called upon to perform.

It is not merely laborious and hard work, but in addition there is the anxiety for the ultimate results if perchance we fail in making a very thorough operation.

In approaching this subject perhaps it may be well to classify first the various conditions which require root canal treatment and filling and then to elaborate the various classes of cases as may be indicated. The following then are the conditions demanding these operations:

"A." Teeth which for some reason have had their pulps removed, either surgically or by a devitalizing agent, and in which there has been no septic condition.

"B." Teeth whose pulps become infected or have been the seat of any sort of disease from putrescence to the various sequelae, as septic pericementitis, alveolar abscesses, etc.

"C." Those cases coming from other operations which have been filled and in which there is found need for refilling because of ptomaines forming in the apical portions of roots of teeth.

In class "A" in which the pulp has been removed either by cocain under pressure, or by arsenic trioxid, it is to be

*Read before the Lake Erie Dental Society, May, 1908.

presupposed that aseptic precautions have been rigidly carried out and that the canal has been kept free from micro-organisms; this having been accomplished by using the rubber dam prior to opening into the pulp chamber, or if high pressure has been employed prior to the application of the pressure instrument. Having isolated, by the rubber dam, the tooth, and for convenience in operating those next contiguous, freely bathe the crowns in alcohol or sulphuric ether to rid them of mucus and other deposits. Now with suitable chisels cut down overhanging enamel walls for good access to cavities, after which remove whatever of loose decay may be painlessly removed by Gillette spoon excavators. The cavity should now be flooded with some germicide which will reach the bacteria lurking in the tooth cavity as a solution of 1 to 500 of mercuric bichlorid. In removing the pulp contents care should be exercised to have all broaches sterilized, and if the instrument has come in contact with anything to infect it, as for instance the thumb nail, after its sterilization, it should not be again used until it is again immersed in a germicide. It now becomes necessary, as a rule, to enlarge the canal or canals, as the case may be, to permit of the introduction of the root filling. For this purpose, having already opened the pulp chamber by ample cutting so that its entire floor is visible, a careful use of Gates Glidden drills may be permitted only for the immediate entrance to the canals, except, perhaps, in some few cases where it is clear that the canals are straight, and even then they are to be used with great caution. It is now customary with the writer to employ the Downey or Kerr broach and to use it as a reamer for enlarging the canals to the apex. This is done by starting with one of small size and going with it as far as the apex, if possible, and following this up with a larger one until the desired size is attained.

In case of the canals of buccal roots of upper molars and the mesial roots of lower molars this may be exceedingly difficult, if not impossible, prior to the use of other agencies for such cases. Of these the writer desires to emphasize the usefulness of the method of Dr. Callahan, given to the profession in 1894; namely, that of the chemical means of opening fine root canals, the sulphuric acid method. A 40% solution of $H_2SO_4$ is employed; a higher solution converts

cotton into cellulose and perhaps does not act more rapidly, though some use full strength. The writer, however, prefers to carry a small quantity, say a drop, by means of a medicine dropper, drawn out to a fine tip, rather than to use a pledget of cotton as a conveyance. A suitable Donaldson smooth broach is now employed. This should be new and bright to obviate the danger of breaking it off in a tortuous canal from which there might be difficulty in its removal. Having arranged a brand new Donaldson's smooth broach in the broach holder there is now to be employed a feature of this technic which is perhaps the most important thing of this whole procedure, and for which the profession is indebted to Dr. J. F. Stephan, viz: The removal of the sharp point by means of an Arkansas stone and the test of this is to attempt to stick it into the thumb nail; if it slides off without catching it is right. Until this is done it is likely to be difficult, if not impossible even with the acid, in very fine crooked canals, to get to the apex for the reason that the sharp-pointed broach, as it comes from the dealer, is likely to stick into the side of the canal at some one of the curves instead of passing around, this producing a little spur at this point of the canal, thereby blocking the course of the canal. The instrument is now to be worked up and down to pump, as it were, the acid to the uttermost part of the canal.

Sometimes the canal will be lost for a time and it is found again, perhaps, by curving the instrument in a line in which the particular root normally is found to curve. When sensation is produced and it is believed by measurement or comparison with a skiagraph that it is at the apex of the root and not impinging upon vital pulp remnants, the acid may be neutralized with sodium bicarbonate solution, and the canals may be still further enlarged with Downey root reamers. In some cases the writer has felt it expedient to allow a small quantity of the acid to remain without neutralizing with the soda until a subsequent sitting. It will do no harm, provided, of course, it is not so left that pressure of mastication will force it through the foramen. In such case it would set up apical inflammation. To avoid this the writer sees to it that the canal is only partly filled with the liquid and that over it is a pledget of dry cotton sealed in with gutta-percha. If the cotton were left saturated with a liquid antiseptic, pressure

could be conveyed to the acid and it would likely be forced through the foramen. Why have acid in canals until another sitting? The only reason for so doing is that it allows time for it to act to a greater degree in enlarging the canals. The acid becomes neutralized by the calcium salts of the tooth root leaving a residue of calcium sulphate which is readily removed. Sulphuric acid is a good germicide and also a destroyer of any dead pulp tissue not mechanically removed. Without a mineral acid in some of these cases the writer feels it probable that pulp remnants would often be forced into the apical ends of the canals and there be more likely to develop subsequent trouble because of failure to render such organic remnants inert by the use of antiseptics.

Class "B" involves, as was said before, cases invaded by micro-organisms. And here we have before us conditions which require very special consideration. The first thing which should command our attention should be avoidance of forcing septic organisms and ptomaines into the periapical space, and while it may be necessary to get an opening into the pulp chambers for the release of confined gases and thereby to relieve pain of an incipient abscess, it seems the part of wisdom to go slowly at first lest a worse condition than putrescent pulp should develop. Only too well does every practitioner know that many times, a tooth otherwise quite well, upon being opened and the canal invaded by instruments sets up an acute pericementitis. When such a sequel results it is to be assumed that germs or ptomaines or both have been forced beyond the apical foramen. After mechanically teasing away whatever is possible, remove from the canals by means of a suitable barbed broach; a liberal use of $H_2O_2$ is often useful as a detergent application. This may be pumped into the canals provided they are not occluded by the instrument to the extent of forcing the contents through the apical ends of the roots. We now can employ with profit the remedy suggested by Dr. Buckley, viz: formalin and cresol. In this sort of case we have present the gases of decomposition of proteid material $NH_3$ and $H_2S$. Dr. Buckley has told us that formaldehyde gas, $CH_2O$, in combination with water in 40% solution and known as formalin combines with the $NH_3$ of the putrescent pulp and produces an antiseptic solid urotropin $(CH_2)_6N_4$ and that the formaldehyde

further unites with the $H_2S$ forming methyl alcohol and sulphur. By the use of formaldehyde we change irritating gases and poisonous liquid ptomaines into inert liquids and solids.

Cresol, a powerful germicide and a homologue of phenol, is about three times as powerful as the latter and when used in putrescent pulp canals is believed to unite chemically with the fats of decomposing proteid to form lysol, a good antiseptic.

The poisonous ptomaines, cadaverin and putrescin, are according to Vaughan and Novy, products of putrefactive changes in proteid material and these are unquestionably produced in the pulps of teeth when undergoing similar changes. These, if forced through the foramen of a root by means of the above mentioned gases, or otherwise into the periapical space, are able of themselves to produce inflammation and suppuration.

Having sterilized thoroughly the canals of the tooth, and there being no contradiction as soreness, it may now be prepared and filled as prescribed for teeth with aseptic root canals. Dr. Burton Lee Thorpe believes Hudson, of Philadelphia, to have been the first to employ gold as a root canal filling as early as 1817. Since his time not only gold has been used but lead, copper, aluminum, wood, paraffine, silk, cotton, oxychlorid of zinc, gutta-percha in solution with chloroform and gutta-percha points, salol, resins, and a host of other materials have been employed. I am not aware that up to the present time the ideal filling has been found. To fulfill all requirements it should be able to hermetically seal the canal against the ingress of germs, either from the blood or from without. It should maintain an antiseptic condition and should not disintegrate; it should be unchangeable and further it should be readily removable. This last consideration will be important so long as our skill is limited to the filling of canals that are straight and readily accessible. So long as we are compelled to leave unfilled the apices of a certain percentage of cases owing to their extreme difficulty, so long are we going to need to have material that can be readily removed.

While it must be confessed that gutta-percha dissolved in chloroform and gutta-percha points have some weaknesses,

still in view of its many good qualities I hold fast to them as the best material for the purpose up to the present time; my practice of late has been to incorporate a little aristol powder in the chloro-percha just as it is to be introduced, and having carefully cleansed the canal with alcohol, and having carefully dried by absorbents and warm air blasts, I introduce in a thin state with the same smooth Donaldson's broach that was used in preparing the canal. The pumping motion will carry the material well to the apex and will remove the air from the canal. This is followed then with a suitable gutta-percha cone, and for this I like to use a special carrying instrument. The gutta-percha cone being introduced, a small piece of gutta-percha may be warmed and placed over the root canal filling and gently pressed in the direction of the root; upon sensation being experienced by the patient it will be reasonably certain that the filling has reached the apex of the root. This, of course, presupposes that the root canal has been effectively dried prior to any attempt at filling.

I have been somewhat surprised to find that a glass tube drawn out to about the size and shape of a lingual root of an upper molar tooth and filled with alcohol and its apex sealed by placing into a little wax, cannot be dried with as many as fifty blasts of hot air with the ordinary chip blower; water required one hundred blasts to reduce it perceptibly. A hot metal root instrument will not dry it readily. Nothing but thorough absorbing, as by means of cotton twisted upon a broach, preferably the Downey or Kerr, or what is still better in canals of suitable size, the Johnson & Johnson root canal aseptic absorbent points. Incidentally I will say these are likewise very convenient for use in holding antiseptic dressings to be sealed in canals.

I am indebted to Dr. Inglis for a root canal filling which, while I have not yet employed it in my practice, I think that possibly it comes nearer to being the ideal filling than any yet developed. It consists in adding to a solution of chloropercha equal parts of paraform, thymol and eucalyptol, and then before using allowing the chloroform to completely evaporate leaving a mass of semi-solid consistency. This is followed by gutta-percha canal points and is believed to

maintain its antiseptic strength and not to shrink, as is supposed to be the case with chloro-percha after the chloroform evaporates or disappears from the canal.

The third class of cases includes that class of teeth which have been previously filled and which have become sore or lame, or which have developed alveolar abscesses or other pathological conditions and require treatment and refilling. In this class of teeth the X-ray is of especial assistance, as it not only usually shows whether or not the root canals have been filled, but it will show any anomalous conditions of the roots and canals and serves as a most useful guide in the treatment. Assuming that it is deemed desirable to re-open canals which have been filled with gutta-percha, chloroform on cotton should be cemented within the pulp chamber by means of oxyphosphate of zinc cement and allowed to remain for a few hours, as it will in the meantime have so softened the hard gutta-percha root fillings that they can then be washed out with chloroform and their apical ends can usually be reached by methods already described. The value of iodin in roots of this class is attested by the use made of aristol, iodin, iodoform, etc., in root canals, aristol containing iodin in combination with thymol. Tincture of iodin is useful as a treatment in roots of this class, where the staining is not a contraindication. It is supposed to act by uniting chemically with albuminous substances which are rendered antiseptic by such union and, in addition it has a salutary influence upon inflamed tissue.

### THE INSTRUMENTS USED IN ROOT OPERATIONS.

The difficulties and the exactions of this operation of root canal treatments and fillings are such that it behooves every careful operator to equip himself with every appliance which will expediate or facilitate these arduous procedures. This being true, it seems that a paper upon this subject will not be complete unless attention is given to this phase of the subject. There is no one instrument that will give more real satisfaction than a pair of SSW special pliers for carrying root canal gutta-percha points, as well as a few suitable root canal pluggers for crowding the points to place. Reference has already been made to the well-known Donaldson smooth

broaches and the Kerr and Downey broaches, as well as to the Gates Glidden drills for both straight and right-angle hand-pieces. A suitable electric root canal drier, both with an air blast and with hot metal points, is, to say the least, a great convenience for these operations. The hot metallic point to be used after absorbents have been used, and this followed with a blast for drying out the canal. The disinfecting agent may then be volatilized by the same process and the root thoroughly antisepticized. Dr. Fred Stephan, of Chicago, should be given the credit for having suggested the use of cotton carriers for placing medicaments as essential oils, chloroform or other liquid remedies in the tooth. This obviates the waste incident to the use of cotton pledgets and is more effective.

Discoloration of teeth should be avoided by first being careful if there is a hemorrhage into the pulp chamber that oxide of iron is not produced by the iron in the hemoglobin of the blood and the oxygen in such agents as $H_2O_2$, thus forming iron rust, a pigment which would be difficult to remove. Then such chemicals as $Ag\ NO_3$ and tincture of iodin, mercuric chlorid, etc., must, if employed, be used with great care, as these chemical stains are difficult of removal.

Lastly let me say that it is fitting that we should spend as much time and pains upon this class of work as may be necessary to accomplish the most perfect results possible, all things being considered. If it requires two or three sittings of from one to two hours each in order to properly open up the canals of a molar tooth it is unquestionably a procedure worth carrying out and the time should be paid for. Some may say that we are not able to charge for the time it takes to accomplish such thoroughness. Then I say do it any way and and charge a fee for it, but do thorough operations. Expensive operations are those that are done indifferently, those that are neglected. Few patients who are really desirable will be lost because of a reasonable charge. It is to be remembered that a pulpless tooth is dependent for futures usefulness upon the integrity of its nourishing tissue, the peridental membrane. And exceeding pains would be taken not to jeopardize this supporting and life-giving tissue to the root of the tooth. A half-filled canal with septic contents, allowed to remain at the apical portion, is bound some

day to cause trouble. It matters little how much of the natural crown may be lost, because an artificial one of gold or porcelain may be substituted, but woe unto the tooth, for endangered it is if its supporting membrane becomes diseased.

## THE MANAGEMENT OF NERVOUS AND TIMID PATIENTS IN THE DENTAL CHAIR.*

By Walter C. Ames, D. D. S., Smithfield, Va.

The management of nervous and timid children in the dental chair is a subject in which I have been deeply interested, and for this reason I am making these few remarks, hoping to bring about a discussion of the subject and thereby make it beneficial to us all. When we think of the terrible results of the premature loss of the temporary teeth, namely, irregularity and the suffering attended thereby, I think we ought to bend all our efforts, use all our persuasive powers, and exercise patience in the handling of children, in order that we may preserve their temporary teeth until the permanent ones are ready to take their place. These first moments spent in an operating chair may make an impression which will last through life.

I think most of us pay too little attention to the care of children's teeth until the permanent ones need our attention. We are annoyed by the timidity, restlessness and inquisitiveness of our young patients. In caring for the permanent teeth, our heads should be full of wisdom. In managing nervous and timid children, our hearts should be full of love. In other words, in caring for the temporary teeth, scientific methods cannot always be strictly applied.

As an eminent writer upon this subject has said: "In the successful management of little children there is a condition that precedes wisdom and antedates experience, and that condition exists in the heart rather than in the head of the operator."

The rude instrument is tempered with gentleness and made a means of mercy in the hands of one who has a deep

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

love for little children. And an operator who has little ones of his own and whose heart, in consequence, is kept warm and sympathetic, will be more likely, all other conditions being equal, to be more successful in handling these little creatures.

Children are interesting to handle and study, but difficult to thoroughly understand; how few of us really understand children, and the reason, I think, is that we do not go about it in the right way. The great secret in handling a child successfully is to win his confidence, and when this is secured the battle is more than half won; and once gained, retain it at most any sacrifice.

A child is a severe critic, his confidence is usually easily won, but it is as easily dissipated by any act of insincerity or lack of sympathy.

Timidity cannot be thrashed out of a child. Parents try sometimes to force a child to allow an operator to perform some minor operation, or advise or request the operator to use deception, while, of course, such must be treated with due deference, they should not influence us to the point of yielding. I have often found that by getting a child alone I could accomplish more than when the parents were with them; they not only seem to have more confidence in the operator, but have more in themselves. We must at all times be able to recognize the amount of courage of our patient, and not go beyond it, for once beyond, the child is entirely undone.

I do not think it wise to try to accomplish too much at the first visit. If I can get them to take a seat in the chair and do some little thing, if nothing more than putting a piece of cotton in a cavity, but being very careful not to hurt them in the least, I consider I have accomplished something, and after a few such visits I find I am able to do much more. In this connection I recall one case especially that I had to deal with a few months ago. A very nervous, timid little girl visited my office every day for a week before she would allow me to put an instrument of any sort into her mouth. She would take her seat and shake as though she had a chill, and I could see she was trying to control herself, and when I was about to give up in despair I succeeded in persuading her to allow me to fill a very simple cavity, and after that I did quite a bit of work for her. As in this case I always fill

the simplest cavities first, and by proceeding as above, you gain the child's confidence and good will.

Whatever you do, never tell them a lie; whenever I think a cavity will be a little painful in excavating, I tell them; don't tell them that you are not going to hurt them, and in a few seconds try to excavate a sensitive cavity or extract a tooth. I find it is always best to be perfectly frank with them. In cases where the child is extremely nervous and unmanageable, we may not be able to excavate all cavities thoroughly and accurately as we should like. If we attempted to do that we may cause so much pain and may produce such an effect upon the nervous system of the little patient, that the object sought—the salvation of the teeth—may be entirely defeated. Instead of insisting upon thorough excavation, it is better to prepare the margins of the cavity with sharp instruments, slowly, and when necessary, even leaving some little decay in the bottom of the cavity. If the margins are fairly well prepared and nitrate of silver is applied to the decay left in the cavity then filled with oxyphosphate. This will practically stop decay. Then in six or eight months afterwards the oxyphosphate, having worn down some, the cavity can be thoroughly excavated and filled in such a manner, and with such material, that it will last the life of the tooth. But management and not method is the object of these few remarks.

In conclusion I will say that we should always use tact and temper our every act with love and sympathy, thereby gaining the child's good will and confidence.

# DENTAL EDUCATION IN OUR SCHOOLS WITH STEREOPTICON.*

By Dr. A. C. Runyan, South Haven, Michigan.

(Continued from page 799 November issue.)

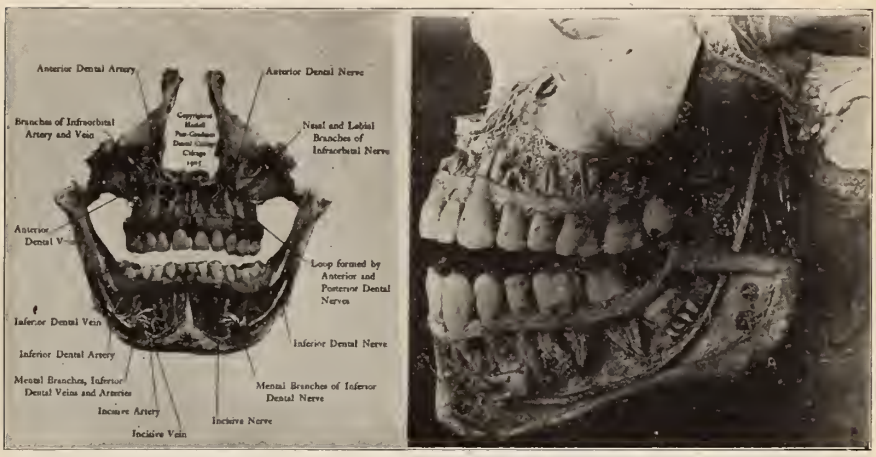
Thirteenth Slide


**13th Slide, Colored.**

This is a section through a tooth and the alveolar process, showing the blood circulation through the pulp or nerve of the tooth and the surrounding tissues. The outer covering is the enamel or protection coat of the tooth. You notice how much thicker it is where the most stress and wear comes and it disappears entirely as it reaches the alveolar process. The alveolar process is a sort of a spongy bone that surrounds the teeth which acts as a cushion for the teeth, so that severe shocks will not break them as it would if they were set in solid bone. I wish to call your particular attention to this point where the gum is attached at the neck of the tooth. You see there is a free margin that follows up the edge of the

*An illustrated talk given before the Southwestern Michigan Dental Society, Grand Rapids, April 14-16, 1908.

enamel before it folds back. It is under this free margin that the tartar is the most liable to begin to form, and it is one of the reasons we advise frequent visits to your dentist. You will not discover it yourselves, and it is the principal cause of many of the alveolar disturbances. There is one way for you to detect its presence. If at any time your gums are inclined to bleed easily, it is almost invariably because of the tartar that has collected there and you should hasten to have it removed.




Fourteenth Slide Fifteenth Slide



**14th Slide.**

This is a front view of the upper and lower jaws with the frontal plates of bone removed, showing the distribution of nerves and blood-vessels to the teeth. I will not discuss this at length here.

**15th Slide.**

This is a side view showing how the upper and lower nerves are joined together and where they enter the brain.

**16th Slide.**

This is an outline sketch of the facial distribution of the fifth pair of nerves. I like to compare the nervous system to the telegraph or telephone system. In this way I think I can

make a more lasting impression on the younger minds. I tell them that I think God considered the teeth among the most essential organs of the human system because He has made them so sensitive. Were it not for this sensitiveness the teeth could decay or become injured and we would not know anything about it, and the first thing we would know we would be without any teeth to properly masticate our food. Our health would be ruined, or we would have to depend entirely on artificial teeth, which are at best a poor substitute.

Now these teeth each have a telegraph or telephone station of their own which acts automatically, so that when the

Sixteenth Slide

Seventeenth Slide

tooth begins to decay or is injured in any way, the trouble is communicated through these little nerves to the main nerve and through that to this sub-station (the ganglion of Gasser), and from there it is communicated to the brain. If we are wise we will heed this alarm and go immediately to our dentist and find out what the trouble is.

You will notice there are other lines running from this sub-station to other parts of the face. If you do not heed the first trouble call, the pulp of the tooth becomes inflamed and may so irritate all these other nerves that they may have what is called "facial neuralgia." This little branch here at the right goes to the ear, so it sometimes happens that we locate the pain in the ear, when in reality a tooth is the cause of the trouble.

**17th Slide.**

I seldom show this slide in my school talks, but I show it to you for this reason. When I was trying to make my collection of slides I saw it listed in one of my catalogs, "A typical occlusion. A rare specimen and very instructive." You see how far it is from a perfect occlusion. However, a great many people think this the way teeth should articulate, and I show it in connection with the following one for comparison.

Eighteenth Slide

**18th Slide.**

Through the kindness of Dr. Richard Summa, of St. Louis, I was able to procure this slide of his justly renowned skull. Here is a perfect occlusion. I lay a great deal of stress upon this to show why it is so necessary for us to take proper care of the temporary teeth so that each tooth will erupt in its normal position, providing the adenoid growths have not caused mouth breathing. I explain why the six upper front teeth should close forward of the lower six and why from there back they rest on top of the lower. I also show why each tooth, whether above or below, with the exception of the central incisors, antagonizes two other teeth.

Nineteenth Slide

Twentieth Slide

**19th Slide.**

This slide and the several following you will recognize as having been copied from wood cuts in the Items of Interest. This face has what is known as the "bulldog" expression, through no fault of her own. This young lady might have been obliged to go through life with her face deformed in this manner. This deformity may be caused by allowing the temporary or permanent lower front teeth to erupt forward of the upper front ones. This class of deformity almost always increases as the patient grows older, and a person may be given credit for a disagreeable character that is entirely foreign to their nature. How easily that might have been avoided had her parents been taught to have their children's teeth cared for in the process of eruption. Fortunately there are specialists now in dentistry who can correct these deformities even at this stage.

**20th Slide.**

This shows the models of the teeth of this young lady, and the position in which they occluded or bit before they were corrected. You see that the lower ones shut forward of the uppers.

Twenty-first Slide

Twenty-second Slide

**21st Slide.**

This shows their position after having been properly regulated by a skillful dentist.

**22d Slide.**

This shows a picture of the same young lady after her teeth have been properly adjusted. See what an improvement.

Twenty-third Slide

Twenty-fourth Slide

**23d Slide.**

This is a picture of a typical mouth breather. The primary cause of mouth breathing is almost invariably these adenoid growths I have mentioned, and I cannot impress on your mind too forcibly the importance of having a child under the supervision of a competent dentist during the whole period of dentition. Some children were born with them, and a strange thing about them is, that they almost always disappear at about the age of sixteen, but they have been there long enough to cause a great deal of trouble. Besides causing the child to breathe through its mouth, they may cause deafness, and act as breeding places for germs of many childhood diseases, such as diphtheria, scarlet fever, etc.

By being obliged to breathe through the mouth while the bones of the face are in the formative stage, the face is narrowed, causing the teeth to protrude, and sometimes the back teeth seem to erupt through too far, the mouth not having been kept shut to keep them in their proper positions.

**24th Slide.**

This shows the models of the teeth in this case. You see how far the upper teeth protrude beyond the lower ones. The deformity is made worse in this case because of the loss of the first permanent molar, thereby shortening the lower jaw.

Twenty-fifth Slide

Twenty-sixth Slide

**25th Slide**

This shows the deformity corrected. The upper cuspids and bicuspids occluding properly with the lower bicuspids.

**26th Slide.**

This is the picture of the young lady after the operation. These pictures prove to you how unnecessary it is for a person to go through life giving the impression that they are of a "bulldog" or stubborn disposition, or as in the second case, with a weak-minded or idiotic expression.

Twenty-seventh Slide

Twenty-eighth Slide

**27th Slide.**

These are all types of the last case shown and have been ably discussed by Drs. Williams and Blackmarr here this afternoon.

**28 th Slide.**

This represents one of the most common forms of irregularity. It is almost invariably caused by the removal of the temporary molars before the first permanent molars are erupted, so that when it does come in it occupies the space of the extracted temporary molars. Then when the bicuspids erupt they are too far forward, thereby leaving no room for the cuspids, so they must erupt outside of the arch. I know that some of you orthodontists will challenge that explanation, but it seems to prove out.

Twenty-ninth Slide Thirtieth Slide

**29th Slide.**

This condition may be caused by mouth breathing or thumb sucking. I caution parents about giving the babies these rubber pacifiers. They have a tendency to produce this condition because of the continual sucking. The contraction of the muscles has a tendency to narrow the arch.

**30th Slide.**

This is an exaggerated case caused by mouth breathing. While such deformities of the arch are rare I have seen some just as bad.

Thirty-first Slide

**31st Slide.**

This is a radiograph or X-ray picture. This slide and the next one were kindly furnished me by Dr. E. Ballard Lodge, of Cleveland, and I use them to show how the X-ray may

be used in dentistry to diagnose conditions that would be difficult to find out otherwise. This is an upper cuspid that became diverted from its course and by the use of the X-ray it was located.

Thirty-second Slide

**32d Slide.**

This is an X-ray picture of what we call an impacted wisdom tooth and was the cause of a very serious trouble, very nearly causing insanity, but by locating its exact position with the X-ray it was removed and followed by a speedy recovery. This shows that the teeth may affect the whole nervous system and that they should have proper care and attention through life.

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## DISCUSSION.

**Dr. Hoff:** There is a word or two I wanted to say about this kind of work; I think that this method of presenting instruction to the children, and even to children of larger growth, is a valuable one because it appeals to more senses than one.

It appeals to the eye, as Dr. Runyan stated in his paper, in a way that a simple lecture would not. You cannot state principles and even practices to people who are unaccustomed to the technical terms that we are liable to use, without conveying misinformation. You cannot do it so well as you can by this pictorial method. I would suggest to any who take up this work, that they do not confine themselves altogether to the method of showing anatomical pictures. But of things that are more nearly associated with those things which will create a habit. A proper habit of hygiene could be just as easily illustrated and shown pictorially as to give a verbal statement as how, for instance, to brush the teeth. The whole method of brushing the teeth is something that very few

dentists, even, understand as well as they might. I find that there is seldom a dentist who takes the care and pains to show to his patients, to give a demonstration to them, as to how they ought to brush their teeth. There are very few people that could or can brush their teeth in exactly the same way to get the benefits of the brushing process. The right kind of brush must be adapted in many cases to the particular use of each individual. I think it would be entirely possible and practical to make pictures and charts with lantern slides to show how to use the tooth brush. The question comes up, what kind of a brush to use. I have had the greatest difficulty in my own city in getting the druggists to keep a supply of the right kind of tooth brushes. I have been to my druggist and tried to have him, time and again, get the brushes that I wanted. I have even gotten brushes and given him samples of them to order for me, but he seems unable to get them. Out of twenty samples that I got from his store there was not a single one among the whole lot that I could recommend any way generally at all, or that I could commend to my patients, not because I have a particularly cranky notion about what kind of a brush I want, but he had all sorts of crooked-handle brushes, small and large, fine and coarse, and all sorts of things that were impracticable for ordinary use. It is almost impossible for a druggist to prescribe for a patient the kind of a brush he ought to use. But what I think we can do in this matter, and I think it is a work we have got to do, and it ought to be done right if it is done at all, is to provide some kind of charts or pictures that will show the proper way in which a child should use his brush, as well as to tell him how often and how to use it.

It is becoming imperative that we do this work because people are expecting it of us now. The public now expects so much of our profession of a public character. There is a kind of false modesty or pride among dentists about appearing to be promoting our own interests, when we enter this public work, that we ought not to consider at all. Dr. Runyan asked me today, my candid opinion, as to whether he had exceeded his professional prerogative in doing this work. He said he felt as though his professional brethren were criticising him for doing the work. I have but one opinion about such matter; anything that is my duty to do, it is my habit and practice to do it regardless of what other people think about it. I presume I do lots of things that are not right politically, and I may have a wrong idea about this matter. But if I felt it was my duty to go into the schools of Ann Arbor and do such work, I should not be greatly exercised as to whether my confreres approved of it or not so long as I did the work thoroughly and not with a selfish purpose and no material injury came to my confreres. We are not doing the work for personal gain and benefit; we are doing it for the public good. If it is worth doing at all, we must do it in a perfectly true, professional spirit, and a spirit based upon honesty and professional integrity, and so long

as we are doing it in that way our consciences ought to be clear, and I want to urge Dr. Runyan, in this public place, to go on with his work. It will be but a little while until he finds that the profession in his neighborhood will be commending him for this work, while possibly they are now looking askance at him and saying that he is doing it for some improper motive. I am satisfied that he is not, and everybody is who knows him. We must not be thin-skinned about this thing; anything that is worth doing at all has got to be done, and it ought to be done with a boldness and courage that are necessary to make it effective. If we are not all willing to do this work we should not criticise some one else who is doing it. There are, however, some people who are doing this work from a commercial standpoint; and they are the people who should not be doing it at all. It should be done by the strictly ethical professional men, and they, when doing it on their own responsibility, in an ethical manner, should not be sensitive about it. It is a perfectly honest and legitimate matter, and since the public is demanding it of us the older men in the profession must do it first or the other men will naturally be timid about it.

**Dr. Lanphear:** You spoke of tooth brushes but you didn't give us an idea of what brush you thought was a good one. What do you think of the rolling tooth brush which has been advocated by so many orthodontists?

**Dr. Hoff:** That is a very large subject; it would take me an hour at least to answer that question fully. I could, if we had time, answer it to your satisfaction. Dr. Spalding can answer it because he is doing that work as a specialty, and he is more interested in it, possibly, than any other man in Michigan. There is no single tooth brush that you can use. The rolling tooth brush is an excellent brush but it will not answer every condition. There is no single tooth brush that I know of, and I don't think anybody will ever invent or discover one that will answer all occasions that you can recommend generally.

**Dr. Spalding:** I could not answer that question any more than I could answer the question, if you should ask it, as to what was the best excavator to use for opening a cavity, or for the preparation of a tooth, or any more than you would use one particular remedy for everything. The condition of the mouth, and the teeth, and the shape of the teeth, the teeth that are missing, etc. There is one brush that is manufactured in England, and is advocated by Dr. D. D. Smith, of Philadelphia, where the bristles are not all of the same length and is rather a broad, flat, straight brush. I think Dr. Rogers will have samples of those brushes to show in the clinic. They are good where there is a single tooth standing alone which requires a special form of brush to reach all its surfaces. We should study conditions more carefully and prescribe proper cleansing materials and instruments. The rolling

brush, however, is a very excellent brush for the majority of cases for one brush, but I think every person should have at least two or three brushes. One brush will reach one part of the mouth, one location, but it may require a different shaped brush to reach another part.

**Dr. Runyan:** I thank you all very kindly for the close attention you gave to my talk last evening. As I told you to start out with, I give no set talk to the schools; I talk to these people just as I would if I had them in my office, and I have grown into this work, as I explained to you last evening, accidentally, from the fact of having been called upon, and have always been very much interested in it, recognizing the fact that we do not see our patients, generally, until preventive measures are not practicable, and great injury has been caused a great many times before we have an opportunity to prevent them. If there was some way by which the people could be educated to preventive treatment I have thought I was doing better than to keep my time occupied with repairs. Now there is a great deal printed in the newspapers that is not true or practicable. People are becoming interested by the public prints as well as by the profession, and they should be taught. My aim has been to persuade the children to adopt proper habits of mouth cleanliness. And I want to say to you here, that even with children I talk sometimes a little more than an hour about the work and retain their interest and attention. In order that they may understand, you have got to give them the order in which their teeth are erupted and show them how certain conditions or results are brought about by the neglect of the temporary teeth and the improper extracting of the teeth.

I am very much pleased with the manner in which Dr. Hoff has handled the subject. I have been troubled from time to time, as the work has grown on me, by remarks of others. I have been asked, "What do you get out of it?" or "I cannot see where you are being benefited?" or "It seems to me it is an injury to you the way you present this. You are fixing it so that you won't have any work to do." I have been surprised and pained at the manner in which these questions have been put to me.

## OUR DUTY TO THE CHILDREN OF THE POOR.*

By Benjamin Bloxton, D. D. S., Richmond, Va.

I want us today to get a broader view of our work and realize our full duty as guardians of the "Pearly Gates." We are not guardians in the sense that we are divinely appointed to admit the rich and fortunate and exclude the poor and unfortunate from that haven of pleasure realized in possessing a clean and sound set of dental organs.

Thousands of our people are in bondage to pain, and slaves of suffering from the lack of oral hygiene and the proper care of their dental organs. Why should these unfortunate ones be condemned to a life of misery, appearance marred, health impaired, body undeveloped and diseased from lack of the proper care of their teeth before they are old enough to protect themselves. I am not unmindful of the fact that we owe a duty to ourselves and families. If one is true to one's self "it follows as the night the day, he cannot be false to any man." Bacon says that every man owes a duty to his profession, but let us also remember that we owe a duty to the community in which we live. May we live and work so as to win the esteem and gratitude of those with whom we come in contact.

What have we done to educate the masses to take care of their teeth and practice oral hygiene? We see what the physicians are doing; how they are interested in pure water, pure milk, pure food, clean streets, etc. What assistance are we giving them to help accomplish these things; we the dentists who know that the water, milk and food is no longer pure after it has passed through an unclean mouth? It is time that we were joining hands with the physicians in fighting diseases of all kinds, and educating our people to practice hygiene. We have dental societies for the mutual benefit and education of its members; what are we doing for our friends and neighbors who are not dentists? Have we forgotten our duty to them? "Thus far our success in dentistry is measured by our ability to cope with advanced diseases of the teeth."

May the time be not far distant when the importance of recognizing the antecedent pathology of caries, erosion, pyor-

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

rhea, alveolaris, pericemental abscess be impressed upon the profession, and the public be educated to preventative rather than operative dentistry.

When I compare, with other nations, the advancement we have made in educating our people to practice oral hygiene, I am very much gratified. Our people are far ahead of others in the care of their teeth; we find that over 50 per cent of the better classes have their children's teeth attended to, and it is seldom that you see in this country, now-a-days, a person in society without their natural teeth or artificial substitutes. But how about the poorer classes, what is being done for them? Are we to continue to condemn them to the early loss of their teeth and diseases because they are ignorant and haven't money? Because they haven't the gold, must they be forced to do without the tooth brush also? I have no doubt but that all of us do charity work in our practice, filling and extracting for a few patients, but is this sufficient? How about the thousands of children who never see the inside of a dentist's office until they go to have an aching tooth extracted? Are we expected to take care of all the teeth of the poor? I think not. We could not do it and support our families also. We are taxed to help protect the children from the ravages of the smallpox. Why not protect them also from the caries and the thousands of germs that lurk in their mouths. There are many poor people who are looking forward to the time when they can summon up sufficient resolution and get money enough to have all their teeth extracted and maybe have a set made and have done with toothache forever. What must be their ignorance and suffering to bring them to such conclusion? How much better off they would be had they been educated to spend a little time and money on these organs each year.

I believe that if we could get hold of the poor children, who have never been taught personal cleanliness, and teach them the care of the teeth, they would think more of their personal appearance, feel better, be proud of their teeth, would hold up their heads and become better men and better women. There is no doubt that clean teeth and clean mouths have a good moral effect.

The care of the teeth of the poor naturally begins with teaching them prophylactics, and you cannot do this by one or

two lectures, or by inspection. It must be gone over again and again by qualified teachers or scientists employed for the purpose. Each child ought to be required to have a tooth brush and other accessories, and shown how to use them. "If the mouths of children in public schools could be examined by competent dentists, carious or diseased teeth filled or extracted, and instruction given and enforced with regard to intelligent use of brushes and antiseptics, the death rate of the country would be very materially lessened and the percentage of illness much reduced, and a stronger and more vigorous race result." Education must precede and co-operate with reformatory work, and the education and the work belong to those closely associated with the condition needing reform, and who are cognizant of the conditions and of the methods for their attainment. "When our profession recognizes its capabilities for such an undertaking, and at a sacrifice of time and thought, secures results to our people, the action becomes altruistic in practice and is justly entitled to be classed as professional in the highest sense of the term."

We should work to elevate and better the condition of society, and our regard will be sweeter than pecuniary gain. Up to recent years there was little done toward oral prophylaxis. The medical profession has not realized the importance of aseptic mouths in treating diseases of the general system. The dentists have been devoting all of their time to supplying substitutes for the tissue lost by disease, but the time is fast approaching when the dental surgeon will be devoting his time and energies to the prevention of disease. All medical science is striving to prevent disease in all of its forms. Hygiene is the watchword of the day, and the world is beginning to realize more and more that it is easier, cheaper and better to prevent disease than it is to cure diseased conditions. The benefits that humanity will derive from the adoption of this principle are incalculable. You say that we have our schools to educate the children. Very true, but are they doing it? Dr. Ambler tells us that he examined 98 works on physiology, hygiene and kindred subjects and found that 35 contained nothing; 63 contained 103 pages, average one and two-thirds pages per book. Is it any wonder that our people are ignorant of oral hygiene when such a state of affairs exists?

Fifteen cities in the United States have medical inspection in the public schools—what are we doing? We are taxed to support the schools. What do they teach concerning the teeth? We have a board of health—what protection do they give our people from the pangs of aching teeth, diseased gums and all of their sequelae? It is up to us to see that this condition is remedied, that the children are taught in our schools the care of the teeth, the harm resulting from neglect and the great benefits derived from the proper care of them. Which is the more important—for the child to be vaccinated, or to possess a good sound set of teeth? We spend thousands of dollars every year in vaccination and attendance on smallpox patients, and do nothing for the teeth of the poor. It is as much our duty to ward off diseases as it is to treat diseased conditions. At least 90 per cent of children of the poor have decayed teeth, and it is not too much to say that 30 per cent of all teeth of children between the ages of five and fifteen, in the public schools in the United States, are diseased. I believe that if we had offices fitted up in our hospitals, and one or more dentists on duty all the time, they could do much good, many patients might be relieved who suffer from dental irritation and unhygienic mouths. Ought there not to be a dentist appointed on the staff of our different institutions for the deaf and dumb, blind and insane? I have no doubt but that many of them suffer unnecessary pain from lack of attention to their teeth.

Diseases of the deciduous teeth become an important factor in the change and modification of the shape of the internal structure of the face. In many children general development is interfered with by the diseased condition of the teeth. In order to avoid the results of these disturbances, the deciduous teeth should receive unremitting care so that decay be not allowed to progress to such an extent that the pulp becomes exposed or the tooth lost before the physiological time for them to be "shed." Sometimes decay on the distal surface of the second molar is sufficient to cause the six-year molar to tip forward and lose the proper articulation with its fellow and thus disorganize the whole dental apparatus. The premature loss of one of the second temporary molars may cause malocclusion of all of the permanent teeth; the six-year molar comes forward, also second and third molar;

the incisors protrude, or bicuspids bunch on account of the arrest of development and a consequent lack of room in the arch.

The anatomical features of the face and maxillary sinuses, the nasal chamber and its pneumatic sinuses, the orbits, etc., are also modified in form and structure by these abnormal conditions, and the organs of mastication, speech, breathing, sight, and sometimes hearing, are interfered with. In order to avoid these disturbing influences, our children should be examined by competent and conscientious dentists and the proper steps taken to prevent the supervention of mechanical or other abnormal conditions. One of the most serious conditions with which the rhinologists and the dental surgeons have to contend, and one that is very intimately connected with the disturbance of normal functions and structure, is partial or complete loss of normal respiratory function through the obstruction of the nasal air passages causing mouth breathing. This condition, with all its injurious effects upon the development of the bones of the head and face, disfiguring the features and undermining the general health, has become very prevalent.

It is time that we were realizing the importance of early intervention and beginning to treat and prevent malocclusion of the teeth and restoring normal facial lines and referring of patients suffering from nasal stenosis to the rhinologist for treatment.

Whether obstruction of the air passages causes irregular teeth, or malocclusion is the cause of the air passages being undeveloped, is not in the province of this paper. I want to show the importance of early treatment of children's teeth, and the correction of the abnormal conditions at an early age. It is my firm belief that irreparable damage is done by the oft-repeated advice, "Wait until all of the permanent teeth are erupted before beginning to fill or correct malocclusion."

The mouth, under the most favorable conditions, is an ideal incubator for the development of many forms of bacteria, germs both pathogenic and nonpathogenic being present at all times. The life circle of these germs demands certain conditions, viz: suitable temperature, moisture, food and removal of their waste products sufficient to prevent their own destruction. The oral cavity is the main gateway

to the entire body—then what is the use of having pure food if it has to pass through an unclean mouth? It is through this gateway that many destructive diseases find their way from infection material in the mouth.

The deciduous teeth, as a rule, are neglected until they begin to ache. The great question then is how to get hold of the children at an early age. If we could have the opportunity of looking after the deciduous teeth, it would be an easy matter to keep them in good condition until they are "shed." Upon the condition of the temporary teeth depend the permanent ones, also the full development of the face, air passages, lungs, and even the chest.

Dr. Bogue calls the six-year molar the "principal molar." Loss of this tooth at any age, but especially in youth, is truly a calamity, as it marks the beginning of a degenerative change in the whole dentition. How very grave then the condition which would warrant its extraction.

The first molar is the key to the facial and maxillary growth, erupting at an important stage of life. Its importance cannot be questioned. If through degenerate heredity, malnutrition, or other causes the child be born into the world with a tendency to insufficient bone development, it is incumbent upon us to assist the necessary crowded dental organs to assume a proper position through aiding the correct adjustment of those bones upon which the natural form of every facial feature depends.

The real majesty and importance of the first molar in the dental apparatus is but just beginning to be comprehended by dentists. They are not only the most important teeth in the whole dental apparatus in performing the function of mastication, but they are, to a very large extent, the molders of the dental apparatus, and the locators of all of the other teeth. They are also the only true points from which to begin the study and diagnosis of all cases of malocclusion. They, to a very large extent, make or mar facial beauty. Upon restoration and maintenance of misplaced teeth into true occlusal relation depends the ability of the individual to properly perform the function of mastication, and there can be but little doubt that the sequellae of improper mastication includes nearly all the ills to which man is heir. Real vital energy is secured only through thorough mastication, and

lack of this, there must follow a lessened vital resistance to disease germs, and other causes of ill health. Moreover the malrelation of the teeth is preventative of perfect oral cleanliness. I am clearly of the opinion that neglect is at the bottom of most cases of irregularity, and that early treatment would prevent these evils, and preventative medicine is the highest level of the art.

Irregularities in the arrangement of the child's teeth should be noted and every dental surgeon and rhinologist should be able to recognize the irregular arrangement of the temporary teeth as well as the first permanent molar.

The pure food law is a good thing for our people, and was much needed, but what we need most is to teach our people personal cleanliness, not only to keep the skin clean, but the alimentary tract as well; to practice hygiene, and oral hygiene in particular. We, the dentists, should be the leaders in this movement. I have heard people extolling the pure food laws and abusing the meat packers, whose mouths had never known the use of a tooth brush.

Why is it that mothers do not have their children's teeth attended to? Isn't it for the reason that they are ignorant of the dangers of neglect? Do we realize the danger these little ones are in, whose mouths are regular picnic grounds for bacteria, a rendezvous for bacilli, where germs call upon microbes and a thousand diseases frisk among the debris?

Take a small portion of this debris from one of their mouths and put it under a microscope and you will behold a revel of life which resembles Broad street on Christmas eve. It is up to us, as dentists, neighbors and Christian gentlemen, to correct this condition, and educate and protect, as far as we are able, those who are ignorant and in danger.

Unclean mouths (and their names are legion) are the incubators of many diseases; gastritis, indigestion, influenza, and sometimes appendicitis and many other ills can be traced to mouths with salivary calculus food debris, putrescent teeth and roots, inflamed gums, etc. A few years' experience in practice will impress upon any one the improvement that frequently follows the successful treatment of diseases in the oral cavity; this, with the moral effect of a clean mouth, makes the teaching and practice of oral prophylactics an ethical and altruistic consideration, and, if not a part of the

daily work of the dental practitioner is evidence that he has not exerted himself to fulfill the highest conception of his calling.

Nature defends herself against germs in many ways; the mucus entangles and carries them to the stomach, where many are killed by the gastric juices; others survive and are destroyed when they reach the intestines; others may enter the system. Here they are retarded by the alkalinity of the blood, and enveloped and digested by the phagocytes, but sometimes these guardians are not sufficient in number to overcome the great influx of the enemies of health. It is at this time that hygiene and prophylactics will often save the day and turn defeat into victory. It is said that "an ounce of prevention is worth a pound of cure." Do we give the poor the ounce of prevention? I am afraid that we have not done so.

Canada is now making an effort to have her school-children's teeth examined. Let us not be behind in this forward movement. We Virginians should take the lead. It is time we were realizing the fact that diseased teeth will produce physical as well as moral degeneracy. There has been some work done towards educating our children in oral prophylactics; we have been trying to get a chapter in the public school text-books on hygiene, I think—with what success I know not—but to my mind this will be entirely inadequate; what we need is some one in our schools to teach the children day after day.

How much the dental profession is culpable in permitting ignorance in oral hygiene cannot be computed, but this fact is apparent, that a condition exists that makes it a prerogative of the profession to investigate its effect upon the natural functions of the physical economy, diffuse the knowledge thus obtained and remove, by all available means, the disturbing factors.

Laws are being enacted to enforce hygienic conditions. Our own city is spending more money than ever before on the health department. There is a general awakening all along the line; let us not be idle, let us be up and doing.

We are thinking and talking of abolishing the D. D. S. degree, and requiring the M. D. in its place. This is a good idea, and work along the right line, and I am much gratified

at the impetus this movement has received at this meeting. What we are after is the elevation of our profession. We think that the science of dentistry is as honorable as medicine, surgery, or any other, and it is time that we were showing to the world that we are no longer "tooth carpenters," but true men of science, and that we are doing more than putting in fillings and making artificial dentures; if that is all, we deserve to be classed with the artificial limb maker, and other skilled mechanics.

To call public attention to a moral and physical necessity requires that we should offer some plan of suggestion to correct or alleviate the condition.

We should have a dental surgeon on our board of health. We need competent men to inspect the teeth of our schoolchildren at least twice each session, and report to the board of health. We should have hospitals for the care of the teeth of the worthy poor. We should have dental hygiene and prophylactics taught in our public schools.

It is up to the dentists to convince the people that dentistry is an important part of preventative medicine, and arrange to have the teeth of the poor looked after. When we shall have accomplished this humanitarian act, dental surgery will have been elevated to a higher plane.

## PRESIDENT'S ADDRESS.*

**By R. A. Adams, D. D. S., Clinton, Indiana.**

Fifty years ago the 28th day of September next, the initiative was taken by the dentists of Indianapolis to form the practitioners of the state into a closer relationship, and upon their invitation, fifteen dentists from different parts of the state met on December 28, at Ramsey's hall and formed the Indiana State Dental Association. At their first meeting Dr. J. F. Johnson, Indianapolis, was elected president; Drs. J. P. Ulery, Rising Sun, P. G. C. Hunt, Indianapolis, and A. M. Moore, Lafayette, vice-presidents; Dr. C. C. North, Indianapolis, secretary, and Dr. T. M. Nichols, Indianapolis,

*Read at the Semi-Centennial Celebration, Indiana State Dental Association, June, 1908.


Officers—Indiana State Dental Association.

treasurer, and these with Drs. John Hood and L. M. French, Greensburg; S. B. Smith, Terre Haute; H. B. Hurd, Attica; George Lupton, Shelbyville; H. Satterwhite, Franklin; G. B. Harlan, Danville; W. R. Webster, Richmond, and C. C. Dillis, New Castle, formed the charter members.

Drs. G. H. Perine, New York City; G. L. Broffett, New Paris, Ohio, and J. F. Tolland, Cincinnati, were present, and were elected honorary members.

The Indiana State Dental Association has met every year since, except 1863, when, owing to the unsettled condition of the country, no meeting was held. In all this time it has ever pressed onward and upward, working continuously for the betterment of the whole profession, and with its present membership and prevailing good will the outlook for the future is indeed bright.

To celebrate our fiftieth anniversary—to commemorate the memory of these illustrious founders—to keep up the good work which they so wisely started—to afford opportunity for placing before the profession, new ideas, new thoughts and new ways and means, and to renew and stimulate that good fellowship which should prevail among the workers of our noble profession, is the object sought by this Semi-Centennial Jubilee Meeting.

To help us celebrate we have invited the dentists of Michigan, Ohio, Kentucky and Illinois to be with us at this time. Who is there more competent to give us new facts and advanced thoughts than the dentists of these states? Who is there upon whom we would rather lavish our good fellowship than upon these, our invited guests? Surely this meeting is fitting.

It is certainly most kind of our sister states to come here at this time and fill our program. You will notice that the whole program is made up of dentists from without the state, Michigan, Ohio, Kentucky and Illinois, each contributing papers, and these, with other states, furnishing this splendid staff of clinicians. With such an array of talent, and with the splendidly arranged social program, our meeting will certainly be all that heart could wish.

In acting the part of host on this occasion we will try


Honorary Presidents Semi-Centennial Jubilee Meeting.

to anticipate your wants and supply them, but should anything be overlooked, do us the kindness to let us know and it will be immediately looked after.

## ELEVATION OF THE PROFESSION.

Is the profession of dentistry occupying as high a position as we are wont to have it? Surely not. Then why? Is it because the members are deficient in skill and ability? No. All will agree that for proficiency and skill we compare with any other profession. It is noticeable that when a writer or public speaker has occasion to refer to the professions it is the ministry, the law and medicine. Seldom, indeed, is dentistry mentioned. Why is it? It is because the members composing the profession either have not the light or have been hiding it under a bushel. The laiety measures the profession of dentistry very largely by what they see and know of the dentists themselves. No profession can be broader or more elevated than are the several members of which it is composed.

It is for us then to be bigger and broader men. It is for us to make our influence felt in the several communities in which we live, not only by relieving men of their physical pain, but by being interested with them in their social, political and civic affairs. This will not only make us broader men, but will place us before society in a better light.

Too many dentists look upon their profession as being their life work, while I maintain that it should be only the work in life from which they are to receive such compensation as is necessary for their well-being. The life work of any man should be broader than the mere confines of a single trade or profession, for if it is not he fails utterly to contribute to the pleasures and comforts of those around him, and thus loses in a large measure real happiness for himself.

## EDUCATING THE PUBLIC.

Relative to the matter of educating the public in the care of the oral cavity, it is conceded that it can be best accomplished by dealing with the children. Our schools offer the opportunity. The schools in the cities and towns can

be reached directly, and the rural districts through the teacher. I would like to see this association enter into a systematic campaign of educating the school children of the state in the care of the oral cavity. We all know it needs to be done. Then if it needs to be done, it is our business to see that it is done. I offer the following plan:

Let a committee on education be appointed whose business it would be to divide the state into suitable districts, of a convenient number of counties each, and appoint a supervisor for each district. Then outline and have printed a suitable address, and place a sufficient number in the hands of the supervisors.

When the teachers of the several counties meet in their annual county institute, this supervisor should have some local dentist deliver an address before the teachers.

Any county superintendent would gladly arrange his institute program to include such a lecture. The teachers would then be in a position to instruct their pupils how to care for their teeth as well as teaching them the necessity therefor.

An outline of another address along similar lines could be printed and placed in the hands of the several supervisors, who, in turn, by agreement, could place in the hands of some local dentist or dentists, as the case may require, in every town in the state. These local dentists could, by arranging with the superintendent of schools, visit each room sometime during the school term, and occupy the "opening exercise" period in instructing the children in oral sanitation.

With our compulsory education laws in force as they are, and if some such plan as this was carried out, eighty-five per cent of the children of the state would receive direct instruction in the care of the oral cavity.

If this or a similar campaign should be carried out for a period of three or four years, oral cleanliness would be practiced by ninety per cent of the children in the state.

To carry out such a program would entail considerable work and some expense, but the results obtained would amply repay us, and I recommend such a plan for your consideration.

## REORGANIZATION OF STATE SOCIETY.

Without going into detail as to the advantages of better society organization, and as you are all more or less familiar with the plan adopted and so successfully carried out by the dentists of Illinois, I recommend that a committee be appointed at this session to reorganize our society along similar lines.

With the great net-work of steam and electric railways in the state making it comparatively easy to get from one place to another, and with the enthusiasm manifested by our present members, I anticipate very little trouble in effecting such a reorganization.

## OUR STATE BOARD AND NEW LEGISLATION.

I want at this time to commend our State Board of Dental Examiners for the good work they have been doing. By their progressiveness they are continually raising the standard of the profession in the state. At all times they have protected the public and the legal practitioners and have taken an advanced stand in the inter-change of license, having already entered into contracts with New Jersey, Michigan, Minnesota, and Iowa, and are negotiating with the boards of other states.

The board has been handicapped, however, in two particulars at least, first, by the clause in our law defining the practice of dentistry, not being explicit enough, and, second, by not being able to keep track of those who have already registered. The clause in the Ohio law defining the practice of dentistry is an excellent one, and ours should be made as good; then, too, our law should be so changed as to compel the annual registration of the dentists of the state, and I recommend that the legislative committee be instructed to have introduced, and if possible passed by the next legislature, clauses covering these two points.

## DENTAL INSPECTION OF SCHOOL CHILDREN.

The secretary of the state board of health will have introduced in the next legislature a bill looking to the medical and dental inspection of the school children of the state. I think this bill should not only include the public schools but all our state institutions.

That this bill may be such as to meet with our approval, I think the legislative committee should be instructed to co-operate with the secretary of the state board of health in its preparation, and then to lend their assistance in having it passed.

To do this it will be necessary for them to go to some little expense, and as this committee has heretofore borne its own expenses I think this time an appropriation from the funds of the association should be made to cover them.

Before closing I want to thank the several officers and committees for the good work they have done; especially do I want to thank the executive committee who have worked long and hard and whose results you now have before you.

## REMARKS BY THE PRESIDENT OF THE ILLINOIS STATE DENTAL SOCIETY.*

**W. A. Johnston, M. D., D. D. S., Peoria, Ill.**

If it were possible to kill off the last speaker on a program as long as this it might help the meeting and give you all a better appetite for your mid-day meal.

Unfortunately, the laws of the state of Indiana forbid the execution of any man, without a fair trial, so you must bear with me, for a few moments at least, and after that I must take the consequences.

In a saloon out west—farther west than Illinois—this sign holds a conspicuous place: "Please do not shoot the pianist. He is doing the best he can." Now just imagine that I am doing the best I can and don't shoot. I am a trifle embarrassed by the array of names on the program, of men of national and international reputation, and am somewhat puffed up in being allowed to appear in such good company.

It would be in very poor taste, to say the least, if I were to call attention to the kind of dentists we have in Illinois, except to say that they are a pretty decent lot, and it is no disgrace to the Indiana State Dental Association to receive

*Remarks made at the Semi-Centennial Jubilee Celebration of the Indiana State Dental Association, Indianapolis, June 4-6, 1908.

the greetings, the good wishes and the hearty congratulations of the Illinois State Dental Society, which are hereby extended to you. Although a trifle younger than you, we have grown faster in the last few years, just as the younger son often outstrips his older brother in size.

It is my purpose, in the few moments at my command, to tell you, "Upon what meat this Caeser feeds, that he has grown so great," and to speak of a few of the advantages of organization.

In 1903, a committee was appointed to devise ways and means for increasing the membership of our state society. This committee organized the state into thirty local component societies, membership in which included membership in the parent organization, and in 1905 the state society was reorganized in accordance with the plan recommended by the committee. We have been working under this plan for three years and are pleased enough with it to recommend it to our friends.

The most noticeable advance has been made in our numbers. In 1904 our total active membership was 246. In 1907, the active members numbered 1,384. In addition to this, we have a list of non-resident, honorary and corresponding members which remains practically the same, This makes a total gain numerically of 1,138 in three years. Isn't that going some?

The records for 1908 are not yet available, but the annual meeting just held in Springfield was certainly a good one, and the secretary reported that we were still growing, so that now we claim a membership of 1,500, which is about 50 per cent of all the dentists practicing in the state.

Now remember, that this means actual paid up members, for under our new constitution no one is counted who has not paid his dues in advance for the current year, and dead heads are not carried on the roll for three years as was the former custom. Our annual dues have been cut down from $5.00 to $2.00, and yet we have more money than ever with which to carry out our plans.

In 1901-02-03 our receipts from dues averaged $1,241.00 per year, while in 1905-06-07 we received $2,717.00 per year from the same source. For years we have been trying to have a suitable dental law enacted to protect the public from

charlatans, but when only 250 out of 3,000 dentists in the state were organized, the law makers reminded us that we were very largely in the minority, and paid very little attention to our requests. When, however, it was possible, just at the critical time, and on only 24 hours' notice, to pour into Springfield over 1,000 telegrams and letters to our representatives, when the present dental law was upon its passage, the result was different. Our friends at the Capitol realized that they had an organized force to deal with, and the law was passed. Without the organized local societies, such a storm of telegrams would have been impossible.

The component societies have proved of great advantage to the country dentist, bringing him in touch with those in the city, promoting good fellowship in the smaller towns, and encouraging latent talent all over the state.

I will not tire you with unnecessary details. You may have the benefit of our experience for the asking.

Increased membership means wider influence, politically, financially, socially and professionally. Success succeeds and is always popular. At our last meeting, five cities clamored for the privilege of entertaining the society in 1909.

We chose Danville because it was as near to Indiana as it was possible to get, and we will be glad to welcome as many of the Indiana men as care to come, to join us in our 45th annual meeting.

A number of Illinois men are on your program this year, and if you like the samples shown, come over the line next May and we will exhibit our whole stock. In the meantime, the whole 1,500 of us, extend our greetings to the Indiana State Dental Association on it 50th birthday and wish it many happy returns.

"May you live
Longer than I have time to tell your years—
Ever beloved and loving may your rule be,
And when old Time shall bring you to your end,
Goodness and you, fill up one monument."

# REMARKS FROM MICHIGAN STATE DENTAL ASSOCIATION.*

By N. S. Hoff, D. D. S., Ann Arbor, Mich.

I regret that the president of the Michigan State Dental Society is not here today to bring the greetings of your Michigan friends and their cordial wishes for your continued prosperity and success in building dental professionalism in your state. Our president has telegraphed me to extend his personal congratulations on this happy occasion and to convey officially the very cordial and fraternal greetings of all Michigan dentists. Our organization is two years older than yours, and we can therefore claim a paternal attitude, but we hesitate, since we realize that your society has done so large and important a service during its past as to make it rank with any and all other dental societies in the middle west in developing our grand profession. I wish I had time today to recall even by name some of the noble men from your state that have made heroic sacrifices of time and money in their devotion to our calling. I have known most of your illustrious men, and recall, with pleasure, personal acquaintance with such men as Drs. Joseph Richardson, P. G. C. Hunt, Seneca Brown, I. R. Clayton, and a long list that I can't now name, but whom I have no doubt you all today feel the stimulus of their past activities. It is a grand thing to have an historical past that will bear rehearsing with pride; it creates new interest and begets enthusiasm, which results in the achievements that are worth while, and it begets devotion to our calling which cannot bring other than the most desirable results. You are going to have a splendid and enthusiastic meeting and every one here, I am confident, is glad he has come. With all the best talent of all the surrounding states to contribute, you certainly will have a feast of good things—may we not hope that it shall be a love feast—but I believe we shall all have come together in vain unless we shall get some new insight into the nobility of our calling as a result of this gathering of the best talent of the six

*Remarks at Semi-Centennial Jubilee Celebration, Indiana Dental Society, 1908. In absence of the president, Dr. E. B. Spalding, Dr. Hoff responded for him.

states represented in this, your Semi-Centennial Celebration. We, of Michigan, come to help you pay our mutual respects to the noble men of your state who have made this meeting possible. We desire to honor in the most complimentary manner those who have done their part of the work. We haven't words to express our gratitude for the grand stand they made for dentistry as a profession, we have inherited the results of their labors, and hope to hand on to our successors a broader and more honored profession than our predecessors founded or hoped to see. We can do no better than to make this meeting a grand success from every standpoint; it will certainly succeed as a literary and technical convention if we can judge in advance from the program, and the motive as well as the management will surely conspire to make it a professional and fraternal gathering long to be remembered.

I bring you the most friendly congratulations and good wishes for this happy event, as well as the fraternal sympathy and hearty co-operation of the dental profession of Michigan in every effort to elevate and ennoble the art and science of dentistry.

## REMARKS BY THE PRESIDENT OF KENTUCKY STATE DENTAL ASSOCIATION.*

**McFarran Crow, D. D. S., Versailles, Ky.**

As the representative of your sister state, Kentucky, it gives me pleasure to congratulate and compliment you on this happy occasion.

I find it my duty, and a pleasant duty it is, to bring you tidings of esteem and good will from a people who are ever ready to recognize and applaud ability and worth. To you belongs the honor of holding the first celebration of this kind, exhibiting the neighborly spirit, and it is to be hoped that it will become a universal custom.

*Remarks made at the Semi-Centennial Jubilee Celebration of the Indiana State Dental Association, Indianapolis, June 4-6, 1908.

The establishment of such a custom is bound to result in closer bonds of friendship and good will between societies and individuals.

Life is short and its pleasures are fleeting so let us make it a rule to seize every opportunity for festive occasions and celebrate them with a will. Let us

"Enjoy the time of love and youth,
To some good angel leave all the rest;
For all too soon we learn the truth,
There are no birds in a last year's nest."

By your kind invitation to us to help you celebrate, and by the splendid welcome given us by your Hon. Governor and Mayor, I can perceive that you have already and everlastingly won the hearts of these Kentuckians, and I assure you that you can always count on them for any enterprise you may undertake, whether it be a frolic or a fight. It may not be a matter of common knowledge, but it is a fact that Kentuckians are rather prone to fight, and generally they are found fighting for a just cause.

Perhaps I may be allowed to remind you that Kentuckians have in the past fought for the freedom of your state and sections. Early history tells among other valiant deeds of that empire builder, George Rogers Clark, how he came with a small band of Kentuckians and captured from the British the forts of Kaskaskia and Vincennes, thereby adding to the United States a territory equal to one-fourth of its present area. Undoubtedly this fair land of yours would now belong to Canada but for the exploits of Clark and his Kentuckians.

I might tell you also of Kentuckians who have since that time come to your state to make their homes and help establish one of the greatest states in the union and incidentally to hold office from vice-president to justice of the peace.

Indiana, undoubtedly, is a great state and has for years had the honor of containing that point known as the center of population. The center is shifting gradually southward, however, and it may not be long before the historic precinct known as Foxtown, Ky., will be the center of the earth.

## DECAY AND LOSS OF THE DENTAL ORGANS.

We Kentuckians come to you today, however, not as fighters nor altogether as frolickers, but to join our hands and hearts and wits with you in the great struggle against one form of disease with which the human family has to contend.

The decay and loss of the dental organs is a great calamity and, strange to say, a large percentage of the population do not realize it. The human mind today, however, as never before in the history of man, is awakening to the fact that disease in its various forms may be conquered and eradicated by scientific means. The dental profession, dealing as it does with the surgical and mechanical care of the organs of mastication, has its part to play in the conservation of health, hygiene and facial beauty. And now on this fiftieth anniversary celebration we may look back with pleasure and pride on the advancement of the profession along these lines in that length of time.

## FIFTY YEARS OF DENTISTRY.

Fifty years in the history of nations is but as one day, but fifty years of the history of the dental profession almost tells the tale and is practically all of what we count as worthy of consideration. Great things have been accomplished in that time, but I am confident that greater still are in store for us in the future.

The practice of the profession fifty years ago was, I have no doubt, considered a wonderful improvement over what it had been, but methods have changed from time to time during the half century past, and today we accomplish feats undreamed of by our ancestors.

Men are among us now who witnessed the beginning of cohesive gold manipulation, and a great many thought that perfection had been reached. Those same men who live to see its passing out again and giving place to something infinitely better. Vulcanite, that paradox, a curse in disguise parading as a blessing, has had full sway almost, but it, too, is beginning to take its place as servant instead of master. Its companion in iniquity, amalgam, for fifty years past has by its ease of manipulation and cheapness become fixed as a

standard filling material with a majority of operators. In the light of present day achievements, were those societies of fifty years ago far wrong when they expelled members for advocating the use of amalgam? Had I the influence and ability to accomplish it, I should at once start a crusade against the indiscriminate use of that trio of makeshifts, vulcanite, amalgam and the fixed bridge, for they are practices contrary to our best judgment and to the advancement and progress of the profession. Cataphoresis has come and gone. The inlay is now here but its hold on the minds of the profession is by no means secure and it may "drop out of sight" at any time. The "worm" theory of our forefathers has been abandoned for the more elegant and scientific germ theory, and today we are standing, as it were, on the brink of a new era breathlessly, almost, awaiting the coming of some Moses to lead us out of the wilderness into the land of the ideal filling, and the cause and cure of pyorrhea. It is a grand thing to live in such a history-making time and have a part, however humble, in its affairs. There is apparently no limit to the accomplishments possible to those who are earnest seekers after facts, and it is a part of our heritage, this opportunity to pursue and obtain undreamed of successes.

The medical profession has practically conquered hydrophobia, diphtheria, small-pox and yellow fever, and is making today a grand attempt to throttle that enemy of all humanity, consumption. We as a profession have a part to take in this attempt also, for one of the requirements is plenty of nourishing food. Perfect organs of mastication and oral hygiene are necessary to that end.

It is my belief that it is our duty to enlist at once in this fight against that most insidious enemy of humanity and throw our weight into the breach already made toward its eradication.

The splendid organization which our profession is surely going to have in the near future, of which this celebration and similar ones are the exponents, will give a great opportunity for such labor. It is a privilege and an honor which comes to us by nature of our calling and we must cherish it and endeavor to l ear ourselves worthy of it by helping in this great work for humanity.

## DENTAL ORGANIZATION.

Dental organization is one of the accomplishments of the past we are called upon to chronicle and congratulate ourselves upon and to notice also that it is growing rapidly all over the country. The spirit of fellowship and good feeling is increasing and will increase more rapidly as the result of association. The scope of society work will widen and develop greater possibilities for good in the future.

## A FUND FOR AGED AND DISABLED PRACTITIONERS.

A distinguished gentleman of Cincinnati has made a valuable suggestion in a recent address. His idea is to establish a national fund by yearly contribution of society members for the benefit of aged and disabled practitioners. Such a fund could probably be combined with the Dental Protective Association, an organization which has already done the profession a great amount of good. At the time of the San Francisco disaster by earthquake and fire a large number of dentists were left in distress. Voluntary contributions were sent in hurriedly and the sufferers were helped to the extent of about $27.00 each. A very pitiful showing compared to what could have been done had Dr. Wright's suggestion been made and acted upon fifty years ago. Through our organization dental legislation can be secured which would otherwise be impossible.

## UNIFORM STATE DENTAL LAWS.

We need more uniform state dental laws. If a person is qualified to practice in one state he is equally qualified for practice in any other state and should have that privilege without having to stand a rigid examination on elementary subjects.

Laws surrounding the practice of dentistry with the proper safeguards are being enacted throughout the states and they are gradually lifting the profession to a higher plane, until finally the so-called "yellow dog" of the profession will be entirely eliminated.

When we can get together and have a uniform standard of ethics and government and uniform laws in all the states, we

will have accomplished a thing of lasting good to the profession. By united action the national government has been brought to see the need for army dental surgeons and has provided for their maintenance. By united action the dental schools have a uniform rule for government, thereby eliminating harmful contentions.

So altogether the fifty years of the history of your association has been a period of advancement for the profession from one success to another, using the failures as stepping-stones to something better until dentistry from a trade has been brought to occupy its proper position as a learned profession. Then let us rejoice together on this happy occasion, not only as dental surgeons, but also as citizens of the greatest, freest country on the globe today. Sweet land of liberty and progress! Let us be thankful for all the privileges and blessings we enjoy, for

"The world is full of roses
And the roses full of dew,
And the dew is full of heavenly love
That drips for me and you."

To your guest of honor on this occasion I present the compliments of Kentucky dentists, who recognize fully the honor they have in honoring him who has done so much for dentistry. May he in the evening of his well spent life have full knowledge of the love and esteem in which he is held by all true dentists. For your venerable and beloved Honorary President we also wish to express our admiration, and sincerely hope he may have many returns of this day. And again ladies and gentlemen of the Indiana Dental Association, in behalf of the dentists of Kentucky, I congratulate you for being one of the oldest and at the same time one of the youngest and most active associations.

Just across the river lies the old Kentucky home, and although occasional clouds have cast a shadow over her fair name, the sun still shines bright, and to her friends, and especially to the members of the Indiana Dental Association, her latch string is ever on the outside.

# CAST GOLD INLAY.*

By L. E. Custer, D. D. S., Dayton, O.

In 1906, Dr. Ollendorf, of Breslau, devised a method of casting metal plates by making a model of the plate in wax and leading to this was a gate about 3 inches long. The flask did not open, but the wax was burned out upon heating. The casting of such thin pieces was due to the weight of metal given to the three-inch head. Dr. W. H. Taggart, independently of Dr. Ollendorf, about the same time, used wax and paraffine for a model of the filling to be cast. The gold is melted with the oxyhydrogen flame and cast into the mould by, in his latest improved device, about 30 pounds pressure taken from the nitrous oxide cylinder itself. The casting of a metal filling by the use of a disappearing model and a flow of melted gold under pressure is due to Dr. Taggart.

In March, 1907, I devised a method which differs from Dr. Taggart's in the method of obtaining the heat and casting. I make use of a small arc light under a glass dome. The gold is thus subjected to 6000° of heat in a very small space and at the proper moment 30 to 40 pounds of compressed air are admitted to the receiver which causes the gold to fill the mould. This method possesses the advantages of simplicity and certainty of casting, for the whole process can be seen and it can be told at once whether there has been a "casting" or not.

## PREPARATION OF THE CAVITY.

The cavity is prepared in the usual manner for an inlay filling, having the walls without undercut. Since a matrix is not necessary the smaller fissures may be followed out in all their ramifications without the necessity of cutting down the intervening cusp structure. The only precaution necessary is that the filling will draw.

## MAKING THE WAX MODEL.

Wax and paraffine, about equal parts, which have been melted and filtered, are used for this purpose. This is rolled out into sticks about the size of a lead pencil for convenience. If it is stained blue or green, it will contrast with the tooth and

*Presented before the Columbus City Dental Society.

gum, which will facilitate the work. Warm one end and press firmly into the wet cavity. Trim off the surplus and have the patient bite into the filling if it is on the masticating surface. Trim for occlusion and approximal space, giving the wax filling such a shape as it is desired in the finished gold. A little time spent in this part of the work will save much in the end.

### REMOVAL OF THE WAX MODEL.

Heat the little wire sprue for this purpose at the notched end. Allow it to sink into the most convenient part of the filling and immediately cool both wax and sprue with a few drops of cold water. Carefully withdraw the filling. If it is felt that there are any undercuts and the filling is not readily removed, it can be worked back and forth till the enlarged part of the wax is rubbed down and the filling is felt to go in and out without any drag. Just before removing for the last time carefully go over all the margins to see that they are perfect.

### THE INVESTMENT.

Place a carbon crucible, cavity downward, upon the investment guide. Let the sprue pin into the hole of the carbon and guide. The filling will rest about 3-16 of an inch above the carbon. Screw the index finger up or down till the lower edge is on a line with the top of the wax. Having mixed the finest ground calcined fire-clay three parts, and plaster one part, carefully paint over the wax filling, taking care that no air bubbles rest upon the wax. A small camel's-hair brush is best for this purpose. Cover with enough investment to be about 3-16 of an inch thick over the wax and carbon, the top of the index finger and the sides of the base will be a guide.

When this has set a little make a fresh mix of investment. This may be coarser ground. Fill the flask about full. Remove the piece from the investment guide, and, holding by the wire, carefully sink in the middle of the flask till it is felt to touch the bottom. The first investment should be well set, otherwise the wax will be pushed out of place. If the second investment is not sufficient to flow over the outer edges of the carbon crucible, add more till it forms a rim around the edges. It is important to cover all of the carbon up except the concaved crucible part.

When the investment has thoroughly set heat the wire to a dull red over a flame and withdraw from the flask. It can be felt when the heat has melted the wax at the inner end. Bind the copper wire under the screw and place crucible carbon down over a flame, not too hot at first. When the carbon shows a dull red the case is ready for casting.

### TO CAST.

Rub the bottom of the flask clean upon a little No. 0 sandpaper and see that the seat of the casting appliance is also clean. Place the flask in the center of the appliance. Place a solid nugget of gold in the crucible large enough to make the filling and surplus enough to fill the carbon crucible when the casting is finished. Place the glass dome in place upon the rubber seat and the fibre plate upon the glass. Screw down tightly. By means of the little thumb-screw at the right bring the carbon in contact with the gold, and then withdraw a short distance. An arc will be formed, quickly melting the gold. When the gold is seen to be not only melted, but nearly at its boiling point, admit at once about 35 pounds of compressed air, leaving the pressure on till the gold is at a dull red.

If the mould has not thoroughly dried out gas will form which, on escaping, raises the gold from its seat. If this is seen the gold should not be cast till it has subsided in the crucible.

### CLEANING.

When the gold has cooled a little, the flask may be immediately opened. Brush off the investment with a stiff brush. If there remains a persistent coating this can be removed by pickling in hydrofluoric acid. Examine with a microscope for little beads upon the surface due to bubbles in the investment.

### SETTING.

Remove the stem with a wedge-cutter. Try in place and articulate. If the inlay does not go to place perfectly, it is due to small beads upon the surface due to a coarse investment or to air bubbles in the investment. Examine with a microscope and remove any that may be found. Cement in place with the finest inlay cement. The fit of these fillings is so perfect that

only the finest ground inlay cement will serve. Ames' inlay is suggested. The filling should then be polished. If at any point there should not be a perfect fit, a rotary burnisher with coarse leaves will spin the gold into perfect apposition.

### SUGGESTIONS.

Be sure the appliance is connected up for + and —; otherwise the carbon pencil will get hotter than the gold. The gold should be + and the carbon —.

See that the copper wire binds the carbon crucible tightly. If current does not flow it is either because the copper wire does not pinch the carbon or the current is not on at the switch. It is better to use a new wire each time.

The first layer of investment should be ground as fine as possible—the finer the better.

The investment should be thoroughly dried out and about a dull red in the carbon crucible. It can be cast when cold, but the gold must be at its highest possible heat.

A switch is placed at the right for convenience. While no current will flow when the appliance is not in use, it is better to turn the current off while placing the flask in position.

The rheostat is properly wound for the few minutes' use necessary in fusing the gold, but will not stand continuous use by mistake or for other purposes.

The gold can be gotten in convenient form by melting in one of the crucibles with as large a head upon it as is necessary to furnish the amount for the filling. There should always be a crucible full of gold when the casting has been made.

If the gold sinks down without returning to the surface, a good "casting" has been made. If it rises up, gas is present.

Do not keep the gold at the boiling point, for as it suddenly drops back into the crucible a tear may separate from the nugget and stop up the hole leading to the mould.

# DENTISTRY IN 1958.

## A Glimpse into the Future.

By F. B. Spooner, D. D. S., Brooklyn, N. Y.

When I awoke, the sun was shining in my face, I felt chilled; every muscle ached. Slowly recollection came of where I was the previous night. I recalled being overtaken by a storm while hunting in the mountains. The earth shook; I had a sense of falling, then rising, and no more until roused to find that day had come again.

I was lying in an indentation of a steep cliff. Below was a descent to the earth far down. Above, the summit was some hundreds of feet overhead. Reaching it, with difficulty, I found the top was an island—if such it could be called where there was no water—on all sides being an abrupt drop. I reasoned that the disturbance was an earthquake, which had thrown me into a crevice, as the ground opened.

The mountains on all sides, and the surface of this rain-washed rock, was all I could discover. Exhausted by my efforts to climb, and consumed by thirst, which I now felt keenly, the sun being well up, I lay down, staring into sky without a cloud. I thought of the tales of men living without food or water. Such was my despair that I hardly observed a gigantic bird that flew overhead. Another came, this one so low that my attention was caught, even to see from the shape that it was not a bird, but an air vessel, made by men. I shouted, but it was soon out of sight. Again discouragement seized me, when I was roused from a stupor, of how long I cannot say, by a man's voice. Another of the craft had noticed me, and were hovering overhead.

They threw out a rope ladder, having a device like a centipede with suckers that attached to the rock. A man followed, who spoke, but I could not answer from my parched mouth. He perceived my condition and helped me to a contrivance like a basket, which was lowered and in which I was raised to the vessel. My friends gave me food and water. Recovering after a time, I told of my adventure. They expressed doubt when I mentioned the quake, which was not surprising, as I learned that such disturbances were known all over the world in a few minutes, and they had no knowledge of such.

The ship which had rescued me held twenty people, including several ladies. They had left San Francisco the day before; when flying low I was discovered. I expressed surprise that a ship should be able to navigate the air for such a prodigious distance, when a man who seemed the captain, asked whether I had never seen such a craft, adding, as I stated that "it was marvelous," "When were you born?"

I replied, "In 1850."

"Guess you have made an error; this is 1958."

I must have grown weak at the shock, for when I recovered one of the ladies was bathing my face with a sweet-smelling lotion. I saw the Rocky Mountains were getting faint, while the sun, being at my left hand, the course was east. The earth was green, not the waste of brown desert that should be there. As I made a motion, the lady withdrew, making way for the captain.

"I have decided to leave you at Denver," he said kindly, "where you will get the best of care."

While speaking, one of the crew handed him a piece of money which had dropped from my clothes. Putting my hand to my belt I found it was broken; the contents gone, save two or three pieces. He took them, rubbed off the stains that had grown in a single night, then going to the group forward, they were examined by one and another. A lady of middle age came to my side, saying, "If you feel stronger, tell me your story."

"The tale is a sad one," she said with respect. "But the dates on these coins give some corroboration. We have thought it best to land you in Denver, and as I own this Aireo, the captain agrees you had best be in charge of some authority."

I expressed my thanks, saying, "It matters little where I am put, as, if fifty years have lapsed, all my friends have passed away."

A young girl stood by the lady's side. She looked with sorrow, and yet repulsion. When I met her eyes she clutched the arm of her mother. The act was simple but in my state caused me to shed tears.

"Oh, mamma, how dreadful," she whispered, "to be alone in the world."

The elder lady was soothing her when the steady throb

of the engines became intermittent. There was a slight jar, telling we had struck land. When I again saw the lady she had a packet for me, and the lovely girl waved her handkerchief, calling over the side, while I descended, that I should not be forgotten.

I had a short opportunity, while being lowered, to see the construction of the Aireo. The structure was an immense skeleton, as in the frame work of an ancient vessel. In each compartment was a small balloon with a deflated duplicate, hence should one leak, the others could be supplied from the reservoirs. In this simple way disaster was averted, for it was not likely that all would collapse at once. In fact this method (not known in my time) enabled a vessel to remain aloft for weeks, and I thought what I would give to have been able to tell the strugglers in my time how to overcome their troubles.

I had little chance to make more notes of this grand ship, as I was taken at once to a hospital. I was shown a handsome private room, and being given food sparingly, was allowed to sleep. Waking after an interval, all was darkness save a glow which showed through the window. Looking out I saw no fire and heard no noises. Later I learned the cause in certain immense lights suspended over the city, which did away with gas.

A nurse entered bringing a drink that resembled broth, but was made only of cereals, as meat was interdicted; also a jelly, most palatably composed of eggs. While I enjoyed the food my young nurse sat looking at me with the same awesome expression that I had seen on the inhabitants of the Aireo.

She explained that the light which came in the room, on her entrance, was from the luminous ceiling. She showed me a button that would graduate the brilliancy. Examining the device, I do not think anything so completely *convinced* me that I had lost fifty years, as the patent mark dated 1942.

"Don't you think you had best sleep?" she softly said, placing her finger on my wrist. I felt the contact of metal, as if she wore a thimble. She slipped it off. "You must tell me what it is," I said in bewilderment.

"An artimetre, to magnify the pulse," she answered. It was a short lever resting on the blood vessel; the long arm accentuated the beat four times.

"Do you mind sitting with me and answering some questions?" I inquired. Seeing she hesitated, I added, "You need not be alarmed, as I am quite harmless."

"I have nothing to fear," she smiled, showing lovely regular teeth. She took from her dress a small instrument like a fountain pen, having a curved handle. As she moved away a short distance, she displayed the toy, saying, "With this I could master you in a moment."

"A grand device," I remarked, grasping the impression that it was similar to the pistols that bicyclists use, filled with ammonia, to quell vicious dogs. She concealed the tiny thing in her dress, not allowing me to handle it.

"Tell me now, as you are so wise, have you heard anything of my story?" She told me that it was all printed on the bulletin board of the office, while the Aireo was not yet in sight.

"Do you mind assuming that I have no recollection since the year 1908?" I asked, taking her hand, which she allowed me to do as though I were a sick child. "The fact, as I recall, was that in that time I was a dentist." She looked puzzled for a moment, and then said quickly, "Oh, yes, but they call them Odontists now."

"That is an improvement indeed," I rejoined. "They don't call specialists in other matters, earists, or noseists, or lungists. If they have changed the title, tell me is dentistry looked down upon, as tooth carpentering; are they allowed to prescribe medicine, or still *beneath* an M. D.?"

This is what I learned had happened in fifty years. All students studied in the college they saw fit. At the end of four years they applied to a main institute in Washington for a final examination and diploma. This entitled them to the M. D. degree. Later they specialized, and (if on the teeth) studied three years more, when they received the diploma M. D. O. It was assumed that the public was intelligent, and would not go to a practitioner who was not competent, and had the title.

"Have the mothers of the present time learned what are the temporary and which the permanent teeth?" I asked.

"Or are the women of this age never quite happy until they have bare gums and a rubber set?"

"The women know more *now*. The government keeps up a dental clinic to examine children each six months, and issues a certificate."

"They were talking of this in my time," I said. "Have any inventions been made to preserve teeth, or do they pull them painlessly, by better ways?"

"When I was a child," she answered, "they discovered that all matter, meaning air as well as solids, was in motion. Nothing in nature rests, for the Sun down to the merest atom, has activity. If a tooth needs treatment a ray of energy is projected between it and the sensory source. As the vibrations exceed the nerve tremor, the feeling is interrupted like tapping an electric wire."

"I see; a sort of X-ray."

"That also is improved. Today in the human colleges the pupils see all the movements of the organs projected on a screen."

I fell back in wonder; so simple, and all told to me by this fresh young girl, who allowed me to hold her hand because I was so ignorant.

I asked her, "Do they use bridge work now; is gold used to fill teeth?"

"Horrors!" she cried. "Gold, and silver too, conductors of heat and cold; no, all that is over."

"What now?" I asked breathlessly.

"That is enough," she said, rising. "Your temperature is away up. You must now rest." She left the room, which became dark save for the glow from the street.

I tested the window, but could not raise it, for I had not the secret. While fumbling, a voice that I recognized, said, "You must lie down now and be good; if you sleep I will come in an hour." So I thought, "She is aware that I have left the bed; I wonder if she knows what I am thinking about."

Deeming it best to obey orders from such a well-informed young woman, I lay down and fell to thinking. If this simple student knew so much, what should I learn of dentistry from one of repute? Wonders would unfold that in 1908 were not dreamed about, and far from being desolate, I felt gratitude that I was so favored in being selected to look, in one sweep, at fifty years of progress in this *gigantic* age.

(To be continued.)

# SUGGESTIONS

## FINISHING GOLD INLAYS.

**G. W. Dittmar, Chicago, Ill.**

I get the best results when I do the final grinding, and coarse disking, or stripping with the inlay well seated in the cavity before it is cemented. I grind, disk, or strip in a direction to draw the feather edge of gold toward the margins. If it is a proximo-occlusal inlay, after it is cut down to what is desired, remove and polish the proximal surface, clean thoroughly and wash it with alcohol and dry. Roughen the cavity side of inlay by scratching with a sharp-pointed excavator to insure a better attachment of cement.—Dental Review.

## A METHOD OF CROWNING A SPLIT ROOT.

**T. H. McClure, Chicago, Ill.**

Occasionally a porcelain crowned root of one of the six anterior teeth splits as far along the length of the root as the post of the crown extends. This usually leaves a portion of the apical end of the root intact so that by removing the loose portion of the root and carefully enlarging the canal, a post can be fitted in that part.

A narrow banded platinum cap is then fitted over the remaining portion of the cervical end and cap and post soldered together. The post, of course, will be entirely outside of the band, and if necessary, should be bent to bring in direct contact with it.

Wax is next placed over the cap and post on the side representing the lost portion of the root and accurately contoured to the original shape. After removing cap and post

with wax in place, it is invested for cast gold. After casting a suitable facing can be ground in place and the operation completed as a Richmond crown.

This operation can be carried out in all porcelain crowns where conditions are favorable, by forming a floor of 45-gauge platinum plate over the fractured portion of the root, soldering to the cap and post, and contouring with porcelain.—Dental Review.

## STICKY WAX.

The refuse beeswax of the laboratory can be utilized in making hard or sticky wax. First remove all paraffin, modeling compound, etc., and place the wax in a vessel with plenty of water and heat until it boils. Continue the boiling for a few minutes, then set it aside to cool. When quite cold remove the cake of wax which will form over the water. The heavier impurities, plaster, etc., will have settled to the bottom of the vessel, the lighter dirt will be on the bottom of the cake and may be removed with a knife. Take of common resin about the weight of the wax, place it in a suitable vessel, which should be large enough to contain ten times the amount, and heat it until it melts. While it is still kept hot, add the wax in small portions, until by testing it, letting a drop fall in cold water, sufficient has been added. If intended for summer use less wax is needed than for use in winter. As a rule, when thoroughly cold it should be brittle. When the wax is added it usually boils up, and if the vessel is not amply large it will boil over. The melting point of resin is much above that of beeswax. It may be made into rods about the size of a lead pencil while plastic, or run into plaster of paris molds kept thoroughly wet with cold water.—Dental Brief.

## THE ARTIFICIAL CROWN FOR THE BICUSPID.

**A. J. Cottrell, Knoxville, Tenn.**

The shell crown is considered objectionable; in fact, hardly applicable, on account of its appearance, and by many because of the slight irritation at the gum margin, and both objections are certainly well founded; but the fact remains

that of all the crowns ever yet suggested the shell crown is still the strongest and most stable, as well as the simplest of construction. In spite of its deficiency on the score of appearance, there are many mouths in which it may be used, particularly those of men having heavy beards, and even in many clean-shaven men and a few women, and when applicable at all it should be given preference over all others. In those cases having very short crowns, an eighth of an inch or less in length, and considerable overbite, it is positively the only substitute from which results may be expected, as it is not possible either in an all-porcelain or a porcelain-faced crown to have sufficient strength to withstand the stress of mastication. As to the objection to the gingival irritation, this has been greatly obviated by our having learned that it is not at all necessary to extend them under the gum; and then the same objection is applicable to any other crown yet suggested.—American Dental Journal.

## AN EASY METHOD OF PROTECTING THE INCISAL EDGE OF A PORCELAIN FRONT.

**C. E. Bolton, Santiago, Chile.**

When ready for soldering, some of the investing material should be removed from around the edge of the tooth with a sharp-pointed instrument—just where it is necessary to protect the facing—and the space filled with moss fiber gold. In this way the soldering can be done easily, and accidents, such as fusing of the backing, chipping of the edges, etc., are prevented.—Dental Cosmos.

## CHOICE OF GOLD FOR CAST INLAYS.

Dr. Van Woert prefers non-oxidizable gold, presumed to be an alloy of gold and platinum. It is soft enough to be burnished into marginal contact, stands the stress of mastication better than pure gold, does not change color, and makes a sharp casting. Dr. Gaylord, of New York, thinking that pure gold was too soft for cast inlays, used twenty-two carat. He soon found that he did not get a sharp casting, he was not getting the accurate cervical margins he wanted. As a test he

made a model of rather extreme shape, for which he made two castings, one of pure and the other of twenty-two carat gold. The discrepancy in the twenty-two carat casting was very perceptible. As no flux is used in casting inlays, and the gold is exposed to a heat much above its fusing point, it is quite likely that alloyed with oxidizable metals, such as copper or silver, it will be apt to flow sluggishly, as Dr. Gaylord suggests. Alloyed gold melted in a crucible without flux will not flow readily into an ingot mold.—Dental Brief.

## TO KEEP DRILLS SHARP.

Keep Gates-Glidden drills sharp with carborundum separating disk, and then be extra careful in using them.—American Journal of Dental Science.

## INVESTING INLAY WAX.

**W. H. Taggart, Chicago, Ill.**

Now we come to the matter of putting the investment around the wax inlay, and that was a problem that was hard to solve. In doing my plaster work in former years, when I was using a great deal of vulcanite for plates, whenever I had a very particular case and wanted it just exactly right, I was in the habit of jarring and jolting the plaster of paris in order to insure a smooth cast into which to pack my rubber, then packed my rubber in, and when the plate came out, the more particular I had been it seemed that more and larger bumps were on it. The plaster seemed to have air-holes and pits in it, and yet I had taken absolutely all the care I knew how to prevent that very thing. Now, what caused that, gentlemen? It was absolutely an unscientific and unreasoning way in which to handle that. There is a certain amount of contained air in the investment or plaster. That contained air is hard to get out, especially when mixed in a pasty condition. You put it in the flask and you think by jarring it you will force those air bubbles out through the plaster. But you do not do that. You simply cause that contained air to pass through the investment until it reaches the surface next to your wax, and after it strikes the wax no amount of

jarring will break or dislodge it, and the only effect of further jarring is to cause the sisters, cousins and aunts of that molecule of contained air to also come up and make one great family bubble. That is a condition which you must not ignore if you wish to get rid of those air bubbles. The way to eliminate this trouble is to mix your investment by these scientific methods I have told you about, putting it into your plaster bowl and then turning your plaster bowl over on one side, laying it down and jarring it, and as you jar it, also rotate the bowl, and that glares the whole inside of your plaster bowl with a thin layer of investment; you keep on jarring and rotating the bowl and those little bubbles of gas or air, as they are rolled over that thin surface, are made to come up to the surface and broken and dispelled, whereas they could not be gotten rid of by any amount of jarring when the investment material is in place surrounding the wax inlay.—Western Dental Journal.

## THE WAX FOR GOLD CASTING.

**R. B. Tuller, Chicago, Ill.**

All things employed in gold casting process must work together to attain satisfactory ends. Let us begin with the wax. A wax adapted in several ways to the purpose must be used, and while some operators have succeeded in some instances with ordinary pink base plate wax, if of pure quality; but while it might do for a simple cavity, its use in a general way would most surely lead to many failures, even in exceedingly careful hands who realize its shortcomings. A wax is required with a certain property of toughness to it and quite hard at an ordinary temperature, and that will not soften too easily in the temperature of the mouth or in holding in the fingers. However, there is danger in handling very hard wax as regards feather edges or sharp margins. The marginal lines should be exceptionally exact, and one can realize that a thin, sharp edge may be turned or caused to yield a little without extreme carefulness, hence it is a good rule to follow to avoid handling as much as possible. When handling is a necessity, to trim and carve some part that could not be done in the mouth, it may be well or safer to slightly warm on

the cavity side—never melt in the least, and carry it carefully back to the cavity and gently press it down to place and with the occluding tooth closed upon it wipe over the margins once more as far as possible to bring them into perfect contact with the tooth. Opening the jaws, the lingual margins may be treated the same way. Chilled and removed now, it should be perfect, and no chance taken of in any way changing the cavity surface.

Sometimes there are some feather edges or overhangs that should be removed. These may be mostly cut off with curved scissors while holding the wax by the instrument it is lifted out with. For this I like a flattened or spear point rather than a round explorer point, because on the latter the wax has a tendency to turn when one is getting rid of the tissue edges. Most any excavator is better to use than a round point. These thin overhangs should not be trimmed close enough to endanger the real margin. Further cutting away may be done on the gold when it can be done more exactly.

Let me say that it is the easiest thing to curl in one of those tissue edges, and make a scroll of it which the investment fails to flow about and into properly, with the result that it comes out in the cast a little solid ridge, often overlooked as a fault, but one nevertheless that keeps that edge of the inlay from going closely to place, and yet so closely, perhaps, that it may mistakenly be set as it is.

I have had a flake of wax, in trimming, fall into the cavity side of the inlay and cling so to resist washing away with running water. If not removed there would, of course, be a prominence in the gold just to that extent, and keep the inlay from going to place accordingly.—American Dental Journal.

## INGENIOUS METHOD OF OBTAINING SPACE FOR A CONTOURED CROWN.

**B. W. Neave, Sydney, New South Wales.**

Referring to cases where the crowns of posterior teeth have been lost by gradual decay, and where the adjoining teeth have encroached upon the space they formerly occupied

so greatly that there is not room for a properly contoured crown, he suggests that a gold shell crown be made accurately fitting the root and as nearly as desired shape as the space permits. To this, on each side, near to the occlusal surface, he solders a thin piece of gold plate, and forces the crown into position. This he repeats at intervals until sufficient space has been secured; the crown is then properly shaped and finished and permanently cemented in position.—Dental Record.

## COPPER CEMENT.

**J. P. Root, Kansas City, Mo.**

One of the most useful and least used, or appreciated, filling materials is copper cement. Inquiries from users and non-users developed two reasons for its not more extensive use, namely, ignorance regarding its virtues and prejudice on account of its color and staining qualities. There are three operations where its frequent use is especially indicated.

### DECIDUOUS MOLARS.

In deciduous molars its use is especially indicated. Why is copper cement indicated in these operations? It is probably the only one made with any antiseptic properties; this is due to the salts of copper, which are styptic and astringent, and experience has proven that these salts permeate the tooth structure to a perceptible degree, carrying their germicidal, antiseptic and hardening properties into the dentin. It is the most tenacious cement made, consequently less attention need be paid to retentive shape of cavity. So in cases of children, where through dread of supposed pain to be inflicted, it is impossible to properly prepare cavity, the fact that it is exceedingly tenacious, as well as being a germicide, indicates its use, either alone, or as a cavity liner beneath amalgam, and any small portion of soft tooth issue necessarily left in cavity is probably placed beyond fear of creating further trouble.

### PERMANENT MOLARS.

For lining cavities in permanent molars which are to be filled with amalgam, where the tooth structure is of such a disintegrated character as to indicate a rapid recurrence of

decay, the use of copper cement either used as a liner and allowed to harden or used in a soft state in combination with amalgam, is a safe procedure for permanency. In buccal cavities well under the gum margin is another ideal location.

### SHELL CROWNS.

A condition is often found in molars, especially when an ill-fitting shell crown has been removed, where the remaining tooth structure is simply a mass of soft, disintegrated tissue, one which it is seemingly impossible to place in condition for re-crowning. A root of this character should be built up with amalgam on top of soft copper cement, and at the next sitting prepared for crowning the same as an ordinary tooth, and the crown set with copper cement.

If for any cause the crown has to be removed, you will find a hard, dense mass of tooth structure, copper cement and amalgam, in good condition for future use, and not the soft, mushy, malodorous condition so often found when ordinary procedures have been followed and you have "trusted to the Lord for preservation."—Western Dental Journal.

## A PLEA FOR NON-EXTRACTION.

**W. E. Tennant, Fond Du Lac, Wis.**

A tooth with a small cavity, or perhaps a root that needs a crown, will give trouble. The dentist that extracts in these cases does a double injustice; one to himself and a greater one to the patient. Just simply refuse to extract these unnecessary cases, and if some one else does it, you won't have the crime laid at your door at any rate. And while I am saying something about extracting, let me say that the man that extracts a tooth nowadays, that is good enough to be filled or crowned, without first using his utmost efforts and intelligence to save that tooth by telling the patient his mistake, is not a whole dentist at all—in fact, he is just a "tooth carpenter," and is not living up to the twentieth century ideal in any sense of the word.—Dental Review.

## A METHOD OF REMOVING A BRIDGE.

**T. T. Baker.**

When necessary to remove a bridge it may be done by the following method without mutilating the abutment crowns: Take a piece of copper wire, 36-gauge, and 15 to 18 inches long; pass one end through the interspace near the crown to be loosened, bend the end down and around the wire several times, forming a loop. Form a loop in the other end, through which pass an instrument, and, drawing the wire taut, strike it several sharp blows with a mallet. This will jar the cement loose from the tooth. Do this at each attachment.—Practical Points.

## MANIPULATING THE INVESTMENT FOR A CAST INLAY.

**J. G. Reid, Chicago, Ill.**

If you want to get the best results in the fitting of a metallic inlay by casting, I should say get the investment over the flame as soon as hard and get the inlay out of the investment as quickly as possible. Where I have invested my wax and have left the investment lying around my office for twenty-four hours, and then cast the inlay, it did not fit so well. That is not, in my opinion, the fault of the shrinkage of the metal.—Dental Review.

## CHILLING WAX IMPRESSIONS FOR INLAYS.

**Herman S. Rush, LaFayette, Tenn.**

I have had excellent results from the use of ethyl chlorid. Spray a little quantity on a piece of cotton, then press the cotton around the tooth and exposed surfaces of the wax, when properly formed in the cavity. The volatilization of the ethyl chlorid is responsible for the rapid chilling, after which the wax form can be removed with a feeling of security that it has not changed shape. The finished inlay, if properly invested and correctly cast, will be perfectly seated in the cavity.—Dental Review.

## CLEANING A WAX FORM FOR AN INLAY.

**Elliott R. Carpenter, Chicago, Ill.**

It is a fact that inlays, after casting, oftentimes have what is called a silicate coating, and it has occurred to me, possibly that was the result of the smearing of saliva on the wax form. For some time I have been washing all these wax forms in water, then in alcohol, and have not yet one case of such coating to report.—Dental Review.

## PRACTICAL POINTS.

**W. E. Tennant, Fond Du Lac, Wis.**

A good separating fluid may be made by making a saturated solution of paraffin in gasoline.

If you have trouble in plates being porous, place above the water line (using very little water) upon a suitable support and the trouble will be obviated.

Try trichloretic acid 50 per cent for melting away the gum overlying third molars, being careful not to let it get into the throat or upon the cheek, by the use of cottonoid rolls; and perhaps, if the flap is large enough, inject cocain and cut it away first, which will relieve materially these painful cases.

In Chicago at a recent clinic, Dr. Keefe demonstrated that any pain arising from the fifth nerve could be temporarily stopped by injecting into the nostril from a watch case atomizer, two or three injections of equal parts of water and alcohol. The pain would disappear in from ten to fifteen seconds.

A free application of campho-phenique after setting a crown will relieve the pain.

In repairing plates, dry pack with vulcanizable guttapercha and save time and trouble.

In syringing the mouth do not interfere with the muscles and the water will not run out at the corners.

A little beeswax and resin will prevent the engine cord from slipping.

In applying arsenic to a cavity that extends below the gum, moisten the cavity with eucalyptol, then completely

fill with temporary stopping—then drill a hole through to the point where you wish to make the application, cover over the arsenic, closing the opening with more gutta-percha, and there is no danger of poisoning the gum tissues.—Dental Review.

## A NEW USE FOR PORCELAIN INLAYS.

**J. F. F. Waltz, Decatur, Ill.**

A recent use for porcelain has come in its combination with the cast gold inlay in cases where considerable gold would be hidden by forming in the wax model a cavity embracing the exposed portion, into which, after the gold has been cast, a low-fusing porcelain is baked, making in effect a bit of work similar to the enamel work of the jeweler.—Dental Review.

## UNCLEANLINESS AND FAILURE IN PORCELAIN WORK.

**C. J. Lyons, Jackson, Mich.**

After grinding a crown or inlay and before adding more porcelain body, it should be thoroughly scrubbed with soap and water to remove any foreign matter that may have accumulated from the engine stones. Uncleanliness is usually responsible for failure in procuring dentistry, as any foreign matter in the porcelain body or on the platinum will be turned into gases, and these gases in trying to escape will cause porosity in the crown or inlay.—Dental Register.

## SILICATE CEMENTS.

**J. P. Root, Kansas City, Mo.**

Remember, this is a chemical porcelain, not an ordinary cement.

The retention is mostly mechanical.

Beware of beveled margins.

Keep any form of grease from instruments during insertion.

Avoid use of hot paraffin.

Retain dryness at least thirty minutes.

Use only where properly indicated, and observe every detail, or else the result will be a failure.

They are indicated especially in approximal cavities in anterior teeth (not corners), labial and buccal cavities, and in deep crown fissures in bicuspids and molars, especially in the permanent teeth of children.

When ready to insert filling be sure everything needed is at hand; you cannot safely stop during operation to hunt instruments.

If a receptacle for water is kept convenient to drop slab and spatula into immediately after mix is made, much trouble in cleansing can be avoided, as the remaining portion is disintegrated and can be taken off with a towel.

Beware of coarse strips and sandpaper disks in finishing; use fine ones, take more time, and get better results.—Western Dental Journal.

## A FEW OF THE ESSENTIAL REQUIREMENTS OF CAVITY PREPARATION FOR INLAYS.

**C. J. Lyons, Jackson, Mich.**

1st. The force and direction of occlusion must be taken into consideration before beginning the preparation of the cavity, then by grooves and angles, secure all the mechanical retention that is possible without forming undercuts.

2d. The walls of the cavity should slightly diverge towards the margins.

3d. The cavity should be as deep as conditions will permit with the pulpal wall parallel to the plane of the surface on which the cavity is located.

4th. All undercuts must be obliterated so as to be able to withdraw the matrix without distorting it.

5th. Frictional retention must be secured by having the pulpal wall as extensive as possible without forming undercuts.

6th. Sufficient working space must be secured before beginning the operation.

If these essential laws are not carried out nothing can be expected except failure. We cannot slight or overlook a single one of these principles of cavity preparation and succeed in inlay work.—Dental Register.

## TREATING HEMORRHAGE AFTER TOOTH EXTRACTION.

**H. E. Belden, New Orleans, La.**

In treating hemorrhage after tooth extraction, my method is this: I have the patient rinse his mouth with an antiseptic solution; I then syringe the bleeding sockets where the teeth were with peroxide of hydrogen and dioxogen; then follow with an antiseptic solution. This stops the hemorrhage, but should it reoccur, I repeat the above, and then apply an actual cautery, a sharpened stick of lunar caustic, run down very carefully into the very bottom of each socket, then pack tightly with an antiseptic cotton loaded with tannin, held in place by a compress. The peroxide of hydrogen or diogogen dissolves more thoroughly the clots from the mouths of the vessels, give oxygen to the blood, and stimulates muscular contraction, and nature is allowed to assist itself. This is somewhat in line with an old theory of exposing the bleeding surface to the atmosphere, the edges of the wound being drawn apart, the clots washed away and bleeding for the moment encouraged.—Ethical Dentist.

## REFITTING MATRICES.

**J. Q. Byram, Indianapolis, Ind.**

The method of swaging the matrix into a model of the cavity and then burnishing it directly into the cavity as a subsequent operation is particularly indicated for those approximo-occlusal cavities where the cavity extends far beneath the gingival margin and involves a large portion of the occlusal surface. The matrix may be swaged of gold or platinum one five-hundredths of an nich in thickness. If a heavy material is used for the matrix, there is less danger of warping during the process of fusing. The matrix, however,

should become a part of the inlay. After it has been swaged to conform to the model, the foundation of the inlay should be fused, then the matrix placed into the cavity and burnished to conform to the cavity margins. The matrix should be trimmed close to the margins of the cavity after the final fusing, but the final finishing of the margins should not be accomplished until after it has been set.—Items of Interest.

## REPLACING FIRST BICUSPID, USING NO CUSP OR DUMMY.

**Thomas P. Hinman, Atlanta, Ga.**

Replacing the first bicuspid, using no cusp or dummy, where the second bicuspid is decayed. This may be done by making a compound cavity in the second bicuspid, constructing a gold inlay for it, and attaching to the latter a facing with solder. The neck that unites the two cavities must be sufficient to withstand the impact of mastication.—Pacific Dental Gazette.

## A QUICK METHOD OF REPLACING PORCELAIN FACINGS WITHOUT REMOVING BRIDGE OR CROWN.

**Dr. Gustavus North, Cedar Rapids, Ia.**

This method for replacing porcelain facings has proven very satisfactory without removing the bridge or causing any discomfort to the patient. Drill holes through the gold backing for the pins of the new facing; countersink the holes on both sides of the backing; cut the pins so that they are just a trifle longer than the thickness of the backing; split the pins of the new facing with a thin ribbon saw half the distance of the thickness of the backing; the facing is now ready to fasten in place by using a little medium-setting alloy Place a little alloy around the pin holes on the side of the backing next the facing and then press the facing firmly in place, holding it there until the operation is completed; take a hatchet-shaped instrument and spread the split pins firmly, then burnish alloy in around the pins on the surface. After

the alloy has sufficiently hardened, grind the lingual surface down to the original form, and we have a very sightly and durable piece of work. Alloy has been used for repairing bridges and crowns for many years, but generally in a bungling, unskilled manner. By the above method, repairing can be made as neat and strong as new work.—Dominion Dental Journal.

## SKILL IN MANIPULATING DENTAL MATERIALS.

**W. H. Taggart, Chicago, Ill.**

We never see high grade dentistry coming from a man who uses amalgam, and thinks it is as good as gold. That man will always do sloppy gold work and sloppier amalgam work. A man who tries to make himself and his patient believe that a vulcanite plate is just as good as a continuous gum plate will never do very good vulcanite work. The reverse of that is not always true, as the man who can always do good gold work will always or nearly always do good amalgam work. The man who can do good gold plate work, if he gets down to it, can do good vulcanite work.—Dental Review.

## FILLING FOR CHILDREN'S TEETH.

**Levi C. Taylor, Hartford, Conn.**

Filling children's teeth has been one of the unsatisfactory departments of our calling, as the use of metals has proven nearly or quite worthless as a saver of teeth. The phosphate cements have proven good savers of teeth, but the dissolution of the cement has been so common that we have found patients quite dislike the frequent renewals, and the danger of neglect on the part of the patient has not made for the cement a reputation wholly enviable. We have found that, by pricking into the cement a little well-annealed porous gold and immediately following it with a hot, flat burnisher for one minute, a filling can be made which will earn for itself a

reputation for preservation and duration far in excess of anything else I have ever heard of. It is not necessary to enlarge even the smallest cavity; if the decay is removed that will be sufficient, then proceed to fill as described above. If the cavity is a deep one, it will be well to wet it over with a little rosin dissolved in ether before applying the cement and gold, thereby making a hygienic filling which has earned for itself a reputation far in excess of all others.—The Journal.

## A GOOD SOLVENT FOR COCAIN.

**H. E. Latcham, Grand Junction, Ia.**

In pulp anesthesia use a 10 per cent. solution of menthol to dissolve your cocain. It is the best solvent I have found out of a dozen or more I have tried.—Dental Review.

# CORRESPONDENCE

## MINIATURE SPATULAS.

L. P. Bethel, M. D., D. D. S., Editor Dental Summary:

Enclosed I send you a short article, written by myself, which was published in the August number of "The Dental Review," page 711. I notice in the advertising pages of the October Summary that a dental manufacturing company used a part of the article in their advertisement, and it gives the impression that the "Trigger" spatulas was the subject of the article I wrote. Such was not the case, and I trust you will publish this letter, together with the article, at your earliest convenience.

Yours truly,
MARK HAYTER,
Dallas, Oregon.

**Convenient Miniature Spatulas.**—These little spatulas are made of common pins. The blades are formed by passing from three-eighths to one-half inch of the points between the rolls of a rolling mill. I make them of different forms and thicknesses. In making one with a rounded end the point should be ground or cut off. Some I gold plate, using for the purpose Caulk's quick method plating solution. After shaping the blades the heads are cut off and a broach holder is used for a handle. They are used for placing small quantities of cement just where it is wanted when lining cavities and setting inlays; for placing devitalizating paste; for placing cement in the enlarged pulp canals when setting post crowns —for this purpose the narrow sharp-pointed ones are used. A wisp of cotton wrapped about the blade of one that has been gold plated makes a most excellent carrier for medicines that are to be applied to the gums around the necks of teeth. The stiffer ones bent to the desired shape may be used for trimming the margins of freshly inserted alloy fillings. In the laboratory they are used for placing the borax paste when soldering; for working invested material into the little places where one wants it to go; for removing wax that gets between the teeth when doing plate work; and for many other purposes that suggest themselves from time to time.—Mark Hayter, Dallas, Ore.

# NEW PUBLICATIONS

**Insomnia and Nerve Strain**—By Henry S. Upson, M. D., Professor of Diseases of the Nervous System in the Western Reserve University, Attending Neurologist to the Lakeside Hospital, Cleveland, Ohio. With skiagraphic illustrations. G. P. Putnam's Sons, Pub., New York, 1908.

This is a little book of 142 pages, but full of interest to those who wish to study pathological processes underlying painful and other functional nervous and mental disorders.

The author says: "No attempt is made in this small work to collocate the material available for a study of the psychoses. Two objects only have been kept in view; to put on record a few observations as material for reconstruction of a column long since fallen and neglected by recent workers in this field, and in what measure may now be feasible to supply the most solid of all building materials, a working theory to bind the swaying fabric of the structure."

In his preliminary remarks, the author speaks of dental disease as one cause of insomnia, melancholia, mania and dementia precox. Regarding his investigations, the author says: "The occurrence of the commoner lesions, caries and abscesses can hardly be considered to have much significance without a study of the effect of their removal on the course of the disease. It was early apparent that a rarer condition, dental impaction, was relatively common in these patients. Of about fifty-two cases examined in the Cleveland, Massillon and Columbus state hospitals, twenty-five patients were suffering from impacted teeth." And he adds: "The cases seen in private practice, most of them of shorter duration, many suffering from the milder dental lesions, have presented some points of interest and have seemed worthy of collocation with cases, seen during the past fifteen years, of neuroses and psychoses due to disease of other viscera.

"The surprisingly frequent dental irritations in a way

supplement these others and stop a gap, both diagnostic and therapeutic, in the study of the nervous results of visceral lesions. To this fact is largely owing what may seem an undue preponderance in number of dental cases cited."

Further the author says: "Among the diseases to which mankind is subject, dental caries is probably the most common, and of dental caries and other disorders of the teeth, insomnia is, I believe, much the most common symptom, often occurring without local pain or indication of its place of origin. It is usually accompanied by other indications of disordered nerve action."

As an instance he cites a case of a young business man, thirty years of age, previously in good health. When seen, he had been suffering from persistent sleeplessness without obvious cause for about a year. Skiagraphs of his teeth showed no lesions, with the exception of a number of cavities, one of which affected the pulp. Convalescence began before his dental work was finished, and was continuous, so that within a few weeks he was sleeping well without narcotics.

Another case cited, two of the teeth were set in pus pockets, very loose, and had at times been abscessed. Two of the other teeth had abscesses at the roots. The two teeth most diseased were drawn and the others treated. The patient has since been sleeping through the night, without waking, for the first time in many years.

He cites a case of melancholia, where, after extraction of an abscessed molar, the patient made a rapid recovery. The author cites many cases, including insomnia, melancholia, hysteria minor, mania, dementia precox, etc., where the treatment of carious or abscessed teeth, or the removal of impacted teeth, brought about a permanent cure.

We have quoted considerably from this little work, feeling that it is of special interest to our readers, but have spoken only of the dental phase. The book treats of sleep and fatigue, the emotions, subconscious sensory reflexes, atavistic symptoms, derangements of formal thought, inductive inhibition, convulsive seizure, vascular potential nutrition and vitality, cell potential in evolution, epicritic neuro-psychosis, predisposition and heredity, etc. There is a chapter on dental lesions and Dr. E. Ballard Lodge contributes a chapter on "The Technic of Dental Skiagraphy."

# AFTERMATH

**Dentist for a Warship.**—In a recently built Italian man-of-war there are special arrangements for a dentist.

**Missouri Board Examination.**—Out of a class of twenty-nine, twelve were passed and authorized to practice dentistry.

**Injured in an Accident.**—Dr. Endicott Smith, a dentist of Boston, was injured, October 18, when the tandem motor cycle on which he and a friend were riding collided with a carriage.

**Elected Supreme Chief of the Golden Eagle.**—Dr. C. D. Krim, a dentist of Columbus, Ohio, was elected, October 15, in Washington, D. C., Supreme Chief of the World, Knights of the Golden Eagle.

**American Society of Orthodontists** elected the following officers: Dr. F. M. Casto, Cleveland, Ohio, president; Dr. Frank Gray, Colorado Springs, Colo., vice-president; Dr. F. C. Kemple, New York, secretary and treasurer.

**Killed by Vulcanizer Explosion.**—An exploding vulcanizer in the laboratory of Dr. John Ransden, a dentist at No. 2329 Frankford avenue, Philadelphia, October 31, fractured the skull of Annie M. Stroust, a servant, and she died a few hours later.

**Deaths.**—Dr. Geo. S. Hummel, of Port Royal, Pa., died, October 20, of typhoid pneumonia. Dr. Lloyd T. MacGill, Sr., of Frederick, Md., died October. 29, aged 79 years. Dr. Samuel Wait, of Sayville, N. Y., died in Washington, D. C., Nov. 4, of appoplexy.

**Fires.**—Dr. E. P. Skaggs, Bonner Springs, Mo., October 13, loss $1,500, insurance $500. Dr. Edward L. Sugret, Buffalo, N. Y., October 17, loss $1,500, mostly covered by insurance. Bushnell & Dunlop, Dentists, Toronto, Ont., October 25, loss, $1,000.

**Mr. Frank A. Ruf, Decorated.**—His imperial Majesty, the Shah of Persia, for the second time has, through an imperial firmin, conferred the decoration of the Order of the Lion and the Sun upon Frank A Ruf, president of the Anti-Kamnia Company, of St. Louis, Missouri.

**West Virginia Dental Society** elected the following officers: President, Dr. James E. Dowden, Fairmont; first vice-president, Dr. J. H. McClure, Wheeling; second vice-president, Dr. L. G. Walker, Grafton; secretary, F. L. Wright, Wheeling; treasurer, Dr. D. C. Clark, Blacksville.

**Marriages.**—Dr. E. E. Lathem, of Columbus, Ohio, and Miss Mayme Lytle, of Cincinnati, Ohio, October 17. Dr. Crawford M. Bowles, of Altoona, Pa., and Miss Elsie M. Bible, of Bellefonte, Pa., October 22. Dr. H. L. Scott, of Hamilton, Ohio, and Miss Ella M. Decker, of Dayton, Ohio, November 4.

**Dentist to Oriental Royalty Dead.**—A cable despatch announces the death by hydrophobia in Shanghai, China, of Dr. J. Edward Hall, formerly of St. Louis, Mo., one of the most noted dentists in the Orient. Dr. Hall frequently was called into service by the Chinese mandarins and other native rulers of the southern Chinese provinces, and also by the royal family of Siam.

**Three Die in Dental Chairs.**—A lady of Sheffield, N. Y., died in a dentist's chair at Warren, N. Y., on October 8; her death being caused by paralysis of the heart, due to chloroform. A retired merchant of Morristown, N. J., died, October 16, in New York while under the influence of nitrous oxide gas. A young man, aged 22, of Calais, Vt., died, October 19, in Montpelier, Vt., while under the influence of chloroform.

**National Dental Association Affairs.**—At the 1908 meeting, the National Dental Association adopted an amendment making all members in good standing in their state dental societies, or their allied societies, eligible to membership in this association, by presenting to the proper authorities at the regular meeting a certificate signed by the president and secretary of any such society. Those desiring to take advantage of their privileges under said amendment should act promptly, as the National Association meets early next year, the last Tuesday of March, at Birmingham, Ala. Blanks can be secured from the secretaries of the various state dental societies, or of

H. C. BROWN, Cor. Sec.,
185 E. State St., Columbus, Ohio.

**A Warning.**—Reports have reached us to the effect that a man has been going about recently in the state of Ohio claiming to represent an association of dealers and consumers with headquarters at Cincinnati, securing signatures of dentists and physicians to an agreement and payment of ten dollars entrance fee for which each signer is to be allowed a discount of from five to ten per cent on all purchases except gold, and one per cent on that. The method of operations is said to be this: The dentist or physician to purchase goods from any dealer, paying cash therefor, and getting any

cash discount possible. Then by sending a receipted bill taken in the name of his association, to a given address, a discount of five to ten per cent of the entire purchase would be allowed.

Dealers supposed to be interested have been consulted, but all disclaim any knowledge of a connection with the concern. Among these, The Ransom & Randolph Co. are mentioned as one of the leading dealers represented in the association.

A good rule to follow in such cases is: Be sure of your grouse before you pay your groschen.

**Robberies.**—Dr. Edward E. Paxon, South Bend, Ind., October 31, gold plate valued at $25. Dr. Merritt J. Keightley, South Bend, $75 worth of gold plate, October 31. Dr. John A. Stoeckley, South Bend, several dollars worth of gold plate, October 31. Drs. A. B. Chapman and C. C. Everts, Indianapolis, quantity of gold taken, November 2. Ft. Wayne dentists, November 1, Dr. A. G. Emrick, $250 loss; Dr. J. B. Anderson, $2.50 in cash taken; Dr. E. R. Burket, twenty sets of teeth, value $25; Dr. Leslie Tucker, loose gold $6; Dr. M. A. Hendricks, loose gold, $8; Dr. E. F. Sites, gold scrap, $18. Dr. Laura Fritzgartner, Wichita, Kans., gold valued at $20, October 19. Dr. G. M. C. Barnard, Ware, Mass., $20 worth of teeth, October 9. Dr. Geo. W. Ferguson, Brooklyn, N. Y., $125 worth of instruments, October 20. Dr. William Kelly, Brooklyn, $35 worth of gold leaf. Dr. L. V. Voorhees, Columbus, Ohio, gold bridges, crowns and plate valued at $50, October 16.

**Dentists Form Society**—Dentists of Milwaukee county, Wis., have formed an association to be known as the Milwaukee County Dental Society. The officers are: Dr. George P. Brenner, president; Dr. Charles L. Babcock, vice-president; Dr. Reno Weiss, secretary; Dr. F. H. Bezzy, treasurer; Dr. W. Hopkinson, librarian.

**Diet for the Average Man.**—Chittenden, who says we eat too much, offers the following as an average man's diet: For breakfast, one shredded wheat biscuit, one teacup cream, one German water roll, two one-inch cubes of butter, three-fourths cup of coffee, one lump of sugar; for lunch, one teacup chicken soup, one Parker House roll, two one-inch cubes of butter, one slice lean bacon, one small baked potato, one rice coquette, two ounces of maple syrup, one cup of tea, with one slice lemon, one lump sugar; for dinner, one teacup cream of corn soup, one Parker House roll, one inch cube of butter, one small lamb chop broiled, one teacup of mashed potatoes, apple-celery-lettuce salad with mayonnaise dressing, one Boston cracker split, one half-inch cube American cheese, one-half teacup of bread pudding, one demi-tasse coffee, one lump of sugar. Such a dietary would make the grand total for the day 58.07 grains of proteid and 2,729 calories.—Med. Times.

# PUBLISHER'S PAGE

## THE DENTAL SUMMARY, 1909.

The great favor with which The Dental Summary has met during the past few years has encouraged us to keep it in the front rank among dental journals. Our aim is always to progress and never to retrograde, and at a cost of hundreds of dollars we are going to enlarge The Dental Summary, beginning with the January number.

It will have a new, artistic and attractive cover and a new dress throughout. There will be new features introduced into the text, which will come as happy surprises to our readers. And our editor reports that he has in store, for readers of 1909, an exceptionally good list of instructive and valuable articles written by men of prominence specially for readers of The Dental Summary.

For instance, in the first number of the new series, viz., January number, 1909, there will be the beginning of a valuable paper by Dr. G. V. Black, Chicago, on the subject of "Supernumerary Teeth." There has been but little written on this subject, and this will be the most comprehensive article yet published. It will be illustrated with about one hundred special engravings. There will be a paper on "Alveolitis" by Dr. M. H. Fletcher, of Cincinnati, and it will be fully illustrated. An article by Dr. Chalmers J. Lyons, of Jackson, Mich., on the subject, "The Necessity for Mechanical Retention in Cavity Preparation for Inlays." This article contains new suggestions and will be one of the best articles yet published on this important subject. It will be illustrated with fine half-tones from plaster models. Dr. F. W. Howlett, Jackson, Mich., will contribute a paper on "Articulated Porcelain Crown." This will be appropriately illustrated. There will be an article from Dr. A. W. Starbuck, Denver, Colo., on "Gold and Porcelain Inlays," fully illustrated. Another specially contributed article is by Dr. E. C. Mills, Columbus, Ohio, on "The Use of the Bar Extension in Prosthetic Dentistry," illustrated. Other original contributed practical articles will also appear in the January number, such as "Cast Anterior Bridge Abutments for Permanent Splinting of Loose Teeth," "Cast Abutments for the Attachments of Bridges," "Restoration of Fractured or Badly Decayed Roots where the Tooth Structure is Destroyed under the Gum Margin," "A Method of Constructing a One-

Tooth Bridge," "Treatment of Obstinate Pulpitis," "How to Prevent Plaster Adhering to Vulcanite Plates." And there will be others.

These are but a few of the many good things that will appear in a single number of this practical dental journal. And there will be twelve such numbers during the year. Every dentist will receive much useful knowledge by being a reader of this popular dental journal.