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INSTRUMENT NOMENCLATURE WITH REFERENCE TO INSTRUMENTATION.*


INTRODUCTION.

The want of some recognized scheme of Nomenclature and Classification of Dental Operating Instruments that will individualize the instruments of the several orders and classes is a great bar to progress in teaching instrumentation. This is apparently severely felt by all who labor for exactness in their operations, or endeavor to express the manner of their performance and to speak of the instruments used. The teacher has no means of telling his pupils just what particular instrument he would use in performing a specific act in excavating a given cavity or preparing a margin. The only means of individualizing excavators and pluggers, the instruments which present the most important variations, has been the manufacturer's number. These numbers have not been used by the profession, except occasionally for ordering instruments from catalogues. An extended study of these numbers develops the following facts: When an instrument is designed that is thought to be a good pattern the manufacturer assigns it a number. The pattern is preserved as a guide to the reproduction of the form and each instrument produced is stamped with its number. In this way hundreds of instruments are numbered without system. Finally, to rid himself of the multitude of instruments and numbers, the manufacturer collates those forms that sell best and throws out the rest. He then renumbers those retained, and enters them in the new catalogue. In this

*This paper as printed for reading before the National School of Dental Technics was copyrighted, because it was seen that a revision would be necessary, and it was not desirable that it should be generally published before such revision.
way instruments of similar pattern are for a time brought nearer together in the numbering. But the process of adding new numbers begins again and soon it becomes another confused mass. There has never been any system of numbering that indicated either the form or use of the individual instrument. It has been purely arbitrary. For this reason, the numbers have not been used by teachers, except for the one purpose of making lists from which the students should do their buying.

A dentist needs some means of indicating precisely the forms of the instruments used in the operations he endeavors to describe, and especially is this badly needed in school work. So long as the teacher has no means of accurately designating the particular instrument he employs, so long will his manipulative teaching be vague and uncertain. The pupil will be unable to know just what is meant, and any description of the manner of using individual instruments will be confusing and without force.

Not only this, but the confusion gives rise to an unnecessarily great multiplicity of instrument forms. We being unable to teach manipulation, the student fails to learn the range of valuable instrument forms, and the powers and capabilities of instruments, and is therefore continually seeking new forms, hoping to find that which will serve him better. This being done without accurate appreciation of mechanical laws, the vast majority of efforts are failures, which tend only to further confuse the manufacturer's numbers.

It should be regarded as a truism that the really capable instruments are strictly limited in present modes of operating by definite laws of usefulness that no man can put aside, and that the valuable forms continue in our cases year after year.

Special instruments for special purposes there are, and many of them fitted only for individual idiosyncracies in operating. Radically new instruments of value in the line of excavators and pluggers come forward now-a-days only as modes of operating are so changed as to require new forms. This kind of growth will continue. That which is needed now in the line of excavators and pluggers is a strict classification of the useful forms and the development of a scheme of nomenclature for the individual designation of each form. The presentation of such a scheme to the pupil will place before his mind the range of possible forms from the mechanical standpoint, and will enable him to know quickly what has been
produced, and in a much fuller sense than heretofore to know what can be produced.

This failure to appreciate instrument forms and the special usefulness of each form gives rise to great confusion in operative procedures. The disagreement as to method among dentists is unnecessarily great, and when such a degree of confusion exists only a very few of the methods can be the best. We should be able to teach methods in our schools. Can we do so without the ability to designate accurately the means of carrying out the method? The carpenter would not buy an auger that had not been made to a definite formula. The carpenter’s boy would be laughed at, if, when sent for a quarter-inch auger, he should bring a seven-eighths. Can we not appreciate the forms and sizes of our instruments as definitely?

What our students need in the beginning of school work is a close drill in the appreciation of the forms of cutting instruments and pluggers, such as will enable them to discover the peculiarities of each with exactness, as to width, length and inclination of blades, and the proportions of the several parts. Also they should be instructed as to the possible variation of useful forms. Directly coupled with this, the student should be taught to record the forms for future reference; and, it would be well for him to acquire the skill to reproduce them from the record. If this be coupled with a careful drill in the uses and capabilities of instruments, an impression will be made on the mind, and a skill acquired by the hand that will be a great aid in the development of manipulative ability.

It is my object to develop the details of a scheme of instrument nomenclature and classification applicable to cutting instruments and pluggers, by the use of which the teacher can reach exactness in teaching instrumentation. This will be attained by first defining and arranging in an orderly way the words of instrument nomenclature that have been developed in the ordinary speech of the profession, by use of which groups of instruments may be definitely known; and then arranging a simple system of formulæ by which individual instruments of each group may be accurately designated.

It can not be expected that this proposed scheme for the classification and study of instruments will be of special benefit to dentists now in practice. That is not its object. It is intended for school work only; but may in time spread to the general profession through the students who go out from our schools.
Another object of the scheme is to limit the number of forms of instruments employed, and to adopt a classified list for school work that shall be sufficient for all schools and not be cumbersome to any. This can be done by selecting a sufficient classified list to be used in teaching, and from which each school may select the particular instruments the students will be required to have. This particular feature of the scheme will be more fully developed later. Or, instead of selecting a sufficient classified list for all schools to select from, each school may select its own classified list in accordance with a specified set of rules for the arrangement of instrument sets. A plan for doing this will be developed later, by which any classified set of instruments will be perfectly comprehended in the minutest detail from the written statement by any one familiar with the scheme of classification, and who has attained a working knowledge of any single set of instruments so classified. Also, such instrument sets may be accurately made by any skillful instrument maker without other guide than the written formulae and the rules that will be developed in this paper.

This paper will be in two parts. The first part will consider and arrange the nomenclature heretofore developed, and the second part will be devoted to the consideration of formula names and the formation of instrument sets.

PART FIRST.*

INSTRUMENT NOMENCLATURE.

[Furnishing the Basis for School Instruction.]

In the development of any system of nomenclature, the basis should be the names that have arisen in the common speech of the profession. These names have a meaning, and, if we gain an understanding of this meaning, we will be able to classify the names in accordance with it, and in so doing present an orderly nomenclature. In doing this it is often necessary to choose between two or more names that have been applied to the same thing and occasionally to separate two items that have been called by the same name. In this way the uncertain nomenclature in vogue, developed at random in the first instance, is rendered orderly and definite. This is readily done in instrument nomenclature, and without the introduction of any considerable number of new terms.

*Some portions of this was given the National School of Dental Technics at Asbury Park in 1895 by Dr. D. M. Cattell, but it is thought best to give it here complete.
Names of Parts of Instruments.

Cutting Instruments, or Excavators.—Each excavator is composed of a shaft which is used as a handle, a shank and a blade. Usually in excavators the shaft is perfectly straight and without variation in size. The shank begins with the first turned part and connects the shaft with the blade or working point. It usually tapers from its connection with the shaft to where the blade begins.

The blade is the part bearing a cutting edge. It may be said to begin at the angle which terminates the shank—the last one, if there be more than one angle—and ends in a cutting edge.

Pluggers have no cutting edges and therefore no blades, as “A blade is the leaf-like portion of an instrument bearing the cutting edge.” The shank of pluggers, therefore, extends to the working point, though they may have similar angles to the excavators. (We should have a specific name for that portion of the plugger corresponding with the blade of the excavator.)

Classification of Names of Operating Instruments.

Existing names of operating instruments may be divided into Order names, sub-order names, class names and sub-class names (4).

An Order name is one designating such instruments as are used for a purpose so similar that groups have received a name indicating the purpose of their use, or answers to the question, “What for?”

The well defined order names are excavators, pluggers, separators, scalers, finishing instruments and accessories.

A Sub-order name is one designating the locality, position or manner of use, in such a way as to distinguish certain instruments from other members of the order, or answers the question, “Where, or how used.”

A Sub-order name is often attached as a prefix to the order name, as hand plugger, mallet plugger, push scaler, pull scaler, etc. Enamel Trimmer is a sub-order of excavators. Burs belong both to Excavators and Finishing Instruments as sub-orders, as cavity bur, finishing bur. The word Bur is properly a class name—they have no order name.

A Class name is applied to a group of the members of an order and describes the point or immediate working part, as hatchet or hoe, descriptive of the blades of excavators, or the working point of pluggers, as convex plugger, serrated plugger, smooth plugger, etc.
A *Sub-class name* describes the angles and curves of the shank leading to the working point or blade, as *bayonet* plugger, *spiral* plugger, *contra angle* hatchet excavator.

In the common speech of the profession, these names have been habitually compounded. Sub-order names are prefixed to order names—as in mallet-plugger, hand-plugger, etc. Class names are prefixed to order names, as in *hatchet* excavator, *spoon* excavator, *hoe* excavator, etc. Also sub-class names may be prefixed to either order or class names, or all these joined, as in *contra angle hatchet excavator*, or in *bayonet plugger*.

In all these compoundings, the order name is last, indicating the use or purpose—the sub-order name prefixed, indicating how or where, while the class name is descriptive of the forms of the working point, and the sub-class name the form of the angles and curves of the shank leading to the point. It should be noted particularly that these terms are applied to groups of operating instruments. They specify the kind of instrument but do not individualize the instruments of the group. These may vary indefinitely in the widths, lengths and angles of blades. For these differences we will propose other terms.

**Rights and Lefts.**

There is a distinct division in operating instruments, known as *Rights and Lefts*. Among excavators we have two forms of rights and lefts. The *beveled* rights and lefts and the *lateral cutting* rights and lefts, or, true double plane instruments. The beveled rights and lefts are hatchet forms made rights and lefts simply by the form of the bevel of the cutting edge. Most of the hatchet forms have bi-beveled edges, i.e., the edge is formed by grinding equally from the two flat sides of the blade. The beveled rights and lefts are formed by making two hatchet forms alike, and then grinding the bevel all from one side on the one, and all from the other side of the blade on the other. The result is a pair of instruments, the one suitable for shaving down the buccal wall of a cavity, and the other suitable for shaving down the lingual wall. The cutting edges are upon opposite sides of the blades, making them rights and lefts. These are used mostly for cutting enamel in opening cavities, but may also be used very effectively in cutting dentin. Any of the hatchet excavators may be made in pairs and converted into beveled rights and lefts, but the general adoption of this, while
producing excellent instruments, multiplies the number of instruments in the operating case to such a degree as to cause confusion. For this reason the formation of beveled rights and lefts should be very strictly limited to enamel instruments, or to special instruments for heavy cutting.

LATERAL CUTTING RIGHTS AND LEFTS.

True Double Plane Instruments.—The double plane, or intersecting plane rights and lefts are a totally different class of instruments, and are designed for lateral cutting, while the other forms, single plane instruments, are for direct cutting. If any of the single plane instruments be laid upon a table or any plane surface, in a certain position, it will readily be seen that all of the angles and curves, no matter how many, are in a single plane. If it is held before the eye, in a certain position, the instrument appears straight—such instruments are suited for direct cutting.

If we carefully examine the rights and lefts known as spoons or rapid excavators, it will be noted that each has an angle or curve that is not in the same plane with the principal angle or curve, but in a plane that intersects the plane of this principal angle at right angles. These we will call double plane instruments—they differ essentially from the single plane instruments in that they are specially suited for lateral cutting. They are always made in pairs. They are first formed similarly to the hatchet excavators, but after the blade is formed the blade of one is curved to the right and the blade of the other is curved to the left. This important division of cutting instruments is confined mostly to what has become known as spoons. They are suited to scooping out masses of carious material. They are not of much value for cutting hard material. This form of rights and lefts is also used occasionally in pluggers.

Definitions of Class Names.

A class name is one that describes the immediate working point of the instrument.

Class Names of Excavators.

Hatchet.—The shank has one or more angles or curves, the last length forming the blade, the edge of which is in the plane of the angle or angles.

Hoe.—The shank has one or more angles, the last length forming the blade, the edge of which is in a plane intersecting at right angles the plane of the angle or angles.
Spoon.—These are always made in pairs. They are first made in the form of hatchets and then the blade of the one is curved to the right and the blade of the other is curved to the left, then the cutting edge is ground to a semi-circle. This curve of the blade is in a plane that intersects the plane of the principal angle or angles at right angles, making the instruments true rights and lefts.

Discoids.—(Disc-like, circular.) The blade is circular in form, having a cutting edge extending around the whole periphery, except that portion by which it is joined to the shank. This circular blade is placed at more or less of an angle with the shaft.

Formerly this form was called a spoon, several forms being grouped under that name. Discoid blades are sometimes seen on double plane instruments of various forms.

Cleoids.—(Claw-like—in the form of a claw.) Sharp pointed blades in the form of a claw, with cutting edges on two sides of the blade.

Chisels.—Straight blades with cutting edge formed by beveling from one side. The blade is usually straight with the shaft, but may be slightly curved.

Binangle Chisel.—A chisel blade placed at a slight angle with the shaft in the hoe form. They are contra-angled.

Rotary cutting instruments will not be included in this list.

SUB-CLASS NAMES.

A sub-class name is one applied to and descriptive of the angles and curves of the shank of an instrument which leads to the blade or working point.

Mon-Angle.—An instrument having one angle only leading to the working point as in pluggers, or forming the blades as in excavators. Mon-angles form a large majority of excavators. In the greater angles only the shorter blades can be successfully used as mon-angles, for the reason that when the blade is long its inclination carries its working point laterally so far from the central line of the shaft as to render the instrument liable to turn in the hand when the edge is forcibly applied. This renders the instrument unsteady and ineffective. To remedy this defect, all cutting instruments, in which the angle and length of blades will carry the cutting edge more than 3 millimeters from the line of the central axis of the shaft, should be contra-angled.

Contra Angle.—The shank of the instrument is first bent back-
ward (from the direction of the cutting edge), and nearer the cutting edge another bend is made forward—this length forming the blade, the object being to form a long blade, the edge of which will be near the central line of the shaft.

Binangle Contra Angle.—A contra angle formed by two angles as described under contra angle.

Triple Angle Contra Angle.—In an instrument of the angle of 12 centigrades or less (about 45 degrees)—the binangle contra angle will bring the cutting edge sufficiently near the central line of the shaft, and at the same time carry the shank sufficiently out of the way to permit the use of the full length of the blade; but in instruments of a greater angle, a binangle would not do this, therefore a triple angle contra angle must be made; this is done by first bending the shank backward as in the binangle contra angle and then forming another angle which will bring the remainder of the shank parallel with the shaft; then passing forward a space of more or less length as may be required, another bend is made forward by which the blade is formed. In this way the cutting edge of a long blade is brought sufficiently near the central line of the shaft for effective work, and the shank carried sufficiently out of the way to permit the full use of the length of the blade.

Long blades that require contra-angling are mostly for use in places where a long reach of blade is necessary.

There are a number of other sub-class names that have been applied to excavators, but as none of them will be used they will be passed by for the present. Also, there are a number of sub-class names applied to pluggers points, as cork screw, cow's horn, bayonet, etc., but as we shall not fully consider pluggers in this paper, they will also be passed.

Curves occur among the rights and lefts or double plane instruments for which no distinctive names have been developed. Those forms which I designate as spoons have a curve beginning at about one-third the length of the blade and gradually increasing to the cutting edge. Another form often seen, but which now seems to be in less favor, is what I should term the hoe spoon. This blade is straight like that of a hatchet until near the cutting edge, when it is bent laterally at an angle, and the cutting edge rounded as in the spoons. These are in pairs, as the spoons, and are true double plane instruments.
Other forms that have been used are almost endless, many of them without names, and very generally have disappeared under the law of unfitness for the purposes intended.

**Rules for Contra Angling.**

**Recapitulation.**

1st. All blades, the angle and length of which will bring the cutting edge more than three millimeters from the central line of the shaft, should be contra-angled.

2nd. All instruments with angles of 12 centigrades or less, when requiring contra-angles should be binangle-contra-angles.

3rd. All instruments with angles of more than 12 centigrades, when requiring contra-angles should be triple-angle-contra-angles.

4th. When the contra-angle is used the cutting edge of the instrument should be brought within two millimeters of the central line of the shaft, or better—when the contra-angle is used the working edge should be brought just so near the central line of shaft that when the instrument is laid edge downward upon a plane surface the edge should just touch, but not actually rest upon the surface.

**Second Part.**

**Formula Names.**

The names which have thus far been developed are sufficient for the designation and easy recognition of instruments belonging to any order, sub-order, class or sub-class. They are not sufficient, however, for the recognition of the individual instruments of any one of these divisions of forms. The blade of a hatchet or hoe excavator may have an angle with its shaft varying from a slight inclination to a quarter of a circle, or even more. Any angle of blade between these may be effective for some particular operation. A similar variation occurs in the widths and in the lengths of blades. An examination of the excavators on sale in our dental depots shows that the widths of blades vary from two-tenths to fifteen-tenths millimeters. The lengths of blades vary from two to about ten millimeters. Any width or length between those mentioned may be effective in some particular operation.

Now any of the widths may be combined with a great diversity of lengths and these again may be combined with a great diversity of angles. We readily see that in this way we arrive at a vast multitude of slight variations in these instrument forms, and any attempt to specify individual instruments without some rules for limiting the number becomes hopeless.
I took up this matter as a subject of study a number of years ago, with the thought that these instrument forms, or a sufficient number of them, could be specified by formulæ, as is done generally with mechanics' tools; as the quarter-inch auger, half-inch chisel, etc. In this study I was at first led into a very complicated system of measurements, which I considered too complex to introduce into school work. But the need of some available system has been so constantly apparent that the subject has not been allowed to rest. Work has been renewed at intervals with each new thought obtained; and finally the idea of a strict limitation of instrument forms in breadths, lengths, and angles of blades has been arrived at. The carpenter will not buy an auger or a chisel that has not been made to a definite formula—a definite measurement. This is true of mechanics' tools generally. They are all made to specified formulæ. It may be said that the mechanic's drills are made to definite formulæ in order that he may fit bolts made to similar definite formulæ, and that the dentist does not do this. True, but the mechanic also uses these formulæ in naming both his drills and his bolts that he may know them. Why should not the dentist have his instruments made to definite formulæ in order that he may know them, and designate the one fitted for a special act in excavating? Why should he have an infinite variety of forms without definiteness? No one dentist uses such a variety. Why should we not agree upon definite angles of the blades of hatchet and hoe excavators and combine with these angles definite sizes, or widths and lengths of blade? In this way we may gain a sufficient number of forms of cutting instruments and rule out all others. And then the thought has also come to me of arranging these in definite sets in which the formula names shall run on definite gradations for all of the instruments of each set, and in this way so construct them that they will be easily learned and remembered by students.

A strict study of the subject from this standpoint develops the fact that we do not need more than three, or at most four angles. Now with each of these three or four angles we will combine one long blade of definite width, one medium length of definite width, and one short blade of definite width, stipulating that the lengths and widths shall be the same in each angle. This makes a set of hatchets—if three angles be used—of nine instruments, and a set of hoes of nine instruments—or eighteen instruments in all. These
we may name the set of ordinaries. (See list of formulae No. 4.) With this limitation of widths and lengths and angles of blades, and the regular order in which they occur, the difficulty of learning to know them by formulae is reduced to a minimum. Indeed it is found in actual practice that the forms are known by sight as quickly as this simple list of formulae is learned.

I have chosen and had made some sets of instruments upon this idea, and find from actual use that three angles is quite enough for my personal use. It is necessary only to add a list of spoons, enamel instruments, and a few long blades for reaching into deep cavities, to make the set complete. A list of special forms for special uses, the formulae for which are constructed upon a similar plan.

It will be seen now, I think, that the infinite variety of widths, lengths and angles of blades without definiteness or restriction of any kind, except the fancy of those ordering instruments, is responsible for the chaotic condition of the forms of cutting instruments. It is my belief that for school work a strict limitation of instrument forms to those that may be accurately designated is desirable.

**Selection of System of Measurement.**

If we have decided that a system of formulae based upon measurements of widths, lengths and angles of blades is desirable, the next point will be to agree upon the particular system of measurement to be adopted.

For the measurement of widths and lengths we have the English inch and the French millimeter. Of these I should choose the French system for two reasons. **First,** from the present indications it seems that it will in time become the only system employed in scientific work. **Second,** the length of the unit seems much more convenient for the work; particularly is this the case if we use the tenth of the millimeter for all measurements of breadths and the millimeter for all measurements of lengths of blades. This seems to be so evident that I have adopted this, pending discussion.

The adoption of a system of graduation of the circle for the measurement of angles is a graver problem. The astronomical circle with its graduation of 360 degrees is far in excess of our needs and becomes cumbersome, because of the minuteness of its sub-divisions. On the other hand, it is the division of the circle most used and best known. The mariner's compass with its division of the circle into 32 points seems insufficient. The division
of the circle into 100, the centigrade circle, seems very much better suited to our needs. In this, 25 centigrades is a quarter of a circle, and equal to 90 degrees of the astronomical circle. The quarter circle is about all that we use and the graduations of this are much more quickly caught and appreciated than in the larger number of divisions. I shall use this pending further discussion.

**The Gauge.**

With the view of making the preparation for this work as nearly perfect as possible, I have had a gauge made in steel for instrument measurement. It consists of a circular head graduated in hundredths, and an attached bar ruled in parallel lines for the measurement of angles. The bar is also graduated in millimeters for the measurement of lengths. For the measurement of widths a supplemental bar extends beside the main bar, leaving between the two bars a gradual widening or V-shaped space, which is graduated in tenth-millimeter widths up to fifty-tenths or five millimeters. This is found very convenient for the measurement of widths of blades, the sizes of plugger points, and the diameter of burs.

**Formation of Formula Names.**

For the formation of formula names of excavators, three points are considered, viz, the width of the blade, the length of the blade, and the angle of the blade with the shaft. All other points are left to be guided by the rules that have been given in part first. These (width, length and angle of blade) are very exactly the
points that go to make up the individuality of the several instruments of any order, sub-order, class or sub-class, and will certainly identify each. The particular conformation of the shanks and the handles are left to the individual manufacturer, or, to the taste of the person ordering instruments. Neither is it considered important to this system that the angles be made sharp and definite, or that they be made in the form of moderately short curves. All such points in construction can be left to the taste of the manufacturer. At least the system now proposed does not take them into consideration.

**The Measurement of Instruments.**

In the measurement of instruments for the formation of formula names, first try the width of the blade in the V-shaped slot of the gauge, which will give the width in tenth-millimeters, and set this down as the first figure of the formula. In this the tenth-millimeter is to be used as the unit. Next measure the length of the blade from the center of the angle to the cutting edge in millimeters and set that down as the second figure of the formula. In this the millimeter is used as the unit. Third, find the angle of the blade with the shaft and set that down as the third figure of the formula. In making this last measurement, lay the handle of the instrument on the main shaft of the gauge, parallel with the parallel lines, and with the point turned toward the small numbers of the circular head. Now move the instrument until the angle of the blade coincides with one of the lines graduating the circle, being careful to keep the handle parallel with the parallel lines.

If we have measured a hatchet and the numbers give—width, 12; length, 5; angle, 6, the formula name will read "Hatchet, 12-5-6." If it be a hoe, the formula will be the same and we call the instrument "Hoe, 12-5-6," the class name always preceding the formula name. This distinguishes both the kind of instrument and the size and angle of the blade of each. In this way we name each instrument of the set, no matter what its class and size, as "Spoon, 20-9-12" or "Spoon, 15-8-12," or "Enamel Hatchet, 15-8-12," or "Enamel Hatchet, 10-6-12," etc.

It is also understood that the edge of cutting instruments shall be at right angles with the length of the blade, unless otherwise specified. When some other angle is desired, it is measured in the large numbers in the last quarter of the graduated circle by moving the instrument without turning it over, and still keeping the handle
parallel with the parallel lines of the gauge until the angle of the edge coincides with one of the centigrade lines, and that number is set in brackets following the width number, thus, Gingival Margin Trimmer 20 [95]–9–12 or Gingival Margin Trimmer 20 [80]–9–12.

**Forming Instrument Lists.**

We have now made out rules of nomenclature by which we may accurately designate individual instruments. I will now explain the scheme for grouping instruments in formula lists which serve to limit the number of forms and to bring those chosen into intelligible order. The appreciation of the value of regular order in the formation of instrument sets has been arrived at rather slowly, and largely from studying the difficulties of students in learning the forms of their instrument points. With the methods that have prevailed few persons learn to think in their instrument forms. They have to search for the proper instrument instead of reading it in the case before them. It is that we may be able to teach pupils to think in their instrument forms that we strive to construct graded sets in formula nomenclature; and these should be placed on such lines of gradation, or be so grouped, that the mind easily follows from one to another throughout the set.

It is not difficult to do this with any of the forms of excavators, but some of them are more easily arranged than others. The ordinary hatchets and hoes present the greatest variations of size and angle of blades, but fortunately are the most easily graded into sets. Carpenters' augers are made in gradations of sizes of 1-32d inch, making the most perfect set. Another set is made on gradations of 1-16th inch, this set containing but half the number of the first. Still another set is made on gradations of 1-8th inch, containing but one-fourth the original number. Yet each of these sets is complete upon its individual lines, and each of the smaller sets is contained in the larger.

For the ordinary hatchet and hoe excavators we may readily do a similar thing by first constructing a list of formulae on regular gradations that will cover the useful sizes and angles of blades, and then cut out all of certain dimensions or angles in the formation of shorter lists. This is not so readily done in spoons, enamel hatchets and some other forms, for the reason that in these we do not require so many instruments of a given class. These also require different formula names, for the reason that the blades are of different dimen-
sions from those of the hatchets and hoes. They must therefore be placed in a different formula list in which we can group together such instruments as agree in dimensions of blade. If necessary we may make several formula lists. At present I will propose three divisions, naming each, as follows:

Ordinaries are the common forms of hatchets and hoes, many of which are found in every operating case.

Specials are those instruments designed for special acts in excavating, such as spoons, enamel hatchets, chisels, etc.

Side Instruments.—These are selections for some particular purpose, only one or two of which are wanted in the instrument set, and which it is not desirable to include in a regular formula list.

ORDINARIES.

After a long and careful study of the dimensions, proportions and angles of blades of the hoe and hatchet excavators used by dentists and generally on sale in dental depots, I am of the opinion that nearly or quite every dentist will find in the following formula list about everything he will want:

SET OF ORDINARIES NO. 1.

14-6-6, 12, 18 and 23.
12-5
10-4
8-3
6-2
4-1

forty-eight instruments.

Formula lists for ordinaries will be given in this form. The first figure gives the width of blade; the second the length of blade; the third the angle of the blade with the shaft; and the additional angles used are given in the first line only, divided by commas.

Each of the dimensions of blade is to be made in each of the angles given both in hatchets and hoes. The list is to be read: Hatchet 14-6-6, hatchet 14-6-12, hatchet 14-6-18, hatchet 14-6-23; or hoe 14-6-6, etc., for the first line; and hatchet 12-5-6, hatchet 12-5-12, hatchet 12-5-18, hatchet 12-5-23; or hoe 12-5-6, etc., for the second line. This is continued in the same way for each of the dimensions of blade. The formula of each instrument is stamped upon its handle as a convenience to the student in learning his instrument points.
According to the rules for contra-angling given in Part First, page 10, hatchet and hoe 14-6-12 would be binangle contra angles. Also hatchets and hoes 14-6—18 and 23

12-5
10-4 would be triple angle contra angles.

There are in the set twenty-four hatchets and twenty-four hoes, or forty-eight in all, and if generally adopted as the full list of ordinaries would, I think, be found satisfactory.

In making shorter lists I would cut out all of certain dimensions of blade, or of certain angles, preserving the regular order of formula names for those retained. As the least desirable I would first remove all of dimensions 14-6 and 4-1, thus:

**Set of Ordinaries No. 2.**

12-5-6, 12, 18 and 23.
10-4
8-3
6-2
thirty-two instruments.

This set is a most beautiful gradation of the ordinary forms of excavators, and really embraces about all that any dentist would want in his case. But these are probably a greater number than most persons would desire.

For the next set I would remove all of the dimensions 10-4, thus:

**Set of Ordinaries No. 3.**

12-5-6, 12, 18 and 23.
8-3
6-2
twenty-four instruments.

This is also a very effective instrument set, but if there are still too many I should remove all of the angle 18 centigrades, thus:

**Set of Ordinaries No. 4.**

12-5-6, 12 and 23.
8-3
6-2
eighteen instruments.

This I regard as an especially desirable list for school work. It is the list I have used most except that I have used the dimensions 5-2 instead of 6-2, but in the future will use the 6-2.
Now, for a still shorter list, and the shortest that I could recommend as reasonably efficient, I would retain but two dimensions:

**Set of Ordinaries No. 5.**

10–4–6, 12 and 23.

6–2
twelve instruments.

This is a list of six hatchets and six hoes excellently graded to the requirements of the student—indeed I do not know how we could better select this number of instruments.

In the instrument sets given we have five, differing widely in numbers, but in each the formulæ are complete on the lines laid out and every instrument is a good one. The smaller sets are all contained in the largest, and are so arranged as to give manufacturers the least trouble in supplying classes. If manufacturers will make up List No. 1, or even List No. 2, and make these their stock instruments in ordinaries, there are few wants in this line that will not be supplied by them. From them any school that may desire to introduce the formula plan of nomenclature in teaching will be able to choose a satisfactory list. Within a few years this may become the plan of the dental profession, and the manufacturers will be relieved from the loads of dead instrument stock they are now compelled to carry. That other instruments in this line will be demanded goes without saying, but they will be fewer in number as discussion of plans and methods under conditions of greater accuracy of understanding proceeds.

**Specials.**

In the list of specials I will give such only as I have defined in part first. These seem to me from my personal study and use of cutting instruments to be best suited to our present methods of preparing cavities. I will first give what I regard as a complete list, and afterwards cut it down to smaller numbers, removing such instruments as can be spared with the least detriment to effective school work. It is to be understood that each full instrument set is to contain a list of ordinaries and a list of specials. The list of specials will contain numbers of classes instead of a great variety of sizes and angles of two classes, as is the case with the ordinaries. We do not require many sizes and angles of blade in any one class of specials. After a careful study of them it is found that most of them may be arranged upon practically the same formula numbers. There are a few, as the straight chisels and the cleoids, which will
not require the full formula terms to sufficiently designate them. Three widths of blade seem to me to be the most that will be necessary, and nearly all may be of the angle 12 centigrades, a few only requiring the angle 6 centigrades. The length of blade may be on the same lines in all but the discoids, the length and breadth of which are necessarily the same.

**LIST OF SPECIALS NO. 1.**

<table>
<thead>
<tr>
<th>Item</th>
<th>Formula</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enamel hatchets</td>
<td>20-9-12</td>
<td>Pr. R. &amp; L. bevels.</td>
</tr>
<tr>
<td>Enamel hatchets</td>
<td>15-8-12</td>
<td>Pr. R. &amp; L. bevels.</td>
</tr>
<tr>
<td>Enamel hatchets</td>
<td>10-6-12</td>
<td>Pr. R. &amp; L. bevels.</td>
</tr>
<tr>
<td>Spoons</td>
<td>20-9-12</td>
<td>Pr. R. &amp; L. curved.</td>
</tr>
<tr>
<td>Spoons</td>
<td>15-8-12</td>
<td>Pr. R. &amp; L. curved.</td>
</tr>
<tr>
<td>Spoons</td>
<td>10-6-12</td>
<td>Pr. R. &amp; L. curved.</td>
</tr>
<tr>
<td>Spoons</td>
<td>20-9-6</td>
<td>Pr. R. &amp; L. curved.</td>
</tr>
<tr>
<td>Spoons</td>
<td>15-8-6</td>
<td>Pr. R. &amp; L. curved.</td>
</tr>
<tr>
<td>Spoons</td>
<td>10-6-6</td>
<td>Pr. R. &amp; L. curved.</td>
</tr>
<tr>
<td>Gingival margin trimmers</td>
<td>20 (95)-9-12</td>
<td>Pr. R. &amp; L. curved.</td>
</tr>
<tr>
<td>Gingival margin trimmers</td>
<td>20 (80)-9-12</td>
<td>Pr. R. &amp; L. curved.</td>
</tr>
<tr>
<td>Gingival margin trimmers</td>
<td>15 (95)-8-12</td>
<td>Pr. R. &amp; L. curved.</td>
</tr>
<tr>
<td>Gingival margin trimmers</td>
<td>15 (80)-8-12</td>
<td>Pr. R. &amp; L. curved.</td>
</tr>
<tr>
<td>Binangle chisel</td>
<td>20-9-6</td>
<td>One instrument.</td>
</tr>
<tr>
<td>Binangle chisel</td>
<td>15-8-6</td>
<td>One instrument.</td>
</tr>
<tr>
<td>Binangle chisel</td>
<td>10-6-6</td>
<td>One instrument.</td>
</tr>
<tr>
<td>Straight chisel</td>
<td>20</td>
<td>One instrument.</td>
</tr>
<tr>
<td>Straight chisel</td>
<td>15</td>
<td>One instrument.</td>
</tr>
<tr>
<td>Straight chisel</td>
<td>10</td>
<td>One instrument.</td>
</tr>
<tr>
<td>Discoid</td>
<td>20-2-12</td>
<td></td>
</tr>
<tr>
<td>Discoid</td>
<td>15-1½-12</td>
<td></td>
</tr>
<tr>
<td>Discoid</td>
<td>10-1-12</td>
<td></td>
</tr>
<tr>
<td>Cleoid</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Cleoid</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Cleoid</td>
<td>10—thirty-eight instruments.</td>
<td></td>
</tr>
</tbody>
</table>

This gives a list of thirty-eight special instruments. Several other forms might be added, but to me they seem unnecessary. They can be added, however, upon the same plan of formulæ used in this list, or if necessary still another formula list may be arranged. This list will give rise to more difference of opinion than the list of ordinarries, for the reason that they are designed for special uses in excavating, and persons who excavate cavities differ-
ently are likely to want different special forms. Such differences, however, have no reference to the formula plan of nomenclature, as other forms can as readily be brought into this system.

In this list of specials each instrument is designed for the performance of a special act in excavating. The enamel hatchets are designed for chipping enamel by hand pressure in opening cavities in the bicuspsids and molars. They are beveled rights and lefts and are somewhat distinctive in form and use. When the manner of handling them and their adaptation to place of use has been learned, they are unusually effective instruments. Indeed, besides their use in chipping enamel, they become the principal instruments for cutting out and forming both mesial and distal cavities in the bicuspsids and molars, both upper and lower. Their angle of blade and form of edge is such that they naturally cut these cavities into proper form. And when properly supplemented by burs, they are very effective in extending these cavities for the prevention of the recurrence of decay at the gingival margin, or at the bucco-gingival and linguo-gingival angles.

The spoons are for the removal of carious or softened material in any position, but more especially in the large cavities in the bicuspsids and molars, also for uncovering exposed pulps the broader blades are invaluable. Of these spoons the pairs in 12 centigrades angle seem to be preferred, though the 6 centigrades angle are the instruments heretofore generally in the market.

The gingival margin trimmers, two pairs of which are of one size, and another two pairs of another size, are for the one purpose of smoothing and beveling the marginal angle of the gingival wall in proximate cavities in the bicuspsids and molars. For this purpose they have the cutting edge ground to a definite angle with the shaft. This is made 80 centigrades in the one pair, which fits them for mesial cavities, and 95 centigrades in the other pair, which fits them for distal cavities. The smaller pairs serve this purpose in places too 'narrow for the entrance of the 20 tenths width of the larger. These are the only instruments in the list that have cutting edges other than at right angles with the length of the blade.

Of chisels I have placed six on the list. Three of them are straight, and the width of blade only is given in the formula name, as chisel 20, or chisel 10. All have cutting edges at right angles with the shaft. Those designated as 'binangle chisels' have the
full formula name with an angle of 6 centigrades. They are so contra angled as to bring the working edge in the line of the shaft. The six form a very effective set for chipping enamel in the opening of cavities, and in trimming the walls to form. The angles of the binangle forms adapt them admirably to the trimming of buccal walls in molars and bicuspid in places where a slight angle of blade is necessary to reach the best position for cutting.

The discoids perform much the same office as spoons, and are available in positions of easy access. When direct access can be had, they are to be preferred.

The cleoids are available for almost any purpose demanding a pointed instrument. I use them much in opening pulp-chambers in upper bicuspids, and in beveling lingual enamel margins in incisors, also frequently in following out fissures in the molars.

In forming sets of these of fewer numbers I would first cut out the list of spoons in 6 centigrades angle; second, the list of cleoids, and third, the discoids; fourth, the gingival margin trimmers 15(95)-8-12 and 15(80)-8-12, leaving the list stand thus:

**Set of Specials No. 2.**

- Enamel hatchets . . . . 20-9-12 Pr. R. & L. bevels.
- Enamel hatchets . . . . 15-8-12 Pr. R. & L. bevels.
- Enamel hatchets . . . . 10-6-12 Pr. R. & L. bevels.
- Spoons . . . . . . . . . 20-9-12 Pr. R. & L. curved.
- Spoons . . . . . . . . . 15-8-12 Pr. R. & L. curved.
- Spoons . . . . . . . . . 10-6-12 Pr. R. & L. curved.
- Gingival margin trimmers . . . 20 (95)-9-12 Pr. R. & L.
- Gingival margin trimmers . . . 20 (80)-9-12 Pr. R. & L.
- Binangle chisel . . . . 20-9-6.
- Binangle chisel . . . . 15-8-6.
- Binangle chisel . . . . 10-6-6.
- Straight chisel . . . . 20.
- Straight chisel . . . . 15.
- Straight chisel . . . . 10—twenty-two instruments.

For a still shorter list, and the shortest list of specials that I could recommend, I would cut out from Set No. 2 all of the dimensions 10-6, thus:

**Set of Specials No. 3.**

- Enamel hatchets . . . . 20-9-12 Pr. R. & L. bevels.
- Enamel hatchets . . . . 15-8-12 Pr. R. & L. bevels.
Spoons . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 20-9-12 Pr. R. & L.
Spoons . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 15-8-12 Pr. R. & L.
Gingival margin trimmers . . . 20 (95)-9-12 Pr. R. & L.
Gingival margin trimmers . . . 20 (80)-9-12 Pr. R. & L.
Binangle chisel . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 20-9-6.
Binangle chisel . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 15-8-6.
Straight chisel . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 20.
Straight chisel . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 15—sixteen instruments.

This list is really quite effective, though one who has become accustomed to the smaller sizes will miss them.

Of these lists No. 2 of the specials, combined with No. 4 of the ordinarines, makes an excellent set for school work. It contains thirty-four instruments every one of which will come into active use in the ordinary infirmary practice.

Also set of specials No. 3 combined with set of ordinarines No. 5 makes a well-chosen short set of twenty-eight instruments that is quite effective for school work, though some very desirable instruments are missing.

These lists are extremely simple in their formula nomenclature and are easily learned by pupils. Of course other combinations of these lists may be made at will. Yet it is important that the direct relation of the formula names be carefully maintained in any lists made up for school use.

SIDE INSTRUMENTS.

Side instruments should be made to definite formulae, that they may receive definite names. For instance, in breaking up the list of specials for the formation of smaller lists, discoid 20-2-12 may be retained as a side instrument, or one of the cleoids may be retained. I like to have in the instrument list as side instruments hatchets 5-3-28 and 3-2-28 for cutting retention grooves in the incisal angle of incisor cavities. It will be noticed that the formulæ of these latter do not follow the lines of the list given. The number of such instruments added to working sets in schools should be limited to a very few favorite forms for some special use. Any considerable number of them will certainly cause confusion in the minds of students, and interfere with the easy mastery of the list as a whole.

Other formulæ lists may be added when desired. This year I have used an additional list of long slender blades expressed thus:

Hatchets and hoes—12-8-12 and 23.
8-6.
Of these the blades in 12 centigrades angle are most excellent instruments for deep cavity work, and yet my experience thus far in teaching leads me to the conclusion that the introduction of this third formula list is undesirable. In other words, instruments in the other two lists so nearly take the place of these that it seems undesirable to burden the students with the additional list.

There is really no limit to the number of lists that might be formed by this method, and if I have now made this clear I have finished my task in this direction. But the more important consideration is the limiting of the instrument forms to definite lines easily followed by the student and readily supplied by the manufacturer.

It must be distinctly understood that in ordering instruments by the formula plan the class name of each instrument must be given with its formula—as Hatchet 12-5-6, or Spoons 20-9-12.

It seems very desirable that some rule be established as to which instrument shall be called the right or the left in the instrument pairs. I will suggest that this be based on convenience of use in the right hand. That blade which, when held as a pen with the point downward, has the convex side of the blade to the right is called the right-hand instrument; and the blade which has the convex side of the blade to the left is the left-hand instrument. In beveled rights and lefts the beveled side corresponds to the convex side of curved blades.

TEACHING INSTRUMENTS AND INSTRUMENTATION.

When the time came for opening school this year, I felt that I could not begin without putting the plan for formula names to trial. The teaching of the mechanical forms, the adaptation of forms to the ends to be accomplished and plans of instrumentation were begun in Northwestern University Dental School this year under extreme disadvantage. It was really impossible that it should be otherwise in the beginning. It has come upon a class of three hundred and fifty pupils—juniors and seniors—after they have accomplished a part of their course by other methods, and with instruments of different forms. To make matters worse, on account of the slowness of manufacturers, together with the extraordinary demand for the particular instrument set used, only a portion of the pupils could be promptly supplied. This has been a great drawback to effective work. Yet the experience gained thus far has been a most valuable study of the effectiveness of the method and of the plans to be em-
ployed in teaching. Most pupils who obtained their instruments in time learned to read their points readily and have made rapid progress in instrumentation.

The proper place to begin this teaching is in the operative technic class; and for this purpose the pupil should be required to obtain his cutting instruments in his freshman year. One of the first and most important steps is to give the pupil a good working knowledge of the value of the millimeter, of tenths of a millimeter, and of centigrade angles. He should attain this in such degree that he will be able to cut bits of paper, or of some soft metal, five, ten or fifteen tenth millimeters wide, or five or ten millimeters long with reasonable accuracy without the use of the gauge; and to form any given angle. In this study he must first work with the gauge or with the printed form. A very excellent instrument for this study is the Boley gauge, an instrument that is specially well adapted to measuring teeth, and many other things in school work and in the dental office. As this is being accomplished the instrument forms are presented one by one, as hatchets, spoons, hoes, etc., and the mechanical features of each, the nomenclature of its different parts, and the relation of the instruments to each other explained. The capabilities of each form will be familiarized by exercise in their use in carving in bone, and forming cavities in teeth. In doing this, correct instrument grasps, and finger and thumb rests, will be taught. The pupil is then presented with the various sizes of each form and learns to distinguish them and to use their formula names.

In this way the pupil becomes fitted to enter the junior year in which this teaching begins to be put into actual practice in the mouth. Now a review of the instrument forms, their nomenclature, and the uses of each, is made in connection with the teaching of the preparation of cavities. In this the lecturer and the demonstrator at the chair become able to direct the student effectively, so that his use of instruments is begun correctly, and comparatively rapid progress made on right lines. This much neglected branch of operative dentistry, instrumentation, can now be taught effectively.

Cavity preparation, in my conception of it, should proceed in a definite order, step by step, which a student should be taught to observe strictly, to carry out with certain instruments, and with fairly definite methods of instrumentation. It is only when he is able to accomplish this work upon a definite system that he should
be regarded as able himself to form his lines of procedure in such a manner as will lead him to that high degree of skill in the future which we desire that our pupils should attain.

**SECTIONAL PIECE OF PORCELAIN BRIDGE-WORK, ALLOWING THE REMOVAL OF ONE OR BOTH SECTIONS.**

*By Adam Flickinger, D.D.S., St. Louis.*

I herewith give cuts and description of a novel piece of sectional bridge-work. It has been of considerable interest to local dentists, and I trust it may prove equally so to readers of the Digest.

**Fig. 1.**

**Fig. 2.**

**Fig. 3.**

**Fig. 4.**

Figure 2 illustrates the skeleton before baking, the bar projection and the gold crown. Figure 3 shows cylindrical tube opening for bar projection. Figure 4 shows the case complete in the mouth. A is the gold crown to which the bar is soldered and B is the gum enamel, which is placed on the labial and lingual side of left lateral and cuspid to overcome an enormous shrinkage caused by loss of alveolar process.
The bands encircling roots of centrals and root of right cuspid are made of platina, 30 gauge. The bar and box fitting over it and the plate and screws are constructed of iridio-platinum.

Close's body and gum enamel are used for the porcelain, and are baked twenty-seven minutes in an electric oven.

Before screwing home, the inner part of bands are skimmed with Britton's cement, and the box, screws and cylindric tube are coated with chloro-percha.

TREATMENT OF TEETH IN A COUNTRY PRACTICE.

By Dr. J. W. Beetham, D.D.S., Fennimore, Wis. Read at Twenty-seventh Annual Meeting of Wisconsin State Dental Society, July 20–22, 1897.

Your patient comes to you, perhaps from miles away, complaining of toothache, and what you do must be of a permanent character. Upon making an examination you find the cause is an exposed pulp, and decide at once to remove the same.

My method is as follows: Apply rubber-dam, wash out the cavity with warm water, then with pyrozone; next remove all debris and insert a small pellet of cotton saturated with carbolic acid, working it well against the exposed surface. Then take about ten minims of a 4-per-cent warm solution of cocain in the syringe—tell the patient it will be painful for a short time only—remove the cotton, apply soft rubber plug, pass needle through and well into pulp, discharge some of the contents and leave the needle for a short time. After two or three minutes the whole pulp can be painlessly removed with a spiral barbed broach. Wash the chamber well with pyrozone, repeating until it ceases to effervesce; flush with 95 per cent alcohol, and dry thoroughly. Do not depend entirely upon warm air for drying, but use copper wire heated in flame of lamp also. Wipe out canal with fine broach, wrap with shred of cotton dipped in eucalyptus oil, pump in chloro-percha, insert gutta-percha point, and fill cavity permanently as desired. The pyrozone breaks up the blood and washes it out, and also penetrates the dental tubuli. The oil following, being a solvent for gutta-percha, penetrates the cement, and being followed by the chloro-percha must seal the pulp-chamber permanently. In cases of severe hemorrhage, keep floating them with 95 per cent alcohol until it ceases.
My reasons for this method of treatment are: complete success with the minimum amount of pain; the unreliability of arsenic and the pain in removal after its use, and last but not least, the patient, after the pain has ceased, either forgets to return or is so far away that he cannot conveniently. I have been practicing this method over four years on most all kinds of teeth, and have had no trouble with teeth so treated.

Discussion. Several members spoke of severe pain following the use of eucalyptus, and asked the reason. Dr. C. C. Chittenden said that if it produces irritation a septic condition is present, which is thought to be under control but is not. In such cases it will act as an irritant, starting up whatever sepsis remains. Where eucalyptus oil can be used without disturbance it is pretty certain that the territory is aseptic.

INCIDENTS OF OFFICE PRACTICE.


Necrosis. Miss E., age 18, came to me suffering with a dull pain in the left upper side of face. Second bicuspid had been extracted three years before, but the socket had not healed. After examination I told her there was some dead bone there which would have to be cut out. She was somewhat alarmed at my diagnosis of her case, and objected to any such treatment. I compromised with her and said I would treat it two or three times, and if it did not submit readily I should have to resort to operation. After three treatments with peroxid and campho-phenique she received no relief. I then had her mother come with her and explained the operation to them, and said that it was the only means of cure.

After obtaining their consent I took some sharp burs, made with a long shank for this kind of cases, and after anesthetizing the parts locally, I removed all diseased tissue with the bur revolving rapidly, washed the socket out with peroxid and carbolized water, packed with gauze and told the patient to return in two days. At the third dressing I discarded the gauze and made a plug of beeswax. After washing with carbolized water at each sitting I dressed off end of plug. The wound healed up very quickly, and the patient has since experienced no trouble.
Miss R., age 31, suffered considerable pain over front of face. I found a condition similar to the other case over right superior lateral. The tooth had been extracted several years before, but the socket had never closed and would discharge at intervals. The left superior lateral was abscessed, with fistulous opening, and did not respond to treatment, not even to carbolic acid. Both centrals had dead pulps and were much discolored.

The necrosis was so extensive that I wished to consult better authority before operating, so I took the patient to the Chicago College and Professor Brophy approved of my diagnosis. He extracted the left lateral and proceeded to cut out the necrosed process, but the patient's nerves gave out, so he operated only on left side. He told me to operate on the other side later, which I did with success. The centrals were so badly discolored that he advised extraction. I dressed the wounds every day for a week, and then every two days until well. I then made a rubber plate with four anterior teeth and porcelain gum sections, and ground edges of gum to feather edge to fit nicely in depression.

Care must be exercised in dressing after these operations, so that the new tissue shall not be disturbed after it begins to form at the bottom of wound, which is caused to heal from the bottom up by keeping the top open with wax plug, trimming off a little at each dressing to allow room for a new deposit.

Case of Alveolar Abscess Extending Through Antrum, Causing a Chronic Inflammation of Entire Lining of Antrum. Mrs. C., age 68, general health poor and not able to come to the office. Her physician had treated her for neuralgia of left side of face for several years. I was sent for and extracted the four remaining teeth, the first and second molars on each side. A very long abscess came away with left buccal root of second molar, and a free discharge followed from the socket. I mistrusted the trouble, but as it was evening and the patient somewhat exhausted I did not investigate further, intending to call next day. Early next morning, however, her husband called at my office to say that his wife was having a discharge through her nose and asked me the cause, so I told him what I had discovered the evening before. Upon examination I found much tenderness on the inside of arch, and a watery pus discharge through socket of abscessed root, which extended into antrum. Washed out antrum with diluted peroxid, followed with a solution
of boracic acid, and gave mouth-wash to be used often. I was very anxious about this case, as the general health and age of patient were against a speedy recovery, so treated every day for one week, and every other day for two weeks. In six weeks patient was entirely well, never suffering again from neuralgia. She lived three years afterward.

Syncope. Professor K., weight 190 pounds, general health good, came for extraction of several badly decayed teeth. He wished the gums anesthetized, and informed me that he would faint away after each tooth, as he always fainted when hurt in the least. As I did not care to have him faint more than once at each sitting, I said he would have to make a visit for each tooth. I extracted one tooth with very little pain and he was much pleased; he talked for about a minute, and then over he went. That was all I could do for him that day, so made another appointment.

As I had never seen such a case before, I made up my mind that something had to be done. Fainting or syncope is the result of weak heart action, and my plan was to stimulate the heart before beginning operation. At the next sitting I gave him thirty-five drops of aromatic spirits of ammonia, and after extracting three teeth without any signs of fainting, I waited a few minutes and then extracted the remaining seven teeth with good results. Since then I always give it when a patient shows any signs of fainting. It is perfectly harmless, and I have never had a patient faint, no matter how severe the operation.

Discussion. Dr. B. G. Maercklein: In the cases described by Dr. Owen, the operations would not have been necessary if he had used a fifty per cent solution of the ordinary sulphuric acid, injecting into the carious pockets until the tissue was wholly saturated. Insert the point of a syringe into the abscess opening, closing latter with a little cotton or gutta-percha, so that the sulphuric acid will distend the parts; allow it to remain a quarter of a minute, and let it discharge of itself. Prepare beforehand a mouth-wash of water and bicarbonate of soda, so as to immediately neutralize the acid as it enters the mouth. Sulphuric acid is a very nauseous astringent and you will probably have some carbonic acid gas blubbering in the mouth, but that soon ceases. If done thoroughly it is seldom necessary to repeat, for the acid so disintegrates the dead bone that it comes away in the shape of debris, and can be easily washed out
with tepid or carbolized water the next day, which is about all the treatment necessary, as it heals of its own accord. This strength of acid is not at all dangerous, as it will not act on healthy bone.

Dr. Owen: In this case of four anterior teeth, with only a small discharge over each lateral, would sulphuric acid injected across the whole bridge free it of this bone?

Dr. B. G. Maercklein: Yes. In this case close the opposite opening if possible, so as to get some tension in the tissue. I used it in one case of carious bone of the lower jaw where every tooth had been extracted and all the sockets were carious, with a new growth of bone on each side of the sockets. It was pronounced by two expert surgeons as malignant, because the inner walls had extended back until the bone encroached upon the glands beneath the tongue, and one sublingual was sloughing nearly one-half inch deep, and the patient was told that the angle of the rami must be excised to save life. A few applications of sulphuric acid convinced me that it was merely a carious process of the lower maxillary. Nature made an attempt to restore the lost tissue, but did not seem to get into the center of the bone. The growth was simply upon the periosteal surface, and the bone in the center was very dense. I used sulphuric acid in that mouth twenty-five times before I had entire relief, and it had gone clear around the jaw and everything dead was eaten out. It was over a week before there was any positive evidence of healing, and three months before it entirely healed. When it did, however, there were two sharp edges of bone, one close to the lip and one close to the tongue, with a depression nearly one-half inch deep between them, yet covered over with mucous membrane and in a perfectly healthy condition. These sharp edges have since come down level; the body of the jaw-bone remains, and the face is not deformed.

NEW REGULATING APPLIANCE.


In many cases it would be desirable to hook or fasten some appliance on or near the apex of root of the tooth, but it is impossible to do this without mutilating the gums, as normally the tooth is covered by other tissue. With this appliance, which I am about to
describe, you get practically the same result as with your attachment direct to the root. With this as a hypothesis, it is plain to see what a great advantage you have in regulating cases of this nature.

To explain the method scientifically, it will be necessary for me to dwell a moment upon the subject of levers, on which the theory of this problem is based. For example, if two separate parallel rods are firmly fastened together by a crossbar at one end, they become one object, and if force be applied to the other end it is immaterial on which rod you apply it, as the strain would necessarily be equal on both, it being taken for granted that the appliance is strong enough to sustain the required strain. It is also immaterial with a two-pronged instrument on which prong you apply the force, if the force, resisting point, and double object are in the same straight line. If they are not in the same straight line, or in other words at an angle, the point of attachment to your appliance to your prong must be either a hinge joint or one of no motion, or else your body would tend to rotate or move laterally, thus defeating what you wish to accomplish.

In order to be more clearly understood, I will enter into a slight discussion of the different joints that might be brought into consideration in regulating appliances of this kind. The hinge joint, of which I have already spoken and with which you are all familiar, gives motion in but one direction, so it can be used to great advantage in this connection. On the other hand, the well-known ball and socket joint gives motion in nearly every direction, which very fact, making it so useful in many instances, would prove inefficient if used here. For example, if you have a two-pronged instrument and apply force upon the one prong having a ball and socket joint at the point of attachment, it would naturally follow by rotating this instrument in such a manner as to bring the force, resisting point and double object in one and the same straight line.

Before applying this principle I will give a practical example, so that there will be little chance for vague ideas in regard to the application of this device. Take for instance two or three separate bars an inch or two in length; arrange these in the shape of a cone, and firmly fasten the bars together at the apex. Is it not plain to every one that this pronged body will act just as a solid mass of the same dimensions, providing the strain is not great enough to fracture either?
Put this in practice by applying it in the following manner: Artificially bifurcate the root with a lever, which must be firmly fastened to the crown with a cap or band, this lever to extend as nearly parallel to the root as possible and so far up as the lips will allow. You can then apply the force upon this lever and get practically the same result as you would were it possible to attach your appliance direct to the root.

We have simply bifurcated the root of a tooth artificially, or in other words, added a root which extends up between the lip and the gum tissue. To this we apply our force and get, as before stated, the same result as though we attached to the apex of the root and fastened our appliance directly to the same. It must be remembered, however, that in cases where we do not care to change the position of cutting edge of crown, it becomes necessary to add an appliance which will hold the same stationary. It must also be remembered that you have nearly three times the force with the same amount of power, which is of course due to the gain in leverage by coming nearer to the point of greatest resistance.

Discussion. Dr. R. J. Wenker: Is there any inflammation of the soft tissues under the lip?

Dr. Maercklein: No more than with any other regulating appliance, unless you have sharp edges, and they can be covered with a little chewing-gum.

Dr. R. G. Richter: Is your idea to have this line in a parallel line with the long axis of the tooth, thereby bringing your pressure and moving these two bodies parallel?

Mr. Maercklein: It is not necessary, but the more in a straight line you get it the more you have the exact condition as though it were attached to the roots directly.

Dr. J. J. Wright: Is germansilver rigid enough to hold the strain of such a bar?

Dr. Maercklein: Not unless it is very heavy; a platinum and gold one is better.

Dr. T. M. Welch: How is the power applied in this method?

Dr. Maercklein: According to the number of teeth in place. Get the resisting power from the third, second and first molars. If you wish to hold the cutting edge stationary, fasten the wire from points around those molars, and fasten each forward to catch the cutting edge into a little loop. Then by extending from the point where
you get your force another rod of rolled platinized gold wire, fastening it up through the loop with the screw on the end, and lengthening so that it holds the cutting edge stationary, you must throw the apex forward by the simple lengthening of the bar.

**AS THE FACULTIES' AND EXAMINERS' DISPUTE LOOKS TO AN OUTSIDER.**

**By W. H. White, D.D.S., Silver City, N. M.**

The controversy between the National Association of Dental Faculties and the National Association of Dental Examiners presents some features which are very common in the transactions of ordinary humanity. It seems that so long as the Examiners passed rules which forced the student to take more courses of lectures and longer courses of lectures, and thus brought more fees to the colleges, and especially when the five years previous practice ceased to deduct any of the time required to prepare for examination, thus forcing all the dental education of the country to the college mill, the Examiners were a great and glorious institution. But when the Examiners saw fit to supervise the previous preparation of applicants to dental colleges, and thus to curtail the latter's omnivorous instincts, then the Faculties rose up in righteous indignation and demanded to know if they were not "a bigger man than old Grant?"

Now while I have a profound respect for the great knowledge and acquirements of the Dental Faculties, and while I realize the great power for good that rests in their hands, unfortunately it is the experience of humanity that great knowledge and great power do not usually deter a man from following the course of self-interest, even when that course is detrimental to public welfare. It is still more common experience that a public servant attends to public affairs better than a dictator.

The National Association of Dental Faculties is an entirely irresponsible body so far as the ordinary member of the profession is concerned. On the other hand, each member of the National Association of Dental Examiners is responsible to the state board of which he is a member, and this state board is indirectly amenable to the sentiment of the dental practitioners within its borders. The National Association of Dental Examiners is the most representative body connected with the dental profession; it has the legal status, and is the natural mouthpiece of the general practitioners of den-
tistry throughout the country, and it should be fostered and upheld by them until it becomes the court of last appeal in all matters pertaining to dentistry.

While I am one of those who believe that some dental education worth having may be acquired outside the colleges, I realize the paramount influence for good and the absolute necessity of the colleges to the profession; still, I think they will do the profession more good as servants than as masters.

WORRY.—Modern science has brought to light nothing more curiously interesting than the fact that worry will kill, and the way in which it kills is stated to be that worry injures beyond repair certain cells of the brain. The brain being the nutritive center of the body, the other organs become gradually injured, and when some disease of these organs or a combination of them arises death finally ensues. Occasional worrying of the system the brain can cope with, but the iteration and reiteration of an idea of a disquieting sort the cells of the brain are not proof against.—*Pharmaceutical Products.*

TRIUMPH FOR A HYPNOTIST—DR. LYMAN MASTERS A DOUBTING PHYSICIAN.—Dr. Charles Lyman, of Rockford, Ill., a hypnotist of local repute, was invited to give a number of tests before the Northern Illinois Dental Society, which was in session in that city recently. After a number of experiments with subjects, Dr. F. H. Edwards, a well-known physician, stated that he doubted whether the subject was hypnotized. This brought out a challenge from Dr. Lyman to put Dr. Edwards in the same condition, which was accepted. After a struggle of nearly two hours against the subject's will the hypnotist succeeded in mastering the physician and had him following his suggestions as he pleased. The test created a great impression and was the talk of the visiting dentists.—*Chicago Evening Post.*

IS DENTISTRY A NECESSITY IN THE EYES OF THE LAW?—Two cases which have recently come before our notice make us arrive at the conclusion that the services of our profession are not considered a necessity by the legal mind, at least not in all cases. An action at law was tried before the Supreme Court of New York, in which it was decided that filling and regulating the teeth of a minor was not a necessity and that the parent need not be liable. In the case of extraction for the relief of pain, however, the dentist became a necessity and his fee would require to be paid. The other case relates to artificial teeth. Judge Wynne Foulkes heard an action the other day by an Atherton dentist for money due in respect of an artificial set of teeth supplied to a minor, and held that "the contract could not be enforced under the act, artificial teeth not being a necessity." Common sense would have decided that as nature considered teeth a necessity, their substitution after loss would come under the same heading. But common sense and law are frequently at variance. It therefore behooves dentists who perform operations for minors to assure themselves of the consent of the parents and guardians of their young patients.—*Brit. Journ. Dent. Sc.*
FINES FOR ILLEGAL PRACTICES. The New York Sun of November 17, 1897, noticing the fine of $150 imposed on Finney, a druggist, for illegally practicing medicine, said: "This is the heaviest fine yet imposed in special sessions for this offense."

In making this statement The Sun was misinformed. The heaviest fine imposed since the County Society began to enforce the medical law of 1881 was that of $500, inflicted on January 9, 1889, in special sessions, upon one Bourqueteet, "private physician to the Bey of Tunis," for a first offense. That same court also imposed fines of $250 upon Brown, August 12, 1887; Strosser, June 4, 1891; Goldsmith, October 31, 1892, and De Samora, December 8, 1892; also fines of $200 upon Eckardt twice; Kraft, Tochterman, Montague, Utzinger, Michael, Morrel, La Roche, St. Leon and Raffel; also fines of $150 upon Weinstein, Guggenheim, Libertino, Hammer, Pool, Koehler and Rosa. Thus there have been twenty-three cases in which a fine of $150 or more has been imposed by that court.

The court of special sessions also imposed on October 4, 1897, prior to Finney's case, a fine of $150 for the illegal practice of dentistry by one Diaz in the "Boston Dental Parlors," and in so doing expressed approval of the dental law and the judicious manner in which the state dental society sought to have it enforced.

The largest fines inflicted under the dental act have been two of $500 each upon the notorious Kahn and Jordan, whom the state dental society caused to be convicted in 1896 for unlawfully affixing the letters M. D. to their names.

All of the above fines, except those in the dental cases, were imposed prior to December 15, 1893; and it may therefore be possible that no fine of $150 has been imposed in special sessions since then.

The last report of counsel published by the county society, that of 1896, shows by a tabulation that since December 15, 1893, five fines of $250 and one of $150 have been imposed, but in what court does not appear; however, from what is said of the court of special sessions in the body of that report, and the further fact that The Sun presumably derived its statement from some one it supposed was authority, one may fairly assume that those fines were imposed in general sessions.
It is a curious result of the various amendments of the laws that—dentistry and the practice of medicine being both regulated by chapter 25 of the general laws, and the former being a specialty of the latter—the misdemeanor of unlawful dental practice must be punished by a fine of not less than $50, and may be punished by a fine of $500; while the offense of unlicensed medical practice cannot be punished by a fine of more than $250, and may be punished by as small a fine as the court sees fit to impose, which in one instance was $10 and in three cases $25. Thus for purposes of punishment, assuming dentistry to be a specialty of medicine, the part is greater than the whole, Aristotle to the contrary notwithstanding.—W. A. Purrington, in Medical Record.

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SURGERY ONE HUNDRED YEARS AGO. By Dr. George Fischer, Germany. As regards dentistry, Germany was far behind France and England, where excellent and intelligent dentists could be found. In 1728 the Parisian dentist Fauchard created an epoch with his "Chirurgie Dentiste," the first complete scientific work on dentistry published. This work formed the basis for all the succeeding books issued. Among the better-known dentists were Berdmore ("Treatise," 1770) and Spence of London, and especially Jourdain of Paris. One of the most important works relating to dental anatomy as well as surgery was written by J. Hunter ("Natural History of the Human Teeth, Explaining their Structure, Use, Formation, Growth and Diseases," 1771). The pain in a carious tooth began when the air touched the bare nerve. Ever of an inflammatory nature, it was not directly dependent upon caries, but due to secondary caries, a disordered stomach, etc., and was so excruciating because the inflamed portions could not spread nor give like the panaritium. To prevent the advancement of caries by draughts of air, the cavity of the tooth had to be filled with gold or lead, or the decayed tooth was extracted, cleansed by boiling and then replaced, whereupon it again grew fast to the socket. Hunter was particularly successful in this mode of procedure, which he based upon his experiments. Having removed the spur of a cock and replaced it in the bird's crest, it again adhered; the human testicle having been cut out and returned to its place, likewise grew. If a sound tooth was knocked out by an accident, it was at once put back into the socket. Also the teeth taken from cadavers and set
again remained intact for many years; they were fastened to a neighbor tooth by a thread. In this connection Littsom, a native of the West Indies who had freed his slaves and thereby lost much of his property, called attention to the transference of syphilis, which he had not observed to be the case when inserting artificial teeth (1787). These were constructed from hippopotamus teeth (Nuck, 1714) or of ivory, and so skillful was the manufacturer that he made whole rows, even entire sets of teeth. When a patient refused to have his decayed tooth extracted, the nerve was killed with a heated fine knitting-needle or with mineral acids or caustic alkalies. The prejudice that a tooth must not be drawn during pregnancy was disputed by the Vienna dentist Serre. In case of an ulcerated tooth the only remedy was to remove it; but not until the inflammation had subsided so as to prevent its spreading. With painful and difficult eruption of teeth Hunter, as Pare had done, advised the cutting of infants' gums, but it was essential that the knife or lancet pierced through to the tooth, otherwise the operation was useless; the scar did not hinder its exit. The Erlangen professor, Isenflammer, contested this idea and therefore opposed this little operation. B. Bell, who early employed the cross incision, was of Hunter's opinion; also Richter, who had very accurately described the process of teething. Both recommended as a means of cleansing the teeth to rinse the mouth with lukewarm water after each meal, which method had already been advised by the French dentist, Guillemeau, in 1706, and wiping off the teeth with a sponge. Theden thought it necessary to clean the teeth also at night, so as to remove all particles of food. In treating sound teeth Richter discarded all powders, brushes and toothpicks, which ought never to be too pointed, nor made of soft wood, nor of metal, nor be made from quills. Even during his time Guillemeau considered it dangerous for the preservation of the teeth to drink beverages too hot or too cold; on the other hand, he thought well-baked bread, mutton and chicken conducive to good teeth; fought against the use of golden and silver needles as toothpicks and permitted only those of quills. Dirty teeth required the application of powder prepared from cream of tartar, chalk and cinchona, with a brush, used on the lower jaw in an inverted position and vice versa on the upper jaw. Tartar was removed with instruments; for filling the teeth zinc was also used, besides lead and
gold. Hirsch of Jena advocated the use of tinfoil in 1796. According to Richter, the remedies for toothache depended upon the origin of the same. When inflammatory, caused by caries, leeches and poultices were applied; if rheumatic, tincture of cantharides, cajeput oil, camphor and electricity were prescribed; if caused by a disordered stomach, emetics of cream of tartar; in case the origin was not known, extract of poppy and the above anti-rheumatic remedies were used. The most common instruments for pulling the teeth, which was done toward the side on which the continuation of the socket was the thinnest, were the pelican, the English key and dental elevator.

The suppuration and the operation for the opening of the antrum of Highmore were known. In 1675 Molinetti first opened the antrum directly through the cheek by means of a cross incision and by trephining, while Meibom in 1718 first laid the socket bare by extracting the teeth implicated. To this method Cowper and Drake added that of puncturing the alveolar processes. After the Bremen physician, Runge, had compiled the first work on the diseases of the antrum (1750), the French surgeons Bordenave, Lamorier and Jourdain gave their special attention to this operation and published their writings in the fourth volume of the Memoirs of the Academie. Bordenave recommended Meibom's method and extracted preferably the third molar, because its alveolus was the thinnest, therefore the easiest to perforate. He at once caused a large opening, which he kept from closing by inserting a silver tube. This procedure was opposed by Lamorier, because often a sound tooth had to be sacrificed, and instead trephined above the third molar and below the cheek-bone, the most prominent part of the antrum. Jourdain, however, deemed it useless as a rule to open the antrum in this way; he sought to find the connection with the nose, in order to free the closed passage and through this make his injections. This method was much too difficult and often impossible, consequently of no use. Lastly, Gooch is mentioned, who bored through the hard palate into the antrum, taking for granted that the same had been pushed forward by the pus. Most of the surgeons chose either Meibom's or Lamorier's method. B. Bell employed a curved trocar, in order to make a puncture from the alveolus; Desault opened from the mouth the lower portion of the fossa canina where the bone was the thinnest and where the operation and
the after-treatment were most easily accomplished. These punctures and trephinings of the anterior wall are to be considered as the starting-point for the resection of the upper jaw.

In a similar manner was treated the suppuration of the frontal sinus, which Richter saw break through into the skull cavity. Either the interior wall was trephined or injections were made into the noses as soon as the pus had found its way there, or if the outer wall was already decayed, the too small opening was enlarged, which, however, could remain fistulous for a long time. Bilguer was once very successful in taking a bullet out of the frontal sinus, and Marechal related the case of a wound in which the brain matter was mistaken for mucus and pus.—*Jour. Am. Med. Assn.*, *Nov. 1897.*

*BLEACHING DEVITALIZED TEETH WITH PYROZONE.*

By J. P. Parker, D.D.S., Santa Cruz, Cal. Read at Pacific Coast Dental Congress, July, 1897. The time consumed and the inconvenience to the patient in bleaching, as a rule, are less than in crowning, and the tooth and root are made more aseptic, thus improving the sanitary conditions of the mouth and thereby lessening the chances of pericemental inflammation. In bleaching with pyrozone we remove septic matter that we would not if we were only crowning:

I begin the process of bleaching by first placing the rubber as closely as possible around three or more teeth; if there is a cavity of decay excavate that, then open into the pulp-canal, and with a spray of a 25-per-cent solution of pyrozone reach all exposed points inside and out, following with blasts from the hot-air syringe. When it is difficult to reach far into the root with the spray I employ cotton to carry pyrozone to the end of the root. One need not fear any serious results in so doing; and yet, if there is no necessity for so doing, it is well to avoid crowding it through the apical foramen. After continuing this treatment from twenty to forty minutes close up the tooth, and in forty-eight hours it will present a great change, usually becoming as white as the others. However, if it does not, repeat the treatment, and it will be a rare case that will need a third application.

I find it very difficult to determine at the first sitting, and while operating, to what extent the pyrozone has affected the tooth, some cases being much more stubborn than others, and in some it is hard
to see any improvement at the time of the operation, but the next
day may bring great changes.

There are two kinds of stain that I have found very hard to
remove, and I doubt if pyrozone will effect a satisfactory result.
The first is a mineral stain, and the second is occasioned by the
tooth having been stained with oil of cassia or cinnamon.

One writer speaks of pyrozone as injurious to the vital teeth
adjoining the one to be bleached, and suggests covering them with
wax, but I never have seen any necessity for such a precaution; he
also advises cleansing the teeth with alcohol before beginning to
bleach, but I see no necessity for that. Another writer speaks of
pyrozone 25-per-cent as a CAUSTIC, spelled with capitals, and yet it
is the most yielding of all caustics, as it does not destroy tissue.
True it burns for a time, but the tissue will live, and in a few
hours be as though it had never been burned. This writer also
speaks of continuing the operation for three hours in stubborn
cases, but I see no necessity for it.

Discussion. Dr. A. F. Merriman, Jr.: I had an experience
recently that pleased me very much. The patient had met with an
accident some twenty-five years ago. She received a blow upon
the central and lateral incisors which I judge was the indirect
cause of the discolored teeth. I found it necessary to crown the
central, but the lateral I bleached to my satisfaction. After the
removal of the debris I used ammonia, and instead of the 25 I
employed the 5-per-cent pyrozone, to my perfect satisfaction, for I
found I had a good color. The tooth had been discolored twenty-
five years. I have recently seen it and there is no rediscoloration.
I think you will find the 5-per-cent solution used with the hot-air
blast is as efficient as the 25-per-cent and much more easily handled.

Dr. Platt: I met with the same experience not long ago. I
bleached the tooth and got it too white, but it has now pretty
nearly reached its normal color. I think it acts very much as a
natural inlay would. You may put in an inlay and have it too
light at first, but in a few days it will assume the color of the
adjoining teeth. Why it does so I don’t know. I think that prin-
ciple applies to a tooth that has been bleached very thoroughly,
dried out perhaps. I would like to say also that in the use of pyro-
zone, 25-per-cent, the cataphoric procedure is of very great assist-
ance. I have in teeth that were very much discolored taken out
the putrescent pulp and put an amalgam filling in, and in forty-five minutes to an hour and a half—at the longest two hours—I have bleached those teeth white enough for every purpose, so they could not be very readily detected from the adjoining teeth. In one case I bleached a lateral incisor that was very badly discolored in thirty-five minutes with the cataphoric apparatus and a 25-per-cent solution of pyrozone. It was as near normal as you could possibly expect a devitalized tooth to become. The use of the cataphoric apparatus with pyrozone greatly expedites the procedure. So far as I can find it is without any pain at all where the tooth is devitalized. Two or three patients have complained of a tingling sensation where the negative pole was placed, but no pain. It hastens the work very materially, and does not, so far as I can determine, do any injury to the teeth.—Pacific Stom. Gazette, Nov. 1897.

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CARBOLIC ACID GANGRENE. Czerny (Munch. Med. Woch. April 20, 1897) observed that, whereas some twenty-five years ago there were numerous records of carbolic intoxication, yet even in that period the occurrence of gangrene was rarely reported. After referring to some recorded cases, Czerny observes that hardly a semester passes in his clinic without a case of carbolic acid gangrene presenting itself, and he warns his students against the use of watery solutions of this agent. He gives details of three cases recently admitted to his clinic. In all the cases the carbolic acid solution was applied to a wound of the finger. Gangrene supervened, and amputation became necessary. This gangrene is of the dry kind. The anesthetic action of carbolic acid induces the patient to leave the dressing on. The part first becomes grayish-white and eventually black, without any sensation of pain. Circulatory disturbances caused by firm bandaging, inflammation or a severe injury predispose to it. The above named patients were in robust health, and the injuries were not such as to induce gangrene by themselves. In two of the cases a three-per-cent solution of carbolic acid was applied, but it was kept on for several days. The duration of the application is more important than the concentration. The author concludes that since, with any solution of carbolic acid, gangrene may under certain circumstances develop, this agent should be altogether avoided as a dressing and other antiseptic solution used.—British Medical Journal, May 22, 1897.
SALIVARY CALCULUS IN THE PAROTID DUCT CAUSING SYMPTOMS SIMULATING ALVEOLAR ABSCESSES. By T. E. Constant, L.D.S., Eng. Miss M., aged about 50 years, came to me “to have a tooth out.” The left cheek was obviously swollen and the swelling had commenced three days previously. The cheek was both painful and tender, but the skin, although tense, was not reddened. The swelling was most prominent in the center of the cheek. Pressure over the region of the left parotid caused pain. The patient was very nervous, and examination of the mouth in consequence somewhat difficult. The patient said the trouble “commenced with pain in the last tooth of the upper,” viz, the left upper second molar. When that tooth was gently tapped she complained of pain, although it was apparently a sound tooth. She said it had been very painful in eating during the last three days. Careful examination, however, enabled me to assure myself that the swelling in the cheek was not connected with either the upper or the lower jaw, and I noticed a greyish appearance at the most prominent part of the swelling in the mucous surface of the cheek. At first I thought it was a commencing slough, but subsequently found it to be due to something white showing through the mucous membrane. With some difficulty I passed a probe into the parotid duct and was able to dislodge a small calculus—about the size of a one grain cocaine tabloid and very much of that shape. I saw the patient two days later, when the swelling had subsided, and the mouth “felt perfectly comfortable.”—Jour. Brit. Dent. Assn., Nov. 1897.

PULPELESS TEETH AND THE TREATMENT OF ROOTS FOR CROWNING. By D. D. Smith, D.D.S., Germantown, Pa. Read before New Jersey State Dental Society. Perhaps no one process in dentistry has developed more methods, or elicited more discussion than that embraced under the head of “root filling.” So-called “treated teeth” are commonly regarded as the unknown quantity in dental equations, and a vague uncertainty and a dread of consequences seems to attach to them. That such uncertainties are not a necessary concomitant in the treatment of pulpectomized teeth and roots, but that such teeth are subject to well defined physiological law, although their condition may be in a degree pathological, it is hoped this paper and the discussions that may arise from it will tend to establish, and that ere long this subject may be lifted out of the
domain of uncertainty and assume a position of certainty in prognosis and assured results in practice.

To bring this matter clearly into view, it seems necessary to briefly review some microscopic characteristics of the teeth. The structures which concern us most are the dentin, cementum, pericementum and pulp. A clear apprehension of the nature and office of these structures, and of their relations to each other, seems indispensable to the intelligent and comprehensive treatment of pulpless teeth and roots.

For the purposes of this discussion, it matters little how, when or by what special organ they are formed or deposited. Our inquiry is, what is the office of each, and what are the relations of the one to the other in this office work in the fully formed and erupted tooth?

The cementum, the external osseous covering of the root in young life, is made up essentially of true bone structure, nourished and supported by its pericemental membrane, precisely as bone tissue is nourished and supported in other situations. This most vascular of the osseous tissues of the teeth is distributed over their roots for the evident purpose of giving them intimate and enduring attachment to the alveolus. It should be noted that this cemental covering varies considerable both in density and thickness at different periods of life, and that thus its true function is often perverted and its office of sustaining the tooth in the alveolus materially interfered with. Neither the pericementum nor the cementum contributes to the nourishment or sustenance of the dentin, unless it be by secondary influences and in a most indirect manner. In intimate association with the dentin of the root and in communication with the pulp, they are yet perfectly independent of both, in so far as sustenance and nerve supply are concerned, as they derive both of these forces from other and independent sources. Whilst there may be traced in some instances anastomotic relations between the tubuli of the dentin and the vascular portions of the cementum, this relation is not sufficiently intimate even in the thicker portions of the cementum to warrant the belief that any true nourishment is imparted to the cementum by the pulp acting through the medium of the dentin. On the other hand there are strong indications that whatever influence the pulp exerts upon the cementum is in the direction of calcific deposits, thus tending to deprive it of bone characteristics and convert it into dentin. It has been intimated that the pulp may promote vascularity in the cementum, but my belief is
that this does not, and in the nature of their relations cannot take place. That the calcific changes which occur in the dentin of the crown, and in the enamel in young teeth, are due to the pulp, needs no demonstration, as the retrograde metamorphosis in these tissues, which results from the death of the pulp, is sufficient proof of the fact that it is their only source of sensation and sustenance.

It is then the function of the pulp in the erupted tooth to recalcify, reconstruct, nourish and protect the dentin and enamel in the crown; and, if in the crown, why not in the dentin of the root? That it does this is abundantly shown in the hardening of the dentin in this part of the tooth; in the extension of the calcifying process into the territory of the cementum, and the conversion of it into more or less perfect dentin; in the occasional deposits of enamel found in the cementum; and in the withdrawal of the alveolar process from about the roots of many teeth with living pulps, after middle adult life.

It is not the function of the pericementum to calcify or in any other way impair the vascularity of the cementum; this tendency or influence is derived from the pulp alone. Demonstrations of this fact are found in cases of devitalization of pulps in young teeth, where the cementum often receives accretions in the form of exostosis; for it is a matter of observation that the roots of young teeth which have been any considerable time devitalized are exostosed to a greater or less extent. This form of exostosis taken on through the agency of the pericementum alone, seldom or never occasions pain in the teeth, and this certainly points to unimpaired vitality and nerve supply in the cementum after devitalization of the pulp, and to the pericementum as the caretaker of the cementum; and, consequently, to the belief that this is its true and only function. It is thus apparent that a tooth is endowed with two separate and distinct sources of life, the one derived from the pericementum for the control of the cementum in all its substance, and the other the pulp, which governs all of the enamel and dentin and their connective tissue, and this important fact must be remembered in all our studies relating to pulpless teeth and roots, if a true basis of treatment for such teeth is ever to be reached.

It is of little consequence what filling material may be introduced into the root-canal if the devitalized dentin and its contents become repellant to the cementum and the pericementum; there remains in such case little comfort or usefulness to the tooth.
Dr. Bodecker, speaking of the appearance of dead dentin under a power of twelve hundred diameters, says: "The dentinal fibers appear shriveled up to rows of minute granules not always in the center of the canaliculus, but frequently quite near to one of its walls. The basis-substance shows a rather indistinct dark violet reticulum with numerous interruptions. The facts here described suffice in my judgment to determine the nature of the reticulum pervading the whole of the dentin; it is of necessity the living matter which is plainly marked in living, and shriveled and reduced to rows of granules in dead teeth."

Reviewing the conditions presented after the devitalization of the pulp, in the light of the microscopical researches here presented, we have first, the pulp cavity and canal in the root, with their contents of pulp substance and linings of cavities; and second, the contents of the dentinal tubuli, the connective tissue, basis-substance or reticulum and the matter of the interzonal layer. This is now all dead matter, and subject to change and decay as is dead animal tissue wherever found. The one source of vitality and nourishment for all the interior structures of the tooth having been destroyed, there remains only that life which retains the tooth within the alveolus, viz., the cementum and the pericementum. What will best conserve the normal activity of the living cementum in its new relations and assist it to remain a living issue, in harmonious relation with dead or at best mummified dentin? Surely not any particular kind of filling material which may be introduced into the root-canal, but rather some form of treatment which shall place beyond the reach of putrefaction the structures subject, with the death of the pulp, to decomposition and decay. Disturbances to pulpless teeth come from causes within themselves, and no filling material alone will ever shut them out. Let us then in dealing with such teeth place the emphasis where it should be placed—upon treatment, and not upon filling materials or methods of applying them.

Efforts in common practice point the first step in treatment, viz., through removal of all pulp tissue, whether it be freshly devitalized, or whether it be in a state of decay and putrescence; and this not only from the pulp cavity but from all canals as well. This of itself is not always an easy operation, as no inconsiderable difficulties frequently present to gaining access through the cavity of decay, even to parts of the pulp cavity, and much more to many
small tortuous and inaccessible roots; still it would be difficult to emphasize too strongly the importance of removing all of the substance of the pulp from the pulp cavity and from the root-canals.

No expense of time or patience should be counted too great for its successful accomplishment. Neither should it be considered a sacrifice to remove strong and good dentin where necessary to gain free access to the root-canals. One has said, "cut until entrance can be gained on straight lines," and this, in a general way, is good advice. Not only should the crown be opened up to admit of successful manipulations, but the pulp cavity and the canals should be enlarged and reshaped until they will admit of access to all parts.

In this operation is necessitated the removal of the lining membrane of the cavities, the reticulum or basis-substance and intertubular matter which comes away with the removal of the dentin. This should be effected without weakening the crown or root, or doing violence to any vital part of the tooth which remains. The greatest care should be exercised that no encroachment be made upon the cementum, either by too free removal of dentin in its longitudinal aspect, or by piercing it at any point with drill or reamer.

Opening into or through the cementum along the side of the root is a most unfortunate accident and establishes an unfavorable prognosis. A natural opening of considerable size at the apical end of a root may be of no special significance, if such opening be properly closed in filling, but a drilled opening of equal size and similar location is by no means so easy of treatment and may prove a great detriment to the root.

The roots requiring greatest care in treatment are: first, small superior laterals; second, first superior bicuspids; third, the buccal roots of superior molars and the mesial roots of lower molars; and fourth, the roots of inferior centrals and laterals. Violence done to a small, irregular or curved root, by piercing the cementum, seems often to be provocative of more trouble than the opening through a large and well formed root, and yet it is frequently found that where the danger of piercing the root from enlargement of the canal is greatest, the necessity for entrance to the canal for the complete removal of the pulp is the more imperative; and thus is presented the importance of patient and skillful manipulation; and nowhere in dental operations is greater skill and good judgment required than in opening and cleansing many root-canals.
Assuming now that the mass of pulp material in the pulp cavity and root-canals has all been removed, let us inquire if anything further can or should be done to insure the comfort of the root before filling or crowning.

The only treatment which has proved uniformly satisfactory in my hands is the creosote treatment. Pure beechwood creosote is a medicament of unfailing utility and permanency when applied within recently devitalized teeth and roots. It is safe, non-irritating and effectual. It is the one material which, when used after cleansing of the canals, neutralizes and renders harmless, even in the young and imperfectly calcified teeth, any decomposition arising from the basis-substance, intertubular matter, or from shreds of pulp tissue in portions of absolutely inaccessible pulp-canals. It places and keeps the devitalized dentin of the roots in harmonious relation with the living cementum which surrounds it, retaining the creosote odor, and consequently its control over decaying matter indefinitely.

Applied on a few fibres of raw cotton (absorbent cotton should never be used in medicinally dressing a tooth or root), twisted into a thread of convenient size, immediately after the removal of a freshly devitalized pulp, it is soothing and most beneficial in its action on the root. Such dressing should be kept sealed in the root from twenty-four to forty-eight hours, and for a longer time in young unconsolidated or imperfectly calcified teeth, that the influence of the creosote may permeate to all parts of the dentin.

It should be carefully noted that while it may be freely and universally applied within a root from which an odorless pulp has been removed, great care and caution should be exercised in applying it to roots containing putrescent matter. A soothing, quieting, beneficial application in the one case, it becomes a violent instigator of periosteal inflammation in the other. To this I apprehend is largely due the disuse of creosote in the treatment of roots, especially putrescent roots, and yet the creosote treatment is of even greater benefit to the putrescent root than to the odorless one.

In the treatment of teeth and roots with putrescent pulps, the effort should be made first to remove all putrescent matter and disinfect with creosote. In this operation, only plain nerve instruments or broaches should be used. No cotton should be attached to the instrument in an effort to facilitate cleansing. After cleansing the root and applying the creosote carefully, the root should be left
entirely open for a time. If any dressing be used, it should be merely a pledget of cotton very loosely applied in the cavity of the tooth, simply to protect it from food and extraneous matter. In twenty-four to forty-eight hours the operation of cleansing the root with creosote on plain instruments can be repeated, when if there be no signs of periosteal inflammation, the root may be more thoroughly cleansed and deodorized by using the creosote on a few fibres of cotton rolled on the instrument, and afterwards by introducing very loosely into the root a thread of cotton dipped in creosote.

The main cavity should again be very loosely closed with cotton, the gum over the root touched with iodin, and the tooth allowed to remain quiet until another sitting, when after recleansing the root, it can probably be stopped tightly with the cotton dressings saturated in creosote. When the tooth will bear such dressing for a day or two, and the cotton comes from the root having the odor of creosote only, the tooth or root is in the best possible condition for filling or crowning, and either operation may be performed without apprehension of aftertrouble.

If the theory of two sources of life to the tooth has been successfully established, and I believe it has, it stamps at once as fallacious and untenable the impression so generally prevalent in the profession, that odors and putrescent conditions found within treated teeth come from sources without the tooth, or that they result from the use of special filling materials. It is indisputable that all odors arising from the cavities of devitalized teeth come from decomposition of the matter within the tooth itself. Arising more commonly from some pulp remains, they may and do have their origin in the decomposition of the basis-substance, intertubular and other matter of the dentin, especially in young teeth subject to destruction of the pulp, disorganization and decay.

While the title of this paper would readily admit of closing at this point, it would nevertheless seem incomplete without some reference to materials and methods for root filling. As has been stated, the emphasis should in all cases be placed upon treatment for roots rather than upon methods or materials for filling them, and yet there is a judicious discretion to be exercised in the choice and use of materials. Certain of the materials in general use are practically if not positively inert and can meet no requirement of a root filling except that of closing the cavity; these
DIGESTS.

are the metals gold, tin, amalgam and lead, wax, and the different preparations of gutta-percha, all of which have for a considerable time been excluded from our list of desirable filling materials for roots. Of the materials more or less antiseptic and medicinal in their action we have medicated wooden plugs, medicated cotton, chloro-percha, the phosphates and the oxychlorids. A wooden plug saturated in creosote or chloro-percha may, in favorable conditions and places, make a desirable filling in carefully treated roots, but for plain accessible roots which can be kept dry whilst filling, the preference is given to the oxychlorids carried to place on cotton. For small roots difficult of access, preference is given to fibres of raw cotton, twisted into a thread of convenient size, saturated in creosote and carefully packed in the canal. For root fillings in conjunction with posts, for retaining any form of crown, the decided preference is given to the phosphates.—*Items of Interest, Oct. 1897.*

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LOSS OF NERVOUS POWER, RESULTING FROM A CARIOUS TOOTH. By J. H. Edward, L.D.S. The vis nervosa, or power of the spinal nervous system, is not electricity in any of its known forms or modifications. I therefore venture the hypothesis, that there exists some modification or differences in the electricity (vis nervosa) of different animals. My reasons for doing so are founded on an accidental discovery I made a few years since whilst I was taking shocks from a series of powerful magnets (electromagnetism). These shocks affected me in a very different manner from those taken from either a cylindrical or a plate electrical machine. From the latter there is experienced, immediately on completing the electric circle by the hand, a transmission of the fluid through the whole range of the spinal nervous system, whilst the shocks from the magnets were felt only from the fingers to the elbow-joints. So that after repeatedly verifying the accuracy of these observations, the conclusion appeared to warrant the supposition that, however similar the phenomena of electricity and electromagnetism, they were not exactly identical, and having reflected on the many anomalies of the nervous system, showing such marked difference in health and disease, I am disposed to think that the power (vis nervosa) of the spinal nervous system is not electricity in any of its known forms or modifications, but that this vis nervosa is something *sui generis*, and therefore cannot be regarded as iden-
tical with either electricity or galvanism, or with electro-thermomagnetism. The reflex action of the nervous system, so ably elucidated by Marshall Hall, seems to favor such an inference, and to warrant the supposition that, whatever may be the peculiar nature or properties of the vis nervosa, it is subject to modification in different diseases, according to the proximate cause of the primary disturbing influences—by the kind of tissues or organs involved, and by the peculiar idiosyncracy of individuals. For how otherwise can we account for so many sympathetic disturbances, as, for instance, in ordinary caries of a tooth? The neuralgic pains may affect the ears in one person, the eyes of another, and in the third there may be violent throbbing of the arteries, with occasional intense suffering along the whole course of the maxillary branch of the fifth pair of nerves.

As an example of some remarkable disturbances from the presence of a carious tooth, and its irritation of surrounding tissues, I may cite the following case: A young lady was brought in a carriage to my residence to have her mouth examined. On being removed, she was supported by a lady on one side and a maid-servant on the other, and her entire muscular system seemed paralysed. Her legs trailed on the ground like useless appendages. Her arms, when raised, fell powerless immediately when unsupported, and even the muscles of the tongue were paralysed; and in her efforts to speak this important organ remained in a quiescent state. On examining the mouth I perceived a dens sapientia of the mandible very carious, and deeply imbedded in the temporal muscle, just below the ridge of the coronoid process, in which locality there was extensive inflammation. I suggested the removal of the latter tooth, and though I had anticipated some advantage from the operation, the actual results astonished me. She instantly obtained the free motion of her tongue, which she immediately used to communicate an important fact, viz., "that ever since the time the tooth I had extracted had been making its way through the gum, she could date the gradual loss of power over her limbs, etc." I saw her about a month afterwards; she could use her hand and arm. Since then I have not seen what further progress she has made.

In this case we had palpable proof that the phenomena could only be explained by assuming that the local irritation (shown by the great vascularity of the part) had, in the first instance, affected the
maxillary branch of the fifth nerve, implicating the trunk of the nerve itself, and ultimately communicating the disturbed condition by reflex action to the spinal system. From this and similar cases I think that there must be some modification in the vis nervosa, depending on some predisposition, local or general, or from some peculiar constitutional condition, for if such were not the case why does not every tooth similarly affected produce, in all cases, uniformly similar consequences, in obedience to the law—like causes produce like effects?—Jour. Brit. Dent. Assn., Dec. 1897.

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PROSTHESIS OF ENTIRE DENTURES WITH COUNTER-SUNK-PIN TEETH ON THE VULCANITE BASE. By Allison R. Lawshe, D.D.S., Trenton, N. J. For the purpose of imitating the natural organs and obtaining the most useful, comfortable, and artistic denture, the countersunk-pin teeth are, perhaps, as superior to plain teeth as are the latter to the sectional block, for the reason that, when selected with due regard to the temperament of the individual and mounted upon a properly constructed artificial base, they present to the tongue organs similar in form to those of the natural denture, and, with the assistance of the palatal gum-festoons and rugae, materially aid the tongue and cheeks in manipulating the food, as also in deglutition and enunciation. Besides, if the lingual as well as the labial surfaces of both the upper and lower vulcanite plates be faced with pink rubber, exposure of artificiality will be avoided.

My method of procedure is as follows: After obtaining an accurate model of the mouth from a plaster impression, and the bite by the How method, and after setting up the case in the articulator, I coat the model with gum-tragacanth mucilage and cover it with a sheet of No. 3 tin-foil, rubbed neatly to place with a ball of cotton under the finger, and, with a thin sheet of wax pressed carefully to place to avoid forming places of extreme thinness, as over the air-chamber and rugae, I form the temporary base-plate and proceed to set up the teeth with especial care to attain a natural-looking arrangement. This accomplished, the wax forming the gums may be artistically modeled and carved with a small vulcanite scraper, and the festoons formed by Dr. M. L. Fay's easy yet effective method, fully described in the December, 1896, number of the DENTAL DIGEST, which is to arrange a waxed, closely woven
cotton string about the necks of the teeth with a suitable instrument, uniting the string and wax with a spatula and smoothing the case with a fine blow-pipe flame; the string to be removed with the wax when the case is ready to pack. With the countersunk-pin teeth I employ this expedient with pleasing results on the lingual as well as labial and buccal surfaces; moreover, in a similar manner I form the rugæ and the rim of the plate as well, by pressing short lengths of the string into the wax base-plate in imitation of the natural prominences. The size of the string forming the gum-festoons and rugæ is about No. 20 of the standard American gauge; for the rim about No. 15.

Having the case now articulated, waxed, carved and festooned, and the rugæ and rim formed, it is to be smoothed with a fine blow-pipe flame, held under cold water a moment to chill the wax and soak the model, and invested in the shallow half of the flask, making the line of division of the two halves come at the rim of the plate.

After the investment has hardened, a strip of No. 3 tin-foil is lightly pressed against the labial wax and faces of the teeth with a ball of cotton, and trimmed about the necks of the teeth with a sharp lancet or knife-blade, removed, flattened and laid upon a piece of heavy foil (I use No. 30), and the pattern marked out with a pointed instrument, but cut with a pair of shears, and a number of slits, extending about half way through it, made from its lower edge, to prevent folding or crimping of the foil when it is pressed and burnished into position. After adjusting it to place, the foil having been warmed to facilitate that operation, it is lightly indented over its entire surface with a small plugger-point in the engine-mallet, the mallet being set to make a very light blow. On the linguo-palatal surface I use a sheet of No. 3 foil and trim it about the necks of the teeth after pressing to place.

When the case is ready to pack the flask is heated in boiling water until it is certain the wax is softened sufficiently to offer not the slightest resistance to the separation of the two halves of the flask, when it is removed, separated and as much as possible of the soft wax picked and wiped out, the remainder being washed out with boiling water. The teeth and foil are now freed from water with bibulous paper and the air-bulb, and finally washed with alcohol and dried before packing of the rubber is commenced.
I use red or black rubber for the palatal surface and countersinks, which latter should, in packing, be very carefully filled with small pieces, and I form the labial and linguo-palatal surfaces of the Walker granular gum facing.

Of course a considerable surplus of rubber should always be avoided, but it is particularly necessary to beware of a large excess when using the granular gum facing, because when that excess is squeezed out through the vents the particles on which the granular appearance depends will be elongated and the imitation of the natural gum lessened. I ascertain when I have the proper quantity of rubber by pressing the two halves of the flask together, and do so without tearing the tin-foil covering of the model by painting it with liquid soap, the soap being washed away before the flask is bolted. The rubber is vulcanized $\frac{1}{2}$ hour at a temperature of 310° F.

The finishing of this denture is very simple. After the flask is cooled until there is no warmth left in the plaster investment, the plate is removed and washed, and heavy tin-foil covering the labial and buccal gums pulled off, and the tin-foil removed by immersion in dilute nitric acid, when it is ready, after washing off the acid and drying, to have excess of rubber removed, gum-festoons trimmed with sharp chisels, and finally polished with a stiff brush-wheel charged with powdered pumice. In making lower dentures granular gum is placed on lingual as well as labial and buccal surfaces.

Concerning the subject of strength there can be no question: The countersunk-pin teeth are supported not alone by pins, but also by the walls of vulcanite around the necks of that filling the countersinks.

Another distinct advantage which the countersunk-pin teeth have over the sectional block and plain teeth is, the anterior and posterior teeth are made in different molds, so it is very easy to select molars and bicuspid large enough to make the denture which they go to form a masticatory apparatus in fact as well as in intention. But the manufacturers can still further improve these teeth by making the cuspids about two shades darker than the other members of the set.—Dental Cosmos, Dec. 1897.

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PHYSIOLOGIC PSYCHOLOGY OF SMELLING. It is a fact of some interest that while the special senses of vision and hearing have furnished some of the most striking acquisitions of modern physiology, the sense of smell has been left comparatively unstudied
by investigators. The reason for this is not difficult to surmise; its origin has no mechanical peripheral apparatus that can bring its study into the domain of physics, nor do the variations of olfaction also follow physical laws like those of color or tone. The problems of its study fall therefore more into the domain of pure psychologic psychology, and the practical difficulties have been so great that few have attempted their solution. The close associations of the sense of smell with those of taste and general sensation, its easy sophistication and common, and indeed almost universal, impairment among civilized people, have added to the embarrassment and aided to discourage physiologic experimentation in this direction.

Within a very recent period it has been commonly taught that odors simultaneously sensed did not form a mixed odor, but were appreciated separately and consecutively. The mutual relations of odors and their shadings and graduations into each other have not been adequately marked, and the whole subject has been heretofore in a comparatively inchoate and unstudied condition. The ambitious but not especially scientific attempt of Piesse to establish a gamut of odors is of course well known, but has not been taken seriously, and as will be seen, recent investigation has shown that odor combinations follow more the laws of color than those of the tone accords. Thus it has been proved that mixtures of certain odors give rise to new and simple odors, though this was not recognized as an universal law. Zwaardemaker in a memoir published within the last three years has attempted to classify odors, and has made a series of nine classes within some one of which he thinks any odor can be included. Combinations of odors he holds can be resolved into the elements belonging to these separate classes; when the sensation is sufficiently fatigued for one of these another is appreciated, and so on. In some cases he holds that odors do not blend but can be sensed at will by the experimenter.

One of the latest and most satisfactory studies of this subject is that of Nagel, in which he attempted to test compound odors without unduly bringing in the elements of fatigue to complicate the question. He criticizes the previous works on the subject and discusses at length Zwaardemaker's views, but does not offer any elaborated classification of his own, nor does he appear to have been satisfied himself as to what are the simple elementary odors, a posi-
tion which, considering the difficulties and necessarily more or less subjective nature of the study, is very judicious.

The conclusions he does arrive at are that any two odors may combine to form what is, at least for the moment, a new simple odor, the permanency of the latter being dependent on the fatigue of the organ for the components. The new smell is lasting according as this fatigability for the original elements is equal or nearly so. With more than two components the conditions for permanency are improved. The compound odor has a resemblance, but not an identity with its components. A mixture thus made, though previously unknown to the observer, can be readily recognized as such when at least one of its component elements is previously known, and the more readily when the olfactory organ becomes fatigued so as to render any one of them more prominent than the others. Continued observation will therefore detect the odor as a mixture, if this was not possible at the first. If this is still difficult, if the fatigue for all the elements is still so nearly alike as to keep up the impression of a simple odor, special arrangements may have to be made to detect them, such as prior partial fatigue of the organ or Passy's method of successive dilutions.

On the whole the analogies of odor combinations are rather with those of colors than with those of sounds, according to Nagel's observations, which as the latest and apparently the best conceived method of study in this special line, may be taken as giving the latest scientific facts and views upon the subject. He does not, however, find the analogy quite complete in finding complementary odors that absolutely extinguish each other, though he finds several instances of close approach to this.

The human sense of smell is probably only an imperfect relic of what it once was in the earlier stages of evolution, but it still has its practical value, and whatever aids to complete our understanding of its physiology is a welcome acquisition. At present much is still obscure, and the field is yet an open one for further research.—Jour. Am. Med. Assn., Jan. 1898.

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NEW METHOD OF CASTING METAL DIES. By Dr. Wm. H. Steele, Forest City, Iowa. We have all been there and know the difficulties to be overcome in order to obtain a perfect metal die of a badly undercut, rough model; cores, sectional flasks, etc., are
all good as far as they go, but fall far short of being a universal success. I have been experimenting for several years in order to find something better, and this method I present you as the result of my experiments; it does away with all the dirt and disagreeable odor of the sand process, and a perfect metal die can be easily cast from the most difficult case. The dies are sharp, smooth and perfect, and several can be cast from the same mold if desired.

Materials for the Work. A good smooth plaster model, a jar of paste, fine Spanish whiting, fine powdered chalk, a medium stiff flat brush for paste, a very soft brush for soapstone, stereotypers' backing paper, filling tissue No. 1 extra white, facing tissue No. 1 extra cream, and some smooth heavy tea-lead.

To Prepare the Paste. Take $2\frac{1}{2}$ oz. of rye flour, $3\frac{1}{2}$ oz. of starch, $\frac{1}{2}$ teaspoonful powdered alum and 2 quarts of soft water, mix together thoroughly; then add cold water and mix until the mass becomes the consistency of thick cream; then gradually add the remainder of the water, which must be boiling hot, stirring well to prevent lumps; continue stirring until it begins to boil, then set off to cool; when cold strain through a fine sieve or cloth, when it should look like jelly. When ready for work add Spanish whit- 
ing until thick enough to spread with paste-brush.

To Make the Paper Matrix and Plaster Mold. When the plaster model is fully set go over the entire surface with the soft brush and soapstone, rub with the finger to remove surplus and give a gloss to the model. Cut a piece of the heavy backing paper large enough to entirely cover the plaster model; also cut from two to five pieces of the No. 1 white tissue, same size for filling (the rougher the model the more sheets will be needed to make a smooth matrix); also a sheet of the cream tissue facing paper and a piece of sheet-lead the same size of the paper. Soak the piece of heavy paper in water, dry off the surface with blotting paper; coat evenly with paste and apply a sheet of the No. 1 tissue; continue with the paste and paper until the requisite number of sheets have been built up; paste on a sheet of the cream tissue-facing, being careful to avoid wrinkles. Now dust the surface with a bag of fine powdered whiting; oil the plaster model lightly and quickly apply the prepared paper, smooth face to the model; beginning in the center smooth down snugly to the model. Now cut a piece of the tea-lead large enough to entirely cover the paper, press it down into the
center of the arch, slit wherever necessary to avoid folds or wrinkles, being careful to have it hug the paper closely all over; oil the lead, place in the casting-ring, and pour with plaster. If the plaster mold is to be removed in sections, to avoid an undercut, pour it with this object in view, making guides where it is necessary so the parts will fit together accurately.

Drying the Model and Pouring the Die. When the plaster is hard place it in the drying-oven for a few minutes—model side up—until the paper matrix is hard enough to separate; then remove the plaster model. Now wet the top edge of the paper matrix and plaster mold; mix plaster thin and build all around the edge to prevent the paper drawing away from the investment when pouring. Place the prepared mold back in the oven and when the matrix becomes hot pour the metal. Use good clean metal, do not have it too hot and the result will be a fine, clean-cut, smooth die.

In conclusion: To ascertain the right heat for pouring, fold a piece of white paper and dip into the ladle; if it comes out black the metal is too hot, if straw color it is just right. Be careful that the matrix is dry and warm before pouring; otherwise, the metal is liable to fly or the die be faulty. The oven I use for drying the matrix is made of Russia iron and has an aluminum cover, and is very useful for drying investments, packing vulcanite, etc.—Ohio Dental Journal, Dec. 1897.

To Protect Steel from Rust.—Professor Olmstead, of Yale, recommends resin melted with six or eight parts of lard as the best protection for iron or steel instruments, or implements of any kind, against rust. Objects anointed with it will remain free from corrosion for years.

To Prevent Nausea from Use of Rubber-Dam.—In Welch's Monthly Dr. Carmichael says: "Use oil-silk under the rubber-dam.—C. C. Jones, "Treatment by a reputable Christian scientist."—Dr. Wetherbee, "Substitute cottonoid."—Dr. Naumann, "Put perfume on the dam."—Dr. Grove, "Wash the dam thoroughly in rose-water."

Toads.—The ancient belief that the toad was a venomous animal has been lately shown to be not altogether without foundation. The cutaneous glands of the toad do secrete a venom which is in a high degree toxic when introduced into the circulation. The production of venom is by no means confined to the common toad and land salamander, but is met with in allied species, the natterjack and tropical toads, and to a small extent the frogs. The creatures are unable voluntarily to eject the venom, which is secreted only in response to some reflex irritation and has a purely defensive function.—Science Progress.
LETTER FROM CANADA.

To the Editor of the Digest, Montreal, Jan. 20, 1898.

Dear Mr. Editor:—As before stated, the dental board received power to start a college in 1892. They claimed that a certain number of the students (the French) were handicapped in receiving a dental education through not being able, like their fellow English students, to go to one of the American colleges, as they were not able to take the lectures in English. For this and other but less important reasons the legislature granted them the power, and in 1892 a college was opened with an English and French faculty (probably the only college in the world so constituted). That this (the joint faculties) has been a success no one for a moment will claim, and it certainly was a mistake to make it a joint affair, since, owing to race prejudice, one or the other of the nationalities is always dissatisfied with its representation among the officials. Take, for instance, the present session, the English students are in the majority, the ratio being 5 to 1, yet all the positions, from dean to janitor, with the exception of treasurer, are occupied by the French.

We think it would be much more congenial and better if they were separate, like the medical colleges. Some will say this is impossible, as there is not money enough to support separate colleges, but the Montreal public are liberal and have always given to worthy institutions when asked. The former dean always boasted that he never had and never would ask the public for donations; the present dean, being of French origin, while the wealth of the city and province is largely in the hands of the English, would hardly receive aid if he did ask. We know of men who stand ready to subscribe $10,000, provided the present conditions of running a college are removed.

It was a mistake to grant the dental board the autocratic power they hold as regards the college. It is quite right that they should be a controlling body, i. e., have the right to control the examinations, but some of their by-laws are dictatorial in the highest degree, as for example: "The board shall not be in any way financially liable for the obligations of the college. The faculties shall annually, one month before the regular meeting of the board, send
a statistical and financial report of income and expenditure and assets to the board. The board shall appoint two auditors, one of themselves and one other, who shall annually inspect the property, affairs, books and accounts of the college and report."

It will be observed by the above that the members of the faculty are placed in a peculiar position—they receive nothing for their services and should the expenses amount to more than the fees, they must meet the deficit.

We think it is impossible to run a college confined to the province on the fees received from the students, there being such a limited number; the solution of the difficulty in our opinion is to ask for aid from our open-hearted wealthy citizens, and establish a first-class English college, or allow our students to attend the American colleges, should they choose to do so.

The students gave a very pleasant "At Home" last month, which was enjoyed by all who were present.

The Montreal Dental Club held their annual meeting on the 17th, when the following officers were elected for the year: President, Dr. P. Brown; vice-president, Dr. W. J. Giles; secretary-treasurer, Dr. R. L. Watson (re-elected). It is the purpose of the club to have a dinner on their next meeting night, the first Monday in February.

Fraternally, MONTREAL.

TEXAS LETTER.
SHERMAN, TEXAS, Jan. 9, 1898.

To the Editor of the Dental Digest,

Dear Sir:—I promised several months ago to furnish you an occasional article from our state, and I will now try to give a brief account of the status of dentistry in Texas. We tried for several years to get our legislature to pass laws governing the practice in this state before we succeeded, and as almost every other state had laws before we did, Texas literally became the dumping ground for all the quacks who were unable to practice in other states. Consequently in 1889, when we did get a so-called law, we had more people practicing, according to population, than probably any other state.

The law of 1889 required that the governor should appoint a board in each judiciary district, consisting of three reputable dentists. As there were about fifty-two districts, the consequence was that a
great many incompetent men were put on the boards, and many others neglected their duty, so that it was possible for almost any one, no matter how incompetent, to practice here. However, as we had a nucleus for a law, the state dental association kept hammering away until we succeeded last spring in having a new law, with which we are highly pleased, passed by our legislature. This law provides for a state board consisting of six dentists appointed by the governor, and the present members are: Drs. T. L. Westerfield, R. P. Hamill, Thos. Williams, M. S. Merchant, C. C. Weaver and Geo. S. Staples. They recently met at Dallas to issue certificates and transact other business, so as to start things running smoothly, and while they found many complications and difficulties, the work was gotten through with less trouble than was expected, and we now think we have one of the best dental laws in the United States. More next time. Yours cordially, Texas.

PHILADELPHIA LETTER.

Dear Digest: Philadelphia, Jan. 21, 1898.

The request for a letter for the first issue of the Digest in this new year is acceded to in the rush and pressure of a busy life because of the earnestness and politeness of the request. The beginning of a new year naturally suggests anticipation, but as my mind is in a retrospective mood I write you a little of the year just closed. When we say "closed," how hard it seems to realize the full significance of the word—that it has gone forever. History and memory we have with us, and we may have learned valuable lessons which can be carried over to the new ledger, but our manner of living, our acts, whether for good or evil, are all now unchangeable and must be laid away as a ledger, balanced and closed.

In our reverie we find many achievements and incidents which make the year 1897 memorable, not only to us as practitioners of a profession, but as citizens and members of the great family. While it is not my wish to give to this letter a political shade, as I hold the most liberal views upon the great subjects of politics and religion, believing that every intelligent citizen should be allowed the full exercise of his own views, yet, to the popular mind, I believe one of the most important happenings, both an achievement and an incident distinctly marking the departed year, was the inauguration
of William McKinley as President of the United States—a man in whose ability and statesmanship I have had more confidence than any one since James G. Blaine left the political arena. But, as I have inferred, I have no desire to talk politics at this time.

Probably one of the most important events of the year was the opening of the Commercial Museum in this city. In no better way than through the work of this institution can the progress of civilization be marked. We will not speak of the Klondike gold fever, it is too great a field. We have been favored with new promises for the Keeley motor, but it has yet failed to mote to any advantage. Many of us have hoped that Keeley's visions were not vain; that he might, in a word, overcome some of the laws of nature, and that his principles could be applied in dental work. If we could only get rid of some of these uncomfortable laws, as Mr. Keeley expects to do (if he lives long enough), it would be hard to set a limit to the changed condition of the human race.

The Roentgen rays have received new application during the past twelve months, but the greatest achievements along electrical lines have been in the laboratories of Edison and Tesla. There seems to be no limit to the resources of these men's minds. You know it is not what we intend, but what we do, that makes us useful; and these great men are always doing something.

Now to turn more directly to our own field, Dr. Crouse may well be called the Edison of the dental profession. He has not only shown us many ways to improve our condition, and liberated us from what promised to be a chafing bondage, but has taken the helm in his own hand and through many storms has been our pilot.

There has not been very much along strictly professional lines which might be termed of importance, outside of our literature and college work. There have been several notable contributions to our literature, especially among the text books. New works and new editions of old standard books have come from able hands and are all filling an important place in dental education. Professor Truman, in the December International, says truly: 'One of the most pleasing features for the present and the future is that the past year has given the dental profession an objective lesson in college work. At no period has there been greater efforts made to erect structures worthy of the labor to be performed in these training institutions. There is nothing which so gauges the real status of a profession as
its buildings and appliances for teaching. Judged by this standard, 
the dental profession has grown the past year as in no period ante-
dating this. The past is behind us, the present is ours, and the 
future of possibilities lies before us. He is wise who accepts all and 
labors patiently, well assured that amid it all progress is the eternal 
condition of mentality, and the apparent lapses are intrinsically but 
the outward signs of that activity that leads forever to a higher 
standard.’’ Cordially yours for the future, The Spectator.

NEW JERSEY LETTER.

To the Editor of The Digest.

Mr. Editor:—The spirit of progress is abroad in New Jersey, 
and anything and everything that pertains directly or indirectly to 
the advancement of dentistry and of dentists is hailed with delight. 
It is not our desire or custom to wait for all to pass and tardily or 
indifferently allow ourselves to be swept along by the tide of affairs, 
but to keep in the front and aid in every way to keep up the march.

The state society is active in its preparations for the annual 
meeting in July, which will be held at Asbury Park. It is doing 
everything possible to make the meeting a great success, and has 
already secured several papers from prominent men in the profession.

The twenty-fourth semi-annual meeting of the society will be 
held on the 22d of this month at Orange, when complete plans for 
the summer meeting will be made and further committees appointed. 
It will end with a banquet tendered by the president, Dr. J. L. 
Crater, of Orange, to the officers and executive committee. Dr. R. 
Ottolengui, of New York, will be one of the speakers and will take 
as his toast, “Dental Education versus Dental Legislation.’’

The legislative committee held a meeting last month, at which 
they laid plans to bring before the legislature a bill to amend our 
dental law. This amendment has been studied with great care, and 
we think will, if carried, be as complete a dental law as is now on 
the statutes of any state. There seems to be good reason to believe 
that it will be carried. It is our desire to have a clause by which 
dentists coming to us from other states may not be compelled to 
pass another examination; but be enabled to practice on a certifi-
cate from their board to our own.

The Central Dental Association will hold a meeting on the seven-
teenth of January, at which Prof. Flagg will be the essayist, and he
I will be prepared, no doubt, with some hot shot along the lines of dental education and amalgams.

This brings us to the fact that we have been shown the first number of the official bulletin issued by the Committee on Colleges of the National Association of Dental Examiners. It is filled with pointed items of the work of this committee, and shows some of the inconsistencies of its so-called opponents, both in their writings and actions. Right is right and must triumph in the end; and they who seek personal ends will live to see the folly of their position. We notice that in all the talk and writings on this subject, it is the college professors and not the profession who are making all the objections to rules tending to raise the standard of preliminary education.

The annual meeting of the Central Dental Association will take place on the twenty-first of February. The menu is all that can be desired, and the speakers are world-wide in their fame. A good time is promised.

Dr. Louis Ottofy of Chicago will be present and speak along the lines of the everlasting "Faculties and Examiners" question. We await with interest what he has to say in regard to this all-absorbing subject.

Dr. Crouse will also speak on the Protective Association. This Association is well represented in New Jersey, and Dr. Crouse will find himself surrounded by friends, who will be especially interested in what he may have to present.

Mayor Seymour, of Newark, will be heard on the subject of "Our City." We have now reached the two hundred thousand mark.

It may not be amiss in passing to say that this society is one of the hustlers in the United States. To their bi-monthly meetings the members add the good fellowship and fraternal feeling which comes with and after a good dinner, which precedes each meeting.

Dr. William L. Fish, president of this society, has opened an office in New York, where for the present he will be three days each week.

Dr. Harvey Iredell, of New Brunswick, president last year of the state society, lost his wife a few weeks ago. He has the sympathy of a host of friends both in and out of the profession.

Dr. P. J. Wilson, late of Trenton, has again returned to Princeton, where for a number of years he practiced to the satisfaction of a large number of appreciative patients.
Dr. W. G. Chase has removed to Philadelphia, where he has been several days each week for the past three years.

Cordially yours,

HORNET.

BALTIMORE LETTER.

Baltimore, Jan. 21, 1898.

Dear Digest:

Did you ever know a bird of your acquaintance to be affected with elephantiasis? No? Well, I suspect that is what's the matter with me. My dermal structures have grown so thick that the shafts of gossips no longer penetrate them. Everywhere—on the streets, in the dental depots, in the society meetings, I hear dentists discussing "Oriole," not always, sad to say, in a complimentary vein. Many are of the opinion that, according to the law of the woods, no one has the right to make such a sharp noise from behind a tree. Others, with resistless eloquence, force me to agree that "Oriole" is a busy-body, altogether too smart and well informed, and has too good an opinion of his own views. Others, forgetful of social courtesies, talk shop and use their "dam(n)" on the poor defenseless bird.

Now to be sure, I did not contemplate all this racket when I assumed the role of an oriole; my only idea was that as the oriole was everywhere recognized as a Baltimore bird, the assumption of that name would just give to these letters, as it were, "a local habitation and a name." Now I am tempted to change it to sparrowhawk; but then upon reflection some of those written about might think I intended to belittle them, as this bird is known to live upon field mice and small birds.

This however was not my reason for thinking of the change, but as some of the ancients believed that the soul of man after death was converted into a sparrowhawk, and as I am assured that if I am exposed, death and destruction are sure to follow, I thought by making the change now I might escape the middle stage of "death and destruction" and further elude the inquisitive. What do you think of it?

Our board of dental examiners are still toying with the law and the young Westerner. In their answer to the proceedings for injunction they claim that "the certificates issued the young man from Ohio and Kentucky are not such as are contemplated by the Maryland law," and deny that he is fully equipped and in every way qualified to practice dentistry in Maryland. Won't you please step
across the river and tell those Kentucky folks what wretched, incompetent laws they are living under; and Ohio too, give them a blast. I am almost ashamed to write for a western journal, with such a stigma on the section!

That quite a number of our old practitioners sympathize with the board in its efforts to bar the young man from practice is not surprising; indeed, it is the opinion of a large number that too many men are entering the profession, and, like the tariff, “that's what makes times so hard.” We feel sorry for these men, or any set of men who really fear competition. They can't help it; the lines on which their lives have been ordered lead right out into Mediocre Street, and they need protection. Without it they can't survive; too many people travel this thoroughfare. My brother, if you feel this fate or destiny settling down upon you, take “Oriole’s” advice—“Anoint your face with the oil of gladness, put a little stiffness in your weak backbone, and get out of that thoroughfare.” Don't hope to escape competition, but strive to be above it. Don’t complain or cry if you are tripped, but be “game.” I always liked gameness and that is why I liked the advice of Mr. Travers of New York. A friend consulted him about the purchase of a dog which he liked exceedingly, but when the dog was placed in a pit with a large rat, the rat whipped him. Still inclining to the purchase he asked Mr. Travers, “Now would you buy the dog?” “No,” he replied, “b-b-buy the rat.”

But to return to the thought of professional competition, I was very much amused to read an article in the religious press on overcrowding of the ministry. The writer takes the same ground that we have all heard occupied at dental meetings, that the profession is overcrowded, and in a climax makes this statement: “The ministerial world needs to-day just as much of a high tariff and protection as does the political world, for those already in or suffering from an unrighteous and unchristian competition.” Surely the Salvation Army hasn’t come too soon if this state of mind prevails in the ministry. Surely this man, forgetful of the anathemas to be heaped upon the head of him who takes from or adds to the Word, would make the Master’s own words read: “Go ye unto all the world and preach the gospel, after the regularly licensed members have grown sleek and fat in the service.” Bah! out upon professionalism that leads to such protection, and out upon those in dentistry who,
having themselves climbed over the wall, stand with their shoulders to the closed door and cry, "He that enters not in by the door is a thief and a robber."

We are glad to see in the last International that the president of the "Southern Branch of the National" has made his peace with the editor; but "alas and alack-a-day," in the Dental Practitioner "Buffalo Bull" has his excellency on his horns and under his feet in a twinkling. We wish he might have escaped the mad rush of the New York bovine, but things red (or yellow either, for that matter) mustn't hang around "B. B.'s" pasture if they don't expect to be charged. Then, too, one hasn't the breath or the inclination to explain, after a fall like this, that he really didn't mean to be red or yellow, that the sun or the foliage had heightened his accustomed sober hues, that "B. B.'s" misconception was due to nyctalopia, etc.

Gloria in excelsis! Our association had a meeting to-night to consider the report of the committee appointed to revise the dental law. The majority report contained some remarkable provisions, but as they were not adopted I will not criticise them. They deserved their fate, suffice it to say. The law as approved by the association is, I think, a tiptop one and is on the line hammered at by "Oriole" in his letters, up to the mark. "Graduates in dentistry who have secured by examination certificates from other state boards, need pass no further examination in Maryland." The sentiment in Maryland, as expressed by this action, is a justification of "Oriole's" contention that the state laws must become uniform, and I earnestly invite the attention of the National Association of Dental Faculties to this action, and request them to take steps to have similar amendments made in other states, thus building up a mutual confidence in each other which will do much to strengthen the national organization. The ultimate triumph of justice is a pleasant thing to behold and who that is fair could consent to the multiplication of examinations contemplated under the old order of things. If this law is approved and passed by our legislature it will make a happy bird of

ORIOLE.

NEW YORK LETTER.

To the Editor of the Digest, New York, Jan. 18, 1898.

MR. EDITOR:—We tender to the readers of the DIGEST our best wishes for the new year, which promises to be more prosperous than the last two or three have been.
The New York Institute of Stomatology held its second annual dinner at Delmonico's last evening. Several prominent men were present, among them being, Seth Low, Horace E. Deming, Rev. E. W. Warren, Prof. Henry F. Osborn, Dr. St. John Rossa, E. B. Merrill, Dr. Louis Jack, Dr. J. Morgan Howe and Dr. C. N. Peirce. Horace E. Deming was heartily applauded for an earnest speech upon "Professional Atmosphere and Morals," in the course of which he dealt with the varying incentives that animate professional men. He applauded the motives of the professional man, saying, "In business money talks, in a profession noblesse oblige. The true professional man would rather get a living in his profession than a fortune in trade."

The printer made us say in our December letter that we would give a synopsis of Dr. Nash's book, but we wish merely to call attention to a few points. After reading it carefully our conclusions are, that the disorder, scientifically considered as a whole, is based upon a degenerate condition of the nervous system, so far as applied to the functional office of the nerves to the organs connecting. The chapter on "Heredity" is worthy of more than a superficial attention, and we are impressed with the thought that "predisposition and environment" are to become the chief factors in the consideration of this order. Dr. Nash believes the trouble to be of modern origin, and we feel inclined to agree with him. The seven chapters on "Idiopathic Alveolitis" we especially commend to an intelligent perusal. From a long practice and careful study of this disease we are qualified to judge, and we wish to congratulate Dr. Nash and to make the prediction that this book will ultimately occupy a very important and helpful place in our literature.

We clipped the following from one of the New York papers:

**DENTIST MUST PAY $10,000 FOR BROKEN JAW.** Miss Essie Abrams to-day obtained a verdict for $10,000 in an action brought by her against Clarence Hackett, a dentist, for injuries to her jaw caused by his unskillful extraction of a tooth on July 21, 1894. Defendant was absent and an inquest was taken before Judge Beach and a jury to assess damages to be awarded to Miss Abrams, who claimed she had been injured to the extent of $25,000.

Miss Abrams said the dentist broke a portion of her jawbone. She suffered extreme pain for a week and then called in Dr. Davis S. Schlegel, who declared she was suffering from necrosis of the jaw. Dr. Schlegel and Dr. Erhardt took away an inch and a half of the diseased bone. She said that she had since been unable to earn anything, as the injury to her face prevented her from following her profession as an actress.
Counsel submitted a certificate of the conviction of the defendant for practicing without a diploma.

In another paper we notice that the surgeons cut through the cheek and then failed to heal the wound. Our oral surgeons would have operated in the mouth and saved the young lady the deformity of a bad scar.

The papers are full of notices of the contest over Dr. Evans' will. The original will was so badly copied, and has so many amendments and codicils, that it is very doubtful if it is legal. It also appears that there were two wills, one for the United States and one for France.

We are disposed to call attention to the report and the proceedings of the Ontario Society, giving an account of a clinic by Dr. Melotte, of Ithaca, N. Y. If we could have more reports like this the journals would be more read and the dentists more edified.

The union meeting of the first and second district societies was held in Brooklyn this month.

The regular meeting of the New York Odontological Society was held January 18, and the paper of the evening was "Dr. Jenkin's System of Porcelain Inlays," by Dr. E. T. Darby, of Philadelphia.

Cordially,

NEW YORK.

TOUGH PLASTER CASTS.—Plaster casts may be made so tough that they will bear the driving of a nail into them without cracking by immersing them in a hot solution of glue for a sufficient time to permit it to permeate the entire mass.—Scientific American.

CHINESE DOCTOR'S TROUBLE—HE ASKS THE COURTS TO HELP HIM PROCURE A LICENSE.—Dr. Don Sang, a Chinese physician of Crown Point, Ind., whom the state board of medical examination has refused to license, has brought suit in the federal court to have the state registration law declared unconstitutional, and a temporary restraining order has been granted pending a final hearing in November. The complainant alleges that he is a native of Canton, China, and that his family represents nine generations of medical practitioners. His father was attached to the medical staff of the emperor. All of his family studied under the most rigid regime in the Sang hospital, which was established in 1406, and the laboratory of which contains no less than 3,178 specifics compounded from herbs, plants, barks, berries and roots of Chinese vegetation. Eight allegations are made wherein the present law is claimed to violate constitutional rights. Dr. Curryear, secretary of the state board, reports that Dr. Sang was refused a license for false representation to the clerk of Lake county, and that his application, being contradictory in itself, was also sufficient for turning him down.
In Instrument Nomenclature.

We publish in this issue a paper read by Dr. G. V. Black at the last annual meeting of the National School of Dental Technics, which gives a very complete system of instrument nomenclature. If adopted this will be of great benefit and convenience in teaching, and will enable the manufacturers to do away with the many useless forms. Furthermore, it will save the students much expense and time in operating, both of which are now wasted in the endeavor to find the instrument best adapted to the work in hand. The paper shows a vast amount of labor, such as but one man in a generation is willing to give.

If the National School of Dental Technics can have the system adopted by all the colleges, it will go far towards securing uniformity of teaching in this subject, and this can be accomplished only by this organization.

Answer to "Our Apology."

There is an old fable of a crow which started on a journey to discover another bird that had lately come into the same forest. While flying over a pond he chanced to see his own ugly image mirrored in the water below. Mistaking his own reflection for the bird which he was seeking, the crow gazed for some minutes, then returning to his companions he described with much disgust the contemptible creature he had seen.

We are reminded of this fable by a recent editorial of our Friend Barrett in the Dental Practitioner and Advertiser, entitled "Our Apology." His editorial is as follows, but the words we have bracketed we think should have been omitted, "The Editor and Publisher of The Dental Digest makes a personal attack upon the editor of this journal for criticizing the manner in which the new 'National Dental Association' was organized. We have earned the right to hold an independent opinion and to express our honest
convictions by many years of faithful attendance upon and earnest labor in the American Dental Association, [rather than] through political wire-pulling, office holding, and general pap-sucking. Our connection with dental societies is [not] that of one who endeavors to 'work' them for personal profit, for we have [no] mercantile or trade interests to conflict with our professional obligations. Hence we claim, and hope to be permitted to exercise, the right to voice our honest sentiments, though every dental depot organ in the land should endeavor to choke us off."

He should have added, "For I am the hired man of one of these mercantile houses; I edit their quarterly, which you know is their advertising catalogue; they pay me, and I would not be doing my duty if I did not follow their bidding. Furthermore, they are very kind; they let me talk ugly and be vulgar, even though I am the dean of a college; and besides receiving pay for editing their journal, it gives me a chance to accuse others of being mean and low bred, so you see the job is worth having."

As regards Editor Barrett's hopes and claims, we should be surprised if any other dental depot organ should wish or attempt to choke him off, if the Dental Practitioner and Advertiser does not.

PROPOSED AMENDMENT TO PATENT LAW.

The editor of the Items of Interest is still pushing the amendment to the patent law, and as correspondent to the New York State Dental Society we could understand his desire to start a discussion on some subject which had not been worn threadbare and thus give added interest to his office.

He urged a reform in our patent laws. It must have been quite gratifying to him to have had responses from so many presidents, pledging the support of their respective societies in the great work of reforming our patent laws, viz., "A petition to Congress for an act to restrain the granting of patents upon any method of treating human disease."

Now as there are no patents granted on methods of treating human disease, the correspondent of the New York State Dental Society would have better dropped this question with the reading of the report at the annual meeting, and thus have made no farther exposure of his lack of knowledge of patent laws. From the January number of the Items, however, we see that the imaginary
reform is still being pushed, and that the correspondent is not only bound to continue in his folly, but is in a fair way to make the dental profession an object of ridicule, by securing aid from different societies in a movement which is sheer nonsense. We are quoted as having taken part in the discussion when this report was read. We opposed the move then for the same reason as now, and stated at that time we could conceive of no form of treating human disease which could be patented. We entered our protest fully at that time and should not pursue the controversy farther, except for the fact that the odium of such folly will fall, in part at least, upon our profession. For, as the editor says, "The movement, then, is inaugurated by the several state dental associations of this country, and must in no manner be considered as the enterprise of this magazine."

If the enterprising officers of the journal in question were the only ones bound to be the subject of ridicule when the proposed bill is presented to Congress, we should be disposed to let them have it all their own way. But as thirty-two presidents of as many societies have responded, pledging their support, and as some of these societies have since appointed committees to work in the interest of the movement, it now takes the shape of a move on the part of the profession, and it is time that some authorized opinion be given. When the blind lead the blind both fall into the ditch.

It is worthy of note that one society, at Washington, D. C., after having the matter presented to them by their president, reported thus: "Our society instructs me to say that at present they are compelled to decline your suggestions, upon the ground that they know of no patents allowable by our government upon any method of treating disease, as far as they are informed, nothing but a process being patentable."—C. W. Appler, Secretary, Washington, D. C. The correspondent recognizes that this change of expression from the society was probably given after having taken proper counsel.

The correspondent also stated in his report that he had a letter from a patent attorney at Washington, written in flattering terms of his editorial, but claiming as did the Washington society, that no such patents could be legal under existing laws.

We have taken the advice of our patent attorneys and they also say that there are no methods such as the correspondent of the New York society attempts to describe which could possibly be patented, and
they consider such a movement without merit and entirely useless. Therefore it is to be hoped that the agitation will not be pushed by the dental societies of this country.

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**Notices.**

**VERMONT STATE DENTAL SOCIETY.**

The twenty-second annual meeting of the Vermont State Dental Society will be held at Hotel Berwick, Rutland, Vt., March 16-18, 1898. A cordial invitation to be present is extended to all dentists in this and neighboring states.

**THOMAS MOUND, Secy.**

**CHICAGO ODONTOGRAPHIC SOCIETY.**

The election of officers of this society for the ensuing year is as follows: Dr. G. W. Schwartz, President; Dr. H. J. Goslee, Vice-President; Dr. F. H. Zinn, Secretary; Dr. Geo. N. West, Treasurer; Dr. J. B. Cigrand, member of Board of Directors. Drs. E. K. Bennington, S. G. Johnson, F. E. Roach, Board of Censors.

**F. H. ZINN, Secy.**

**ST. LOUIS DENTAL SOCIETY.**

At the regular monthly meeting of this society, held Jan. 4, the following were elected officers for this year: Dr. John G. Harper, President; Dr. M. G. Marshall, Vice President; Dr. James C. Chisholm, Cor. Secy.; Dr. W. G. Cox, Rec. Secy.; Dr. A. J. Prosser, Treasurer. Drs. J. G. Pfaff, W. N. Conrad, J. P. Harper, Committee on Ethics and Election. Drs. J. H. Kennerly, F. F. Fletcher, Emma Eames Chase, Committee on Publication. Meetings to be held the first Tuesday evening of each month.

**JAMES C. CHISHOLM, Cor. Secy.**

**HENRY S. CHASE, D.D.S.**

Dr. Henry S. Chase died January 12, 1898, at his home in St. Louis.

He was born in Vermont before the war and came to St. Louis at the close of it. He was one of the first dentists in St. Louis and for years was one of the leaders in his profession. He devised many improvements in methods which he freely gave to the profession. Dr. Chase was a vegetarian in theory and practice, a pioneer among cremationists, a strong advocate of Henry George's doctrines, and in his later years the leader of a group of spiritualists.

His wife and four sons survive him, also his daughter-in-law, Dr. Emma Eames Chase.

**MASSACHUSETTS BOARD OF DENTAL REGISTRATION.**

A meeting of this body will be held in Boston, March 7, 1898, at 10 a.m., at Harvard Dental Infirmary, North Grove street. Examination in Operative Dentistry at 11 o'clock.

Each candidate must come prepared with rubber-dam, gold and instruments to demonstrate his skill in operative dentistry. Anyone who wishes may bring his patient. So far as possible patients will be furnished.
NOTICES.

The Theoretic examination will include Anatomy, Physiology, Histology, Chemistry, Pathology, Materia Medica, Operative and Prosthetic Dentistry.

All applications, together with the fee of $20, must be filed with the secretary of the board on or before March 1, as no application for this meeting will be received after that date. The next meeting will be held in June, 1898.

G. E. MITCHELL, D.D.S., Secretary,

FIFTH ANNUAL CLINIC BY ALUMNI ASSN. OF C. C. OF D. S.

The following clinics were held January 19, 1898, at the College Building:
In Surgical Amphitheater—T. W. Brophy, Oral Surgery.
In Furnace-Room—R. C. Brophy, Cast Aluminum; H. J. Goslee, Gold Plating.
In Bacteriological-Room—E. L. York, (a) Bacteriological Exhibit, (b) Exhibit of Photomicrographs.

The annual Alumni Banquet was held at the Leland Hotel Wednesday, January 19, 1898, at 6:30 p. m.

RESOLUTIONS PASSED ON DR. EVANS' DEATH BY AMERICAN DENTAL CLUB OF PARIS.

At a special meeting of the American Dental Club of Paris, held at the office of its president, Dr. G. C. Daboll, on December 11, 1897, the following resolutions were unanimously adopted:

Whereas, by the sudden death of Thomas W. Evans, M.D., D.D.S., Ph.D., which occurred at his home in Paris Sunday evening, November 14, 1897, this club loses one of its most assiduous members and our profession one of the most remarkable men that has ever graced its ranks; therefore, be it
Resolved, That the American Dental Club of Paris deeply deplores the death of so eminent a colleague, who, as its first president and as a fellow member, ever alert to the interests of the club and the profession, always commanded the profound respect of all.

Resolved, That we, as a body of American dentists whose lot by various circumstances has fallen in a foreign land, while gratefully acknowledging the hospitality of our sister republic and our gracious adoption by her people, feel it but just to acknowledge our gratitude to Dr. Evans, who, as one of the
great pioneers of the dental profession, has done so much to break down old
prejudices and prepare the way not only for us but for every dentist whose
heart is in his work and whose object is to benefit mankind.

Resolved, That we regard his success in securing the recognition by all
the nations of Europe, of the beneficence of dental science and art as first
understood and practiced in America, as of the greatest importance to the
public, as well as to the dental profession. That influence was strongest during
the first twenty-five years of his practice, during the plastic period of the
evolution of dental science so especially active in America. On account of
his influence in the highest circles, the way has been made easier to convert
conservative Europe to modern methods of conservative dentistry, and not
only every member of this club and every American dentist in Europe, but
every native dentist as well has been benefited by that influence. And we
believe above all that by the adoption of modern methods such a stimulus
has been given to all dentists of all nationalities as will one day render den-
tal science a universal and not merely a national science, as it was during a
great portion of Dr. Evans' career.

Resolved, That while we recognize the influence of others of his contempora-
aries, he played a principal role, owing to the peculiar position brought by
his unparalleled success, such success being due to his personal magnetism,
high-mindedness, affability, practical common sense and tact.

Resolved, That this club regard the numberless honors conferred upon Dr.
Evans by the various sovereigns of Europe as the just tokens of appreciation
of the dental profession through one of its great representatives, and it is
proud that he was an American, and proud he was a member of this club.
And, notwithstanding his pecuniary success, his unlimited honors, and his
long sojourn away from his native land, we know that while being faithful
to his duties in foreign lands, his loyalty and affection for his own country
never diminished. He was first, last and always a dentist, and proud to be
considered one, and despised that 'snobism' which makes some men ashamed
of the profession to which they owe all their success in life.

Resolved, That we believe the name of Dr. Thomas W. Evans deserves a
place with other great names in the history of the development of dental
science.

Resolved, That our sympathy be extended to the relatives and friends of
Dr. Evans; that a copy of these resolutions be handed them, and that a full
record be made and preserved by the secretary of the club in its procedures,
and that a copy be sent to the dental journals of America for publication.

Resolved, That as a token of respect to our late confrere, the American
Dental Club of Paris, join in a body to attend his funeral.

John W. Crane,
Isaac B. Davenport,
J. H. Spaulding,

Committee.

CHICAGO ODONTOGRAPHIC SOCIETY.

The Odontographic Society of Chicago, which will celebrate its tenth
anniversary on the 21st and 22d of February, is not only a notable feature in
the professional life of Chicago, but holds high place among the scientific
bodies of the country. Its growth during the ten years of its existence, both in numerical strength and scientific importance, has been unusual, almost unprecedented.

In 1887 a group of thirteen men of that year's class of the Chicago College of Dental Surgery met in the office of one of the number and decided to form themselves into a society whose purposes should be mutual improvement along the lines of their profession and social intercourse. The new association was christened the Odontographic Society of Chicago by Dr. A. W. Harlan; Dr. Chas. E. Bentley was chosen president, Dr. Geo. N. West secretary, and Dr. J. E. Keefe treasurer.

Shortly after formation the society decided to admit other graduates of the Chicago College of Dental Surgery, by which arrangement the membership was soon considerably augmented. At the end of the third year the constitution was so modified as to permit the admission of graduates of all reputable dental colleges. Membership has increased steadily, and to-day the Odontographic Society numbers 250 members and is the largest dental society in the country with the exception of the National Dental Association.

One of the causes of the unprecedented success of the Odontographic Society, it may be said with safety, is the total elimination of all politics from its workings, recognizing as it does no existing faction in the dental profession of the city. Its membership has always been distinguished by a cordial good fellowship and a spirit of cooperation which has attained the highest results for all concerned. Every circumstance attending the coming celebration seems to indicate that this tenth anniversary will be not only an important event in the history of the Odontographic Society, but that it will make an epoch in the dental history of Chicago. Acceptances have been received from almost every state in the country. Men eminent in the profession in every section have signified their intention to be present.

It is the earnest desire of the Odontographic Society that all members of the profession in the city of Chicago should cancel the dates upon their appointment books for those two days and hold themselves in readiness to extend the hand of good fellowship to the strangers and to give what assistance they can in making the occasion a great and memorable success.

The sessions will terminate in a banquet on the evening of the second day.

Below is a list of clinics up to date:


NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

(Continued from page 839, Vol. III, No. 12.)

Dr. Barrett: I am quite surprised to hear all of this at this late day. I had not been here but two sessions when I inquired of my friends from New England what we were here for. We do not recognize any college, every candidate is examined; and now, to come down here and try and help out our brothers who recognize colleges and find that they want to drop the bars and set up another standard is somewhat surprising. Why, I thought you were all satisfied. I have heard no objection until this afternoon, and to hear
NOTICES.

this going on now is a little surprising but quite pleasing, even at the eleventh hour. I am glad I didn't go away until someone expressed himself on it, and I hope when the association comes to deal with the report these gentlemen will follow up their talk this afternoon.

Dr. Brown: That is certainly a surprising speech, considering the fact that the resolution offered this morning trying to maintain the standard was laid upon the table and the very gentleman who has just spoken is the one who made the motion to lay upon the table.

Dr. Barrett: To know where they were—to lay it on the table until they knew that.

Dr. Brown: Well, you know now.

Dr. Dowsley: No, we have not heard the report yet.

The committee on conference here entered the room.

Dr. Donnally: Your conference committee respectfully report that the following rules were approved by the two conference committees in joint session as a just and reasonable reconciliation of the differences of opinion between the Faculties' and the Examiners' associations which your committee was appointed to adjust. Your approval of the same will permit, we believe, a proper relation and favor the common objects of the two organizations:

Rule 1. Colleges desiring recognition by the National Association of Dental Examiners, which are not now on the recognized list, shall make application for such recognition through the committee on colleges, on blanks provided for that purpose.

Rule 2. The preliminary requirements prescribed by the National Association of Dental Faculties will be accepted by the National Association of Dental Examiners.

Rule 3. The statements set forth in the application of any college for recognition shall be verified, after investigation, by the board of dental examiners of the state in which the college is located, or by other persons designated by the National Association of Dental Examiners of the state in which the college is located, or by other persons designated by the National Association of Dental Examiners in case no such state board exists; and the recommendation of such board shall be essential to recognition.

Rule 4. The state boards in connection with this association are hereby required to become informed of the character of the dental colleges located in their respective states, as to their equipment, facilities, and methods of teaching, and shall report annually to this association wherein they fail to comply with these requirements.

Rule 5. Attendance of students upon three full courses of not less than six months duration each, in separate college years, shall be required before final examination for graduation.

Rule 6. Each dental college to be on the list of recognized colleges must have a teaching faculty composed of at least six individuals, and teaching the following branches: Operative Dentistry, Dental Pathology, Dental Prosthetics, and Oral Surgery. Also the six branches: Anatomy, Physiology, General Pathology (fundamental), Materia Medica and Therapeutics, and General Surgery. Their students must also be taught the subjects of chemistry and bacteriology in laboratories adapted to the purpose and under suitable instructors. That such college must possess, in addition, suitable lecture-rooms, well appointed dental infirmary and a general prosthetic laboratory; also must furnish in this way systematic instruction to its students.

Rule 7. Final action shall not be taken on the application of any college until such college has been admitted to membership in the National Association of Dental Faculties.

Rule 8. To be continued on the list of recognized colleges, all colleges must maintain these rules and conditions.

Rule 9. To more fully enforce these rules it is hereby directed that any college violating these rules shall be taken from the recognized list of colleges.
Note A. We consider it inadvisable for a member of an examining board to be connected with a dental college in any capacity whatever.

Note B. We recommend that each college in the list of recognized colleges state in its annual announcements that it complies with the rules and conditions of the National Association of Dental Examiners.

Note C. The date of recognition of any institution shall be placed on the list issued by this association; and the question of eligibility of the candidate for registration or for examination shall be left for each state board to determine for itself.

EVENING SESSION.

The president called the meeting to order and the secretary called the roll of states.

In compliance with precedent, we have herein given a list of the unrecognized institutions, and while it is important that your committee on colleges should have in its possession such a list for its information, and for the information of the various state boards, we most earnestly recommend that this portion of the report be not published in the printed proceedings.

### DETAILED REPORT OF RECOGNIZED COLLEGES.

<table>
<thead>
<tr>
<th>Students in Actual Attendance, Session 1896-7.</th>
<th>Freshmen</th>
<th>Juniors</th>
<th>Seniors</th>
<th>Specials</th>
<th>Totals</th>
<th>Graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Baltimore College of Dental Surgery, Baltimore, Md.</td>
<td>65</td>
<td>28</td>
<td>67</td>
<td></td>
<td>214</td>
<td>57</td>
</tr>
<tr>
<td>2 Boston Dental College, Boston, Mass.</td>
<td>53</td>
<td>73</td>
<td>65</td>
<td></td>
<td>191</td>
<td>57</td>
</tr>
<tr>
<td>3 Chicago College of Dental Surgery, Chicago, Ill.</td>
<td>180</td>
<td>188</td>
<td>153</td>
<td></td>
<td>521</td>
<td>130</td>
</tr>
<tr>
<td>4 College of Dentistry, Department of Medicine, University of Minnesota, Minneapolis, Minn.</td>
<td>43</td>
<td>24</td>
<td>28</td>
<td>1</td>
<td>96</td>
<td>28</td>
</tr>
<tr>
<td>5 Columbian University, Dental Department, Washington, D. C.</td>
<td>19</td>
<td>21</td>
<td>15</td>
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<tr>
<td>6 National University, Dental Department, Washington, D. C.</td>
<td>15</td>
<td>15</td>
<td>10</td>
<td></td>
<td>40</td>
<td>9</td>
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<tr>
<td>7 Northwestern University, Dental School, Chicago, Ill.</td>
<td>185</td>
<td>173</td>
<td>155</td>
<td></td>
<td>463</td>
<td>142</td>
</tr>
<tr>
<td>8 Southern Medical College, Dental Department, Atlanta, Ga.</td>
<td>41</td>
<td>16</td>
<td>21</td>
<td></td>
<td>78</td>
<td>19</td>
</tr>
<tr>
<td>9 University of Tennessee, Dental Department, Nashville, Tenn.</td>
<td>38</td>
<td>19</td>
<td>14</td>
<td></td>
<td>71</td>
<td>14</td>
</tr>
<tr>
<td>10 Harvard University, Dental Department, Cambridge, Mass.</td>
<td>50</td>
<td>41</td>
<td>39</td>
<td>1</td>
<td>131</td>
<td>32</td>
</tr>
<tr>
<td>11 Indiana Dental College, Indianapolis, Ind.</td>
<td>71</td>
<td>58</td>
<td>54</td>
<td></td>
<td>183</td>
<td>54</td>
</tr>
<tr>
<td>12 Kansas City Dental College, Kansas City, Mo.</td>
<td>28</td>
<td>35</td>
<td>40</td>
<td></td>
<td>103</td>
<td>39</td>
</tr>
<tr>
<td>13 Louisville College of Dentistry, Louisville, Ky.</td>
<td>67</td>
<td>57</td>
<td>36</td>
<td></td>
<td>160</td>
<td>36</td>
</tr>
<tr>
<td>14 Missouri Dental College, St. Louis, Mo.</td>
<td>39</td>
<td>43</td>
<td>19</td>
<td></td>
<td>101</td>
<td>19</td>
</tr>
<tr>
<td>15 New York College of Dentistry, New York, N. Y.</td>
<td>68</td>
<td>70</td>
<td>110</td>
<td></td>
<td>248</td>
<td>82</td>
</tr>
<tr>
<td>16 Northwestern College of Dental Surgery, Chicago, Ill.</td>
<td>21</td>
<td>16</td>
<td>20</td>
<td></td>
<td>57</td>
<td>15</td>
</tr>
<tr>
<td>17 Ohio College of Dental Surgery, Cincinnati, O.</td>
<td>82</td>
<td>78</td>
<td>51</td>
<td></td>
<td>211</td>
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NOTICES.

18 Pennsylvania College of Dental Surgery, Philadelphia, Pa.................. 119 100 103 4 326 111
19 Philadelphia Dental College, Philadelphia, Pa................................ 116 153 146 415 135
20 Meharry Dental Department, Central Tennessee College, Nashville, Tenn.................. 6 5 6 17 6
21 University of California, Dental Department, San Francisco, Cal... 58 56 44 158 43
22 University of Iowa, Dental Department, Iowa City, Iowa.................. 54 89 35 178 34
23 University of Maryland, Dental Department, Baltimore, Md.............. 62 79 69 210 62
24 University of Michigan, Dental Department, Ann Arbor, Mich........... 80 56 58 194 50
25 University of Pennsylvania, Dental Department, Philadelphia, Pa..... 152 108 103 3 366 98
26 Vanderbilt University, Dental Department, Nashville, Tenn............. 65 59 42 4 170 42
27 Western Dental College, Kansas City, Mo................................... 50 70 52 172 52
28 University of Denver, Dental Department, Denver, Col...................... 13 6 9 28 8
29 Detroit College of Medicine, Department of Dentistry, Detroit, Mich........ 30 25 26 81 22
30 Western Reserve University, Dental Department, Cleveland, O........... 21 32 33 23 109 32
31 University of Buffalo, Dental Department, Buffalo, N. Y.................. 61 68 70 199 70
32 University College of Medicine, Dental Department, Richmond, Va........ 10 8 11 29 7
33 Birmingham Dental College, Birmingham, Ala................................. 19 13 8 40 7
34 Cincinnati College of Dental Surgery, Cincinnati, O......................... 25 17 27 69 27

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<tr>
<td>1,956</td>
<td>1,953</td>
<td>1,739</td>
<td>36</td>
<td>5,684</td>
<td>1,600</td>
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</table>

Figures supplied from announcement and DENTAL DIGEST, the official report having been refused.

Note—Special students include first graduates and are not included in "totals."

Following is a list of schools which have ceased to exist:

Recognized List, 1893—Minnesota Hospital College, Dental Department, Minneapolis; St. Paul Medical College, Dental Department, St. Paul, Minn.

Unrecognized List, 1894—Homeopathic Hospital College, Dental Department, Cleveland, O.; United States Dental College, Chicago, Ill.

Recognized List, 1895—The American College of Dental Surgery, Chicago, Ill.

Unrecognized List, 1895—Cincinnati College of Medicine and Surgery, Dental Department, Cincinnati, O.; The Baltimore Homeopathic School, Dental Department, Baltimore, Md.

Recognized List, 1896—Washington Homeopathic Medical College, Dental Department, Washington, D. C.

Unrecognized List, 1896—Cleveland University of Medicine and Surgery, Dental Department, Cleveland, O.
We have had under consideration applications for place on our list of recognized colleges from the following schools:
University of Colorado, Colorado School of Medicine, Department of Dentistry, Denver, Col.
Howard University, Dental Department, Washington, D. C.
Atlanta Dental College, Atlanta, Ga.
Baltimore Medical College, Dental Department, Baltimore, Md.
Marion Sims College of Medicine, Dental Department, St. Louis, Mo.
Omaha University, Dental Department, Omaha, Neb.
The New York Dental School, New York City.
Pittsburg Dental College, Department of Dentistry.
Western University of Pennsylvania, Pittsburg, Pa.
Tennessee Medical College, Dental Department, Knoxville, Tenn.
Tacoma College of Dental Surgery, Tacoma, Wash.
Milwaukee Medical College, Dental Department, Milwaukee, Wis.
The applications having been made in proper form upon our blanks, questions fully answered and proper recommendation for recognition having been made by the state board, and being members of the National Association of Dental Examiners, we, after most careful scrutiny, recommend the recognition of the following colleges:
The Atlanta Dental College, Atlanta, Ga.
The Baltimore Medical College, Dental Department, Baltimore, Md.
The Marion Sims College of Medicine, Dental Department, St. Louis, Mo.
The New York Dental School, New York City.
The Milwaukee Medical College, Dental Department, Milwaukee, Wis.
In the case of the University of Colorado, Colorado School of Medicine, Dental Department, Colorado, we find the preliminary requirements not up to the required standard. The school, however, having shown every disposition to comply with our rules, we would recommend that the committee on colleges be authorized to place their name on the recognized list upon receipt of a statement from them that they will comply with rule 2.
In regard to the Tennessee Medical College, Dental Department, Knoxville, Tenn., we would state that they have complied with all of our rules and requirements except rule 2. This they are unable to certify to, as they claim that the grade does not exist in their state. We would therefore suggest that Dr. Kesterson, the dean of the college, be given an opportunity to present the case before this body before final action is taken, as the committee on colleges are unwilling to assume the responsibility of not reporting favorably an institution which they believe to be up to the requisite standard with the exception of a technical point.
L. Ashley Faught, Ch'n, Committee on Colleges.
G. Carleton Brown, Committee on Colleges.

On motion the following colleges were accepted as on the recognized list of colleges:
The Atlanta Dental College, of Atlanta, Ga.
The Baltimore Medical College, Dental Department, Baltimore, Md.
The Marion Sims College of Medicine, Dental Department, Missouri.
The New York Dental School, New York City.
The Milwaukee Medical College, Dental Department, Milwaukee, Wis.

On motion a vote of thanks was extended to the proprietor of the Hotel Chamberlin for the use of the meeting room.

On motion the resignation of Dr. Faught, as chairman of the committee of colleges, was taken from the table and accepted.
Adjourned sine die.

Charles A. Meeker, Secretary.

Chicago has entered a claim as a meeting-place for the fourteenth national medical congress in 1903.
LIVE PULP AND GUTTA-PERCHA IN SAME PULP-CANAL.

By E. C. French, D.D.S., Eau Claire, Wis.

A boy seven years old was brought to me to have the lower left first molar extracted. On examination I found the tooth very badly decayed, almost nothing left of the crown but the enamel, and the pulp hypersensitive. I applied an anodyne and dismissed patient for the day, requesting that he return the following morning, at which time I made application for the devitalized pulp. The usual steps in pulp removal, cleansing and filling were taken with satisfaction to the operator and patient, and the latter was dismissed.

Nothing more was seen of him until five years later, when he returned with a badly swollen jaw and ulcerated molar. I found the second molar in place, so removed the first molar at once. I found a pus sac the size of a buckshot on the posterior root, but the anterior root was in a perfectly normal condition. The tooth was put aside for further examination, as I was anxious to know if I had been thorough in my root filling five years before.

Later in the day I placed the tooth on an anvil and broke it open with a hammer; it so happened that the root-canals in breaking were exposed to the apex of both roots, and the following interest-
ing condition of things was shown: The canals of both roots were bifurcated, and those in the posterior root, upon which the pus sac formed, were seemingly well filled to the apex with gutta-percha, but those in the anterior root contained healthy pulp tissue from pulp-chamber to apex. Into one of these last named canals I had forced a gutta-percha point so successfully that it was plainly seen at the apex of root, and yet with this point penetrating the entire canal the pulp tissue was in a normal condition. The other branch of this anterior root I probably had not disturbed when filling the tooth, and the pulp in it was normal. The pulp tissue extended over the bifurcation of the anterior root, and on top of this I had thoroughly pressed a large amount of gutta-percha, to entirely fill the pulp-chamber. The filling was carbolized when inserted.

You will see by the cut of anterior root the exact condition of affairs. A represents the pulp tissue, B the gutta-percha point, and C the gutta-percha filling pulp-chamber.

PRESIDENT'S ANNUAL ADDRESS.


At the present time it takes considerable egotism on the part of the president of a dental society to willingly submit an annual address and there seems very little ground not covered by previous addresses. I will, however, offer a few suggestions which concern the growth of the society and of ourselves in the profession.

It is sixteen years since five or six dentists met in this city, and organized here the first local dental society in the state, outside of Chicago, and named it the Central Illinois Dental Society. By the organization of this society was set on foot the movement which resulted later in the formation of the Northern, Southern, Eastern and Western Dental Societies. The Central and Western were consolidated at a union meeting held in Galena, October 14 and 15, 1890, and the new society is now, as you all know, known as the First District Dental Society. So we have four active local or district dental societies in the state.

I am glad to note that dentists everywhere seem more alive to the value of local dental societies. During the last year there has been a movement started by the Chicago Dental Society, to organize Fellowship Dental Clubs outside Chicago. One has been started at
Milwaukee, Wis., and the second one in this city, Streator, where this society was originally organized. There are, I think, societies in Elgin, Aurora and Quincy, which were organized sometime ago. At my own home, in Moline, we have a society called the Tri-City Dental Society, which was organized by the dentists in Moline and Rock Island, and Davenport, Iowa, five years ago, and it has been in active operation since, holding monthly meetings alternately in one of the three cities. The idea of organizing Fellowship Clubs is a good one and could be adopted with profit in all towns having four or more dentists. I know the Tri-City Society has been of great benefit to those who have joined it, and there has been established a fraternal feeling among us, such as never existed before.

This society has gained a reputation for being thoroughly practical. Let us maintain that reputation, and in order to do so let each one take part in the discussion, and not leave it to a few. Respond promptly when called upon to help with the program, and to all calls no matter what. I heard Prof. A. O. Hunt, of Chicago, remark in a discussion, by way of encouragement to the younger members, who might feel they could not add anything new: "Make the attempt; a person of himself seldom says or does anything new, but old things are often presented in a new dress, and it is by contact with others that we both gain and impart knowledge."

Our attendance should be even greater than it is. Each member should make it a point to be present and bring someone who is not a member, and he may be induced to join. The reason why more dentists do not belong to some one of our dental societies is because they do not realize the great good to be obtained from such association, and so are contented to plod along in the same old rut. Others, who may intend to join sometime, remain indifferent unless their attention is especially called to it. Let us use a little personal effort in this direction and see what the result will be.

It is advisable, I think, for a young man after graduating, to join the alumni association of his college. He will thus be bound more closely to his alma-mater, and its influence will be for his good. He will then be more likely to get the society spirit and join his local or state society so soon as he is settled. Let him look around and see who are the most prosperous men in the profession. He will find it is the men who attend the meetings, and they usually read the most and are the best prepared to serve their patients.
The time has come, I believe, when a more brotherly spirit should be displayed by those older and longer established. Others have rights as well as ourselves and we are bound to respect them. No community belongs to one man by right of discovery or conquest. On the other hand, I would say to those starting in practice, make the acquaintance of the older practitioners and be agreeable. Do not belittle yourselves or your profession by doing cheap work, for any dentist who lowers prices for professional services advertises his own incompetency. Charge a reasonable fee for all operations performed and earn it. Uphold the prices in the places where you locate. My experience has been that people are always willing to pay a reasonable fee for faithful services rendered.

Assumption and advertising and mere appearances will not save those who do not grow and keep up with the profession, and even small fees will not long coax the patronage of the intelligent. Each year these dentists are less able to maintain themselves among us, because the public is becoming better informed.

We have laws governing the practice of dentistry and for the protection of the public, and it is well that we have; but I believe the laws of the different states should be made to conform, so that a legally qualified practitioner of one state may, if he so desire, move into another state and resume practice without being compelled to appear before a board of dental examiners. I think it is contrary to the constitution of the United States and should be changed.

CASE OF ELECTROPLATING.
BY F. N. BROWN, D.D.S., CHICAGO.

On April 16, 1897, Dr. H., a physician of Chicago, called. I found the right superior first molar capped with a gold shell crown, but lack of proper attention to the interdental space left a disagreeable opening between it and the second molar, which proved very annoying. The crown was removed, the tooth shaped up and a properly-fitting crown adjusted, also an open-face crown for the cuspid, as the two bicuspid were lost and we wished to replace them. On the 19th at 10 a.m. I inserted a small amalgam filling on the distal surface of the first molar, in the edge of a very large amalgam filling that had been in place for several years and was as hard as amalgam could possibly be. At 2:30 p.m. the same day I cemented on the bridge. On 21st and 22d I shaped up the lower left
Second molar and second bicuspid. On 24th at 2 p.m. I cemented on this the antagonizing bridge. All of this time (five days) the upper bridge showed no signs of electroplating.

On Monday the 26th at 2:30 p.m. the Doctor called, stating there was something wrong with the gold I had put in his mouth. Upon examination I discovered the upper bridge to be beautifully electroplated a silvery white, and the lower bridge almost covered with the same deposit. The excursive movement, the bridges being in contact, caused a peculiar crepitating sound, as frequently heard in mixing fresh amalgam. It required nearly an hour to remove the plating, which was done with pumice and a soft wood point. Having two other bridges to insert on the opposite side of the mouth, I saw the patient on the 28th and 30th. On these dates there was a recurrence of the plating but of a lighter deposit, the lower bridge having ceased to plate. On May 3 the case was dismissed, feeling satisfied the electroplating had exhausted itself, which proved to be the case.

On May 20 the Doctor called, stating the upper bridge was loose and the molar painful. I removed the bridge and a wonderful state of affairs presented itself. There was not the least particle of cement to be seen. The large amalgam filling which was so hard and had been in for years, was now in a plastic cheesy condition and was readily removed with a spoon-shaped excavator; it had about the consistency of freshly prepared amalgam. A month had now passed since the bridge was inserted.

Some of the peculiarities of the case: The amalgam filling I had inserted was very small and located in the edge of the large filling, which occupied the entire distal and two-thirds of the grinding surface of the molar. The small filling had been in about four and a half hours before the bridge was cemented on. The electroplating did not commence until the lower bridge was inserted, five days later. The platings continued for six days. The filling I inserted was on the distal surface; the platings would first show on the mesial, near the labial angle. After removing the plating you could see the deposit take place. Usually we see small nodules of cement remaining when a bridge or crown becomes uncemented, but in this case there was no cement whatever in the molar crown. The molar crown was electroplated on the inside, the open-face crown was not. There was an amalgam filling on the mesial sur-
face of the molar separated from the large amalgam fillings by dentin; this filling was not affected in the least.

I refilled the molar with amalgam, waited a day for it to harden, cemented on the bridge, and have had no further trouble with it.

IS THERE ROOM AT THE TOP?

By Lee S. Smith, Pittsburg, Read Before the Odontological Society of Western Pennsylvania, September, 1897.

The desire to succeed is deep-planted in every honest heart and shows itself in every phase of life, even cropping out in the youngest boy, as seen by our children endeavoring to make a fortune by selling lemonade at one cent a glass, or in some similar enterprise, and this desire to make money on the part of the young is not to be laughed at, as it is simply the outcropping of an element in human nature, that grows with our being and develops and expands with our aging. "The love of money" may be "the root of all evil," and yet, the possession of a sufficient amount of it is as necessary as is our breath. While the love of money and the hoarding of it are to be condemned, yet the honest desire to secure it for what good we may get out of, and by it, is commendable in all. If we stop to analyze money and the race to obtain it, in and of itself, it makes us laugh even at our own efforts in its pursuit. Yet the race goes on, cropping out now in this way, again in that, the appearance of one or another, so changed and disguised as scarcely to be at first glance recognizable, and yet resolving itself into the same old race, which has been going on since money, or its equivalent, was introduced.

A man once called upon a noted artist and asked to have a portrait of his father painted. "All right," said the artist, "when can I see him and have a sitting?" "Oh, he's dead," said the man. "Well, then, bring me what pictures you have of him." "But we have none," said the man. "Well, then," said the artist, "how do you expect me to paint a likeness of him? I never saw him." "Why," said the man, "did you not paint a picture of Moses?" "Yes." "Did you ever see him?" "No." "Well, then, can't you paint a portrait of pa?" "All right," said the artist; so after questioning regarding the features, hair, etc., he went to work. When the portrait was finished he sent for the man, who, when the curtain was drawn, looked at the picture for some time, then rubbing his hands over his eyes he said, "Yes, that's pa, but how he's changed."
So it is with our calling in life; call it profession or trade, be we merchants or what not, our object may be disguised or changed in one way or another, but after all it is the same, viz., a desire to secure our full share (and a little more) of the all necessary money. I would not be understood as meaning that this is, or should be, the chief end of life—not by any means. But the treatment of this subject is the chief end of this paper and I shall therefore seek to confine myself to a treatment in that direction and let your conscience prompt you to the higher and nobler aims of our being.

It has been said, "there is always room at the top," to which some poor unfortunate has answered, "that is small satisfaction to those at the bottom." We constantly hear it said that all departments are overcrowded, as well in the professions as in the mercantile world, the trades, or the breadwinners among laboring classes. While this saying is true, it is most emphatically untrue. It is true in so far as asserting that there is an overcrowding in the ranks of these different classes is concerned, so long as we count noses and not brains, so long as we consider numbers and make no distinction between ability and worthlessness. Yes, all callings are overcrowded with slush and so-called seekers after success, but men of ability, capacity and adaptability, men who are men and not mere machines, are just as much in demand to-day in all callings of life as they ever were. In other words, "there is always room at the top."

I was in the office of a friend of mine a short time since, a manufacturer worth a million or more, when he was speaking of his cares and his desire to unload some of his responsibility, and he said: "I do wish you would recommend to me a good reliable man who could and would take a real live interest in my business and relieve me. "Why," said he, "my men are all mere machines, nothing more; they work by the clock. Six o'clock, go home. Saturday night, pay. That is all they think of or work for."

Do you think that an isolated case? Not by any means. It is the common rule. I have observed it as an almost universal condition of affairs through my business observation of thirty-two years.

Let me say most emphatically that I firmly believe if a young man who has the natural ability, or even an average capacity, secures a situation in almost any calling in life, and throws his whole being into his business, seeking not how little he can do for wages agreed upon, but trying in every way to study his employer's busi-
ness and interests, and seeking to anticipate his wants and relieve him of his cares, such a man will nine times out of ten find that "there is room at the top."

I recall and could name many young men of my acquaintance who have secured situations in stores, factories and workshops, sometimes aided by my own recommendation in their behalf, and to some of whom I talked by the hour upon the facts herein stated and emphasized, who stand to-day at the top, some as partners, others as head men or overseers; consequently in making these statements I am not advancing theories. I am giving you the simple truth as worked out in the lives of many known to and by me. I am not asking you to come up to a soda fountain to pay your nickel for a glass of sweetened wind, but I am offering you a drink of pure, distilled truth, free of charge.

If this is so in business, will the same rule apply to the professions, and especially to dentistry, for that is the branch in which we are especially interested? I say most emphatically, yes. There is just as much "room at the top" in dentistry to-day as there ever was. Then how can I get there, says the new beginner—what is the secret of success?

To answer these vital questions I will devote the remaining part of this paper, and for fear of wearying you I shall be compelled to treat the subject very briefly, and simply throw out hints in the form of a skeleton in outline, which I trust your good sense may be able to fill in and round out into a perfect model, which will enable you to reach that much sought after and desired place, "the top."

Much has been said and written upon the characteristics which should be possessed by a successful dentist, and much that I may say may be repeating, but truth cannot be too often repeated.

As every building depends upon its foundation, so success, even as looked at from a financial standpoint, depends first, last and always upon character, and here comes in the duality of true success and the necessity of considering something more than simply dollars and cents as the acme of being. And here also comes out another truth, viz., we may succeed in accumulating dollars in our profession as in any other calling, and yet not be at the top.

Only recently a member of the dental profession said to me: "Oh, well, after all dentistry is a trade rather than a profession. A dentist does not rank in society with other professional men." If
this is so, whose fault is it? I say it is the fault of the individual himself and not of his profession, and I say this without fear of contradiction.

There is no man, I care not what his calling, but whose rank in society is determined almost solely by himself. The man who wears clean linen, keeps his clothes brushed and his shoes polished, and walks erect, putting his heels down with a snap, both commands and demands the respect of his fellow men, by asserting his respect of himself. Then character enters in as an element of success in another way, viz., it secures the confidence of his fellow men, assuring them of his ability and disposition to carry out his contracts, no matter of what kind.

Much has been said as to the necessity of having and keeping a tidy, clean office and office furnishings, and when we remember the nature of the occupation of the dentist, and the fastidiousness of many of those from whom he must expect his best patronage, too much stress cannot be placed upon this subject.

Then again comes the necessity for thorough work. I mean by this, excessively thorough work. One object should ever be uppermost, and that is to make his patients think that in so far as their views and wishes are concerned, he is the best dentist in the world. This can be accomplished only by doing the best work that can be done, and done in the most easy and pleasant manner possible as to its effect on the patient.

Our professional relations with our patients are not of the most pleasant and agreeable at the best, but they can be much modified by gaining the implicit confidence of our patrons in our ability to do the best work, and to do it with the least pain.

The dentist who starts out with a firm determination to carry out all these necessary requirements, has thereby made a good start upwards, and yet there is another part that must not in any degree be neglected, if the upward march is to be sustained and the climb continued, and that is the business side of a professional life. A man may have the ability to make money, that is, to earn it, but if he lacks the prerequisite qualifications of managing his affairs in a business-like manner, he may utterly fail of real success. In this particular I am sorry to say very many otherwise able and worthy men fail, and especially so in the professions, and in ours fully as much as in any other.
And in this part of a man's life, character is all important—yea, more than that, it is indispensable. How can I express myself, so that I may make you understand how absolutely necessary I consider proper care and qualifications in this direction? How shall I set up a model so that you may work by it? Let me try by laying down a few general rules.

First. Whether a man has a dollar in the world or not, from the very beginning he should make his word in all things as good as a bond. Never fail to keep a promise without a good and sufficient reason frankly and honestly stated.

Second. Live within your means. Never think that it is necessary to do as others do if you are not able. Such a course is the cause of more failures in life than any other.

I once asked an aged man for whom I had the greatest veneration, love and respect, a minister, how he managed to rear six children and always have food and clothes for them, upon the small salary he received. "Why," said he, "there is no secret about it. When we had money we bought, when we had none we managed somehow, we lived within our means and did not go into debt."

It is most deplorably true that many people think that professional men are all rich and therefore do not need money, and there are thousands who rank the dental profession among the bloated bondholders, and much of this opinion is caused by the exceedingly loose methods prevailing among professional men regarding the business side of their lives.

I have often heard dentists say, "such a man owes me a big bill, he is perfectly good, but I dare not ask him for it, for fear of losing his patronage." Now, that is just where nearly every one of you makes a grave mistake, looking at it even from a solely selfish standpoint. In the first place, there is no honest man but will respect you all the more for asking for your own, and more than that, there are many of the best business men who never pay bills except upon demand. True, this is not as it should be, but it is a fact, and facts are stubborn things. Then again, after you have worked for and earned the money it is yours, and you should have it. It is a deplorable fact that many a rich man has utterly failed in business simply because others had all his capital.

In this matter I would advise every young man, as well as old practitioners, to adopt strict business rules, to carefully keep a com-
plete set of books, render statements every month or quarter, as regularly as any business house; if not paid within a reasonable time, send a request for payment. If this be not heeded, have a call made. Nothing will aid you like establishing a reputation in this line, and it will be respected by all right thinking people.

But I must stop, not for want of thoughts, for this is a subject that is inexhaustible, but because I have taken all too much of your time already. If in these rambling suggestions I have thrown out any hints that will enable any of you to make an honest, earnest effort to scale the ladder of success, I can assure you you will certainly find that there is still "room at the top."

**THUMB SUCKING.**—The best way to prevent thumb-sucking is to wrap the thumb with gauze or soft cloth, and saturate it with some intensely bitter substance like bisulphate of quinine. Should this fail, the hands should be tied.—*Graham.*

**SOME INTERESTING FACTS ABOUT SPONGES** are given in a recent report on the sponge and oyster industries of Southern Italy. Science has declared that a sponge is an animal, and biologists have observed that though a living sponge is fixed and apparently motionless, the holes in the surface are capable of opening and shutting, and from the largest of them, when open, a stream of water issues which is supplied by innumerable smaller holes, generally invisible except under the microscope. Young sponges swim freely about by means of little waving hairs upon their surface, until they reach an age when they prefer security to independence and monotony to danger. They live on solid food; the water entering by the small pores passes through a system of branching and fine canals, and is collected again by a similar system into the outflowing current from the large holes. At the junction between the two systems of tubes are the most vital organs of the sponge, little swollen cavities of microscopic size walled in with tiny living particles, each bearing a vibrating hair with which it lashes on the current, and a transparent filmy skirt with which it catches any food that may pass. All this labyrinth of canals and cavities is living, soft flesh, set through and through with little flinty needles or thorns to prevent it falling a prey to the hungry creatures that exist in the water. The sponge of commerce during life shows only the largest of its numerous holes; over all the rest the dark slate-colored flesh forms a continuous film. In the ordinary course of sponge-fishing, the fisherman, having once secured his sponge, proceeds to prepare it for the market. The animal rapidly decomposes if exposed to the air, and therefore the body has to be rapidly beaten or washed in running water till the fleshy substances are thoroughly removed. If decomposition has advanced too far, no process is known by which the skeleton can be purified and rendered fit for use. The sponges, when cleaned, must be thoroughly dry before they are packed, otherwise they will develop orange-colored spots which the Greek fishermen call "sponge cholera."—*Pharmaceutical Journal.*
TRIBULATIONS OF EDITING. The definition of the transitive verb "to edit" includes the selection, preparation and revision of material for publication, and so opens quite a large field to the discrimination and labors of the editor. Much of the material sent in to journals for publication, and much of the matter collected by reporters from the proceedings of societies would be amusing, were it not pathetic in its varying degrees of value. Much of it has to be rewritten, much eliminated, and much is published with editorial hesitancy and a foreboding of coming evil.

It is difficult for those not actively associated with journalism to realize that much that is said and written on scientific subjects does not pertain to the subject under consideration, and in itself is of no value whatever to the disinterested listener or reader; and it is even more difficult for the editor to say just where the line can be drawn without fear of giving offense.

Let each speaker or writer confine himself strictly to the subject in hand; let him make all his statements in such a concise and lucid manner that their meaning is easily understood, and the value of their publication will be increased in proportion as will be lessened the labor of editor and wear and tear on his scissors and pencil.

These observations are prompted by the recent circumstance of a plaint of a well-meaning but supersensitive tempered member of an association, who, unfortunately, labored under the impression that having delivered himself of a disquisition on a special method of operation in which he prided himself, found that his remarks had been eliminated because they were not germane to the special subject of discussion. It was difficult with him, as it has been with many another enthusiast, without doubt, to appreciate the fact that "there is a time and place for everything," and that irrelevant remarks must be abscinded at the stage of publication.—Editorial in Pacific Medico-Dental Gazette, Jan. 1898.

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INFLUENCE OF SCIENCE ON MODERN CIVILIZATION. By Cecil Corwin, D.D.S., Oakland, Cal. Read before Pacific Coast Dental Congress, July 15, 1897. It seems to be the prevailing opinion at the present day that modern civilized people are much inferior
to the ancient races with respect to physical development and stamina. That such is not the fact is proved by statistics of all civilized nations, which show that as civilization advances death rates decrease, longevity increases, and the people become better developed physically. Nevertheless, it is a well-known fact that certain ancient people were superior to the present generation in their physical proportions, but much of their superiority was due to the fact that they were continually at war with one another, necessitating the constant training of soldiers for conquest and self-defense. An instance of such a people may be found in the old Vikings, who were probably the most powerful and fearless warriors the world has ever known. From lack of civilization and scientific accomplishments they were unable to maintain themselves against depletion from warfare, disease and famine. The Romans and Grecians furnish us with abundant proof of the benefits of civilization upon the physical condition of the people. It is the study of their history that has been such a great help to the people of the present day, and yet their results were obtained without scientific aid.

If we are to accept the history of the ancient Semitic races given in the Bible as scientific, we find that many people attained the age of two hundred years or more. Abraham lived to be two hundred and five years of age. In his eighty-sixth year he became the father of Ishmael, and in his one hundredth year the father of Isaac. His wife Sarah was then ninety years of age, and lived to attain the age of one hundred and twenty-seven. Such instances of longevity are unknown at the present day, and it would appear that great changes have taken place in the constitution of the human race. Although we are at present making rapid progress in that direction, it does not seem probable that we will ever reach any such condition of life. The most remarkable cases of longevity among people of the present day are those of a family in Ohio, who average 110 years of age.

The mummified remains of the ancient Egyptians do not indicate any great physical superiority over the present generation. On the contrary, they were rather a small race of valley people, occupying the lower region of the Nile. The explorations of the ancient tombs of the Teutonic race show that they were no larger than their modern descendants, the Germans.

Height, weight and muscular power can be developed within the limits of racial type by favorable conditions. The inhabitants of mountain
regions are always larger and more muscular than those of the same ancestry who inhabit the plains. We have to-day striking examples of the influence of topography upon a people. The Scottish Highlanders have for many generations inhabited a particularly high mountainous region where vegetation is scarce and great activity is required to maintain existence. The result is a race of people whose muscular development and traits of character are known the world over. The Germans, on the other hand, have mostly occupied level plains, and, as a result, they are short in stature and rotund in body. Transplanted into America, the English people have already assumed a type varying considerably from their cousins who have remained at home. The hardships to be met with in the settlement of a new country result in the increased stature and muscular power of the people. The average height of males in the United States is 5 feet 10½ inches; England, 5 feet 9 inches; France, 5 feet 4 inches; Belgium, 5 feet 6½ inches.

During the civil war the largest and strongest soldiers were from the mountainous regions of Kentucky and Tennessee. They measured, on an average, 5 feet 9¼ inches in height. The Iroquois Indians (some five hundred of whom were included in the examination) averaged 5 feet 10½ inches in height. Next to these came the recruits from the Mississippi Valley, with an average height of 5 feet 8¾ inches. California has now taken the lead in these respects, having a climate which favors the development of large and healthy people.

Children of foreign parentage raised in America are taller and much better developed than those of the same ancestry who live in the old countries. Measurements have been made of school children of the United States and striking results obtained; one of these being that Oakland city school children starting at five years of age below the average size rise above it at the completion of the period of growth; while the children of St. Louis, starting above, fall below the average at maturity. It is certain, therefore, that in this vast country of ours, possessing as it does such a variety of climatic and topographical characteristics, the American people should become the most perfectly developed race on the face of the earth, under the influence of science. With such facilities for communication and travel as exists, we will not develop into numerous types corresponding to each section of the country, but, by migration and intermar-
riage, the best qualities of the race will be distributed. Indeed, investigation along this line is particularly fruitful of results. Tables of mortality show conclusively that death rates are lower and expectation of life greater in America than in any other country. In 1890, the death rate in America was 18 per 1000 of inhabitants; in England 20, and in Scotland 21. From 1880 to 1890, deaths of children decreased 15 per cent. The average age in 1880 was 23; in 1890, 25 years.

It has been the history of every nation that as civilization advances the size of the families decreases. Accordingly, we find that in 1880 the average for each American family was 5.09; in 1890, 5.04—showing a decrease of about 5 per cent for the decade. From the Massachusetts census it seems that the foreign-born married women have a larger number of children than the native-born married women, but that a greater proportion of them die. It is therefore manifest that, as the birth-rates are decreasing and longevity increasing, a greater number of children survive than formerly. The decrease of the birth-rates is an indication of advancing civilization rather than a degenerating tendency. From 1820 to 1830 the natural increase of Americans was 32 per cent. From 1880 to 1890, 14 per cent.

The introduction of physical culture into our schools has resulted in an increase in height, weight and muscular power of the students. Amherst college, in 1861, made physical exercise a compulsory part of the course. The following are a few of the facts deduced from a comparison of the data collected at different times: The average actual strength of students for the year 1887 to 1891 is 8.5 per cent greater than for the years 1861 to 1868. The average loss of time from sickness was 8 per cent less from 1885 to 1889 than from 1861 to 1865. Deaths from 1861 to 1870 (exclusive of those killed in the war) were 6 per cent of the whole number graduated. From 1881 to 1890 3 per cent of the whole number graduated.

That a sound body is necessary for a sound mind cannot be denied, and a civilization which overlooks the physical for the mental development would be laying itself liable to degeneration. Notwithstanding the many favorable results of the application of scientific investigations to the present generation, we are still confronted with serious conditions which menace the health and lives of the people. From the number of cases of insanity among men of busi-
ness who have broken down in the struggle to amass fortunes, it is fair to presume that the prominence given by Maudsley to eagerness to get rich as a cause of insanity is amply justified. He says: "The occupation in which a man is entirely engaged does not fail to modify his character, and the reaction upon the individual's nature of a life which is being spent with the sole aim of becoming rich is most baneful, and it is my firm conviction that it is extremely unlikely that such a man will beget healthy children."

The alarming increase of insanity in the United States is shown by the fact that in 1870 there were 37,000, and in 1890, 92,000 cases. The increase of crime is also an alarming condition. In 1880 there were 709 convicts in our prisons to every million of inhabitants. In 1890 there were 722 to every million, showing an increase of 13 to the million in ten years. Such conditions require the most careful application of scientific knowledge to eradicate them.

Science has done so much toward saving the lives of individuals who are not properly constituted to beget healthy, robust offspring, that it has increased the number of weak and deficient in the world to such an extent that the increase of crime and insanity has become a menace to organized society. Until applicants for marriage licenses are required by law to undergo a thorough physical examination and to show that no hereditary weaknesses are manifest, the evils to which I have referred will remain with us. Life insurance companies are carrying out this principle at the present day as the surest mode of protection. Why, then, should organized society as a whole allow its ranks to be filled with any and every class of humanity without a voice in the matter? It is a condition that does not exist in any other confederation. It is our duty then, as scientists, not simply to confine our studies to the narrow limits of our profession, but to make the more important general results profitable to the mass.—Pacific Medico-Dental Gazette, Jan. 1898.

THE TREATMENT OF PULPLESS TEETH WITH DR. SCHREIER'S SODIUM AND POTASSIUM OR KALIUM AND NATRIUM. By L. D. Hodge, Arkansas City, Kan. Read at So. Kansas Dental Assn., Dec. 1897. It is prepared by taking two parts sodium to one of potassium in such a manner that it will adhere to a nerve broach. Potassium is a peculiar metal, forming the radical of potassa and a number of other medicinal preparations.
It is solid, softer and more ductile than wax, easily cut with a knife, and of a silvery white color. It possesses a remarkably strong affinity for oxygen and is capable of taking that element from almost every other substance. When thrown upon water it floats, takes fire and burns with a rose-colored flame, combining with oxygen and generating potassa, which dissolves in the water. Sodium or natrium is also a peculiar metal, forming the radical of the alkali soda. Its chemical affinity resembles that of potassium but is less energetic. Like potassium, it has a strong affinity for oxygen. When thrown upon water it instantly fuses into a globule without inflaming. Both metals were discovered in 1807.

In using Dr. Schreier's preparation always put the rubber-dam on, for fear of burning your patient. Open into pulp-chamber so you have free access to root or roots. Then with a warm instrument puncture an opening through the wax covering the sodium or potassium. Now take an iridio-platinum broach and introduce into the preparation—enough will generally adhere to your broach for one application. A good plan is to dry the thumb and finger: grasping the broach, you can draw the preparation to the end of your instrument that you may the easier introduce it in the root-canal. When you have introduced the preparation you will notice a slight explosion. On removing the instrument be sure and wipe dry before placing in the bottle. Follow the same treatment several times; then with cotton wound on a broach wipe out the root with warm water or pyrozone. After drying the root somewhat, repeat the treatment till you have the root comparatively clean.

Some fill the root at first sitting, but I prefer dressing the canal with oil of cinnamon, campho-phenique or eucalyptus, sealing the cavity and leaving for a few days. On return of patient it is a good plan to use the same treatment. If there is still soreness in the tooth I put off filling till another sitting. Two treatments will generally be sufficient, for in the first treatment you have burned up, destroyed and changed the contents of the root-canal till the odor has the smell of soap, and in using pyrozone you remove this odor and the root is sweet and clean. Having used this preparation since '93 I can recommend it in the highest terms.

The fundamentals of success in any operation upon pulp-canals are the positive removal of all putrescent pulp-canal contents, the sterilization of those canals, and finally the positive sealing of the
apical end of the canal with some mild non-irritating material. Sodium and potassium certainly do this. The foregoing treatment applies to blind abscesses, also to alveolar abscess with fistulous opening, except in the latter I force through the fistulous opening 1:2000 bichlorid mercury, also pyrozone, and fill root at once with chloro-percha, following this with gutta-percha points.—Western Dental Journal, Jan. 1898.

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THERAPEUTIC TREATMENT OF INFECTED TOOTH-ROOT CANALS. By George W. Warren, D.D.S., Philadelphia. Read before Odontological Society of Pennsylvania, Oct. 1897. It is my belief that the relative value of drugs cannot be dissociated from certain medicinal properties, and that these properties are not only determined by scientific investigations through experiments in the test-tubes in our laboratories, but in addition to this, and of greater importance, I should say, is the experience derived from the every-day practice of careful and studious practitioners. We all know that certain drugs, when surrounded by certain conditions, will give us certain definite results, but let us change the conditions, as from the test-tube to the root-canal surrounded by an inflammatory condition, and our results are often quite different. Now, I feel sure of my position in stating that it is the consensus of opinion with a larger number of teachers and experimenters that the agents we should employ in the treatment of putrescent root-canals should be (1) germicidal, (2) penetrating, and (3) non-irritating in their effect. And after a varied clinical experience I believe the essential oils more nearly meet these requirements than any other remedies we have at hand; notably, the oil of cinnamon, oil of eucalyptus, and oil of cloves. These oils have decided germicidal properties, are penetrating, and are mostly non-irritating to the tissue, and in addition, their viscosity no doubt prevents, in a measure, the passage of bacteria.

I will briefly give you a report of two selected cases illustrating the line of treatment which I have indicated. About three years ago a lady called upon me for treatment, who, in the pursuance of her profession, is required to travel from city to city during the greater part of each year, thus requiring and receiving attention from several dentists. She reported that the first inferior molar on the right side had for a long while been the source of much annoy-
ance. It had been treated by numerous dentists, would apparently return to the normal condition, but with every cold she contracted the alveolar inflammation would return. I inspected the tooth in question and found in it a large amalgam filling; while on the border of the maxilla immediately below and opposite the anterior root, was an inflammatory bunch, such as we have all seen, which seemed quite dense and sore to pressure. I removed the filling from the tooth, and from the roots took a quantity of cotton having a composite odor, in which I could detect that of creosote. I enlarged the canals slightly by means of drills, irrigated them thoroughly with peroxid of hydrogen and warm water, then introduced on a few fibers of asbestos a dressing of oil of cinnamon, closing the cavity with gutta-percha. The patient was visiting my office nearly every day for the week following, having a partial bridge denture inserted, which gave me an opportunity to watch the swelling disappear and the tissue return to a normal color and condition. At the close of her stay in this city she called, as I had requested, to have the tooth filled. I removed the dressing, dried the canals thoroughly with warm air, and closed the apical ends with a small point of gutta-percha; then filled the roots with oxychlorid of zinc, and closed the crown cavity with an alloy filling and dismissed the case. Now we have the most interesting and important part of the matter. After an absence of two years the patient again called upon me for services, and reported that this tooth had not given her a moment's uneasiness during her absence and had been quite as useful as any other of the similar organs.

Case number two is the treatment of the left superior lateral incisor for a lady forty years of age. It so happened that I was inserting an artificial crown on either side of the tooth mentioned, and it was the opinion of the patient that the diseased tooth should be extracted and the space bridged. This tooth had for many months troubled the patient, being somewhat loosened, and there being a slight discharge of pus through a fistulous opening on the gum opposite the apical end of the root. It had been treated in Chicago and in this city, the last dentist filling the root with gold. After securing the patient's permission to treat the tooth, I removed the gold from the canal, washed thoroughly with peroxid of hydrogen, then with my hypodermic syringe I injected oil of cloves into the canal until it ran out through the fistula on the gum; this was
followed by a few fibers of asbestos saturated with oil of cloves being placed in the canal and the cavity closed with gutta-percha. After remaining about three weeks without any evidence of a recurrence of the discharge of pus, the dressing was removed, and a point of gutta-percha was passed into and through the end of the root until it made its appearance at the gum surface, and the cavity filled with the same material. The patient then left the city for the summer months. Upon her return in the autumn I found that the tooth was entirely comfortable, quite firm, and that the tissues had settled down to a more normal condition, leaving the point of gutta-percha standing slightly above the surface; this point was then grasped with a pair of tweezers and twisted off at the end of the root. A permanent filling was then placed in the tooth, which has been a useful organ of mastication unto this time, there being no recurrence of the inflammatory condition.

In bringing these cases before you I do not present them as isolated ones, but as cases of frequent occurrence, illustrating, as I believe, the value of the essential oils in the therapeutic treatment of infected root-canals.—International Dental Journal, Jan. 1898.

SYPHILITIC NECROSIS OF THE ALVEOLAR PROCESS.

By A. Berlyn, L.D.S., Glas. A.S., age 30 years, recently consulted me complaining of acute tenderness of his gums. On examining the mouth, I found the upper maxilla apparently quite healthy, with only four teeth standing, viz., right and left centrals and cuspids. In the lower jaw there was a different state of affairs—the molars and second bicuspid on either side had been lost, and those regions were also quite healthy, but in the region of the first bicuspid right to the first bicuspid left, where all the teeth were standing, a rather serious condition of affairs presented itself. The gum was acutely tender, very highly inflamed, a thick yellow pus was welling up round the necks of the teeth, which were all more or less loose, while the alveolar process appeared to be in a soft spongy condition. On inquiring into the patient’s history, I found that three years ago the patient had had a severe attack of syphilis, and being a chemist’s assistant, he had continually dosed himself with large quantities of mercury, in the forms of hyd. cum creta, hydrarg. iodi. rubri, and hydrarg. iodi. viridi, until he became thoroughly salivated, and had lost the twenty missing teeth without operative assistance. The patient then ceased.
mercurial treatment and placed himself under large doses of pot. iod., which he continued for some considerable time. When patient consulted me he was in a very low and weak condition, in fact bordering on a state of collapse, with little or no appetite, the breath very foul and fetid, and completely broken down with agony of mind. Hoping the sequestrum would separate itself, and not wishing to operate upon the patient while in his then low debilitated condition, I placed him under strong tonic treatment, stopped all mercury and pot. iod., which he was still taking alternately, and proceeded to treat the disorder with strong antiseptic and astringent lotions. I scarified the gums, which bled profusely; daily syringed with pot. permang. and zinc lotions, most carefully and minutely cleaned each tooth, daily swabbed and cleaned round the necks of the teeth with peroxid of hydrogen, but all to no purpose, for the disease appeared to be spreading beyond control. I then decided to operate, and had the patient placed under chloroform. Having removed all the teeth remaining in the lower jaw, I proceeded to separate the gum completely from the inner and outer margins of the alveolar process down to the maxillary bone. The condition of the alveolar process when exposed presented a soft cheesy substance, which I scraped away with a sharp spoon so completely as to leave the lower maxillary bone completely bare; I replaced the flaps of gums and prescribed the following mouthwash: Zn. chlor., grs. vi.; zn. sulph., grs. iv.; morph. acetas, grs. ii.; aq. ad., ʒ viii.; as also permanganate of potash. Within three days the mouth was well healed, and no trace whatever of any suppuration and but very little tenderness. Within a month from the date of operation I made the patient a temporary lower denture carrying twelve teeth, which he is now wearing with perfect comfort and with no trace or sign of any further trouble or irritation. The case is interesting, as showing not only the danger of large doses of mercury, but also that where proper aseptic conditions are observed there is no need to wait for voluntary separation of the sequestrum, but rather to proceed to operate at once.—Brit. Jour. Dent. Sc., Jan. 1898.

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FORMALDEHYDE IN SOLID FORM. By William Rollins, D.D.S., Boston. As you have considered formaldehyde of sufficient interest to dentists to publish a long article from one of the medical magazines, you may possibly find room for a short note on
one of its dental applications. If we make a very strong aqueous solution of this gas, part of it slowly assumes the solid form and is precipitated. When this is dried and the pulp-chamber in a tooth filled with it, after a time it is all reconverted into a gas and thoroughly disinfects the whole tooth. If there is any absence at the root, by sealing in the solid formaldehyde with cement most of the gas escapes through the abscess, which soon yields to the treatment, which should be renewed every three days as long as required. An extended use has shown me the value of this treatment.—International Dental Journal, Jan. 1898.

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SOURCE OF IRRITATION. By L. P. Haskell, D.D.S. Some years ago I heard Professor Ford lecture upon the bones of the head. In the course of his remarks he said, "I will show you where absorption of the lower jaw has taken place to such an extent as to bring the mental ganglion to the surface of the jaw, instead of a half inch or more below it as when the jaw is in its normal condition." He showed a lower jaw with the opening directly on top. This explained what to me had been a mystery in several cases, where there was a very small spot in that locality (the region of the second bicuspid) which was excessively sensitive. Since then I have had several similar cases, one of which was in my office this morning. The only thing to be seen is a white spot about the size of a pin's head. They have always occurred upon the right side in my experience, a singular fact.—Ohio Dental Journal, Jan. 1898.

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UNIQUE METHOD OF BACKING A TOOTH. By W. A. Siddall, D.D.S., Cleveland. I was showing my brother a method of soldering into a bicuspid gold crown a porcelain facing without investing. Having made a die on which to swage the backing I was looking around for a piece of soft wood to use as a counter die, when my brother handed to me a piece of rubber to use instead. He suggested at the time that possibly the backing might be swaged directly onto the tooth with rubber. It was not tried and nothing further was said or thought of it then.

About ten days later, having occasion to make one of these crowns, it occurred to me to try to swage the backing in this way. I cut out my backing, made holes for the pins, cut the pins short, placed the backing on the tooth and laid the tooth buccal side down
on a piece of soft pine. I then took a piece of car-spring rubber an inch thick and placed on the tooth and struck it two or three sharp blows with a hammer. I found that the porcelain was not fractured and that the backing was driven to fit quite well. The next time I placed the tooth on a steel anvil, placed my rubber over it and found that I could strike it with a heavy hammer without breaking the porcelain, and the backing fits—well, like paint fits a board. It is safe to lay the tooth on an anvil or hardwood board if be a thick tooth and there is not much convexity of the buccal surface—but if the facing is thin and the buccal or labial surface is quite convex, place it on soft wood or even on another piece of rubber. With a thick facing 22k. gold, No. 28 in thickness, has been driven down to fit absolutely, though of course a thin backing of platinum or pure gold answers just as well and requires less force. The rubber may vary somewhat in elasticity, but a little experience will enable one to ascertain what strain a porcelain will stand and amount of force required to make the backing fit.—Ohio Den. Jour., Jan. 1898.

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EXSECTION OF THE SUPERIOR MAXILLARY NERVE, OLD AND NEW METHODS. By H. L. Ambler, D.D.S., M.D., Cleveland. Looking at the anatomy of the fifth pair of nerves, we find that the true origin is in the pons as far back as the lateral tract of the medulla oblongata; it is the sensitive nerve of the head and face, and the nerve of motion for the muscles of mastication. The superior maxillary nerve (second branch of the fifth pair) has two roots, a sensor and a motor; it arises as a flattened band from the middle of the Gasserian ganglion, and passes forward over the greater wing of the sphenoid bone, until, reaching the foramen rotundum, it leaves the cranium and presents itself in the sphenomaxillary fossa, from which it passes through the sphenomaxillary fissure to the orbital cavity, where being lodged in the infraorbital canal, it continues forward to the infraorbital foramen and to the points of ultimate distribution. The Gasserian ganglion is a reddish gray knot about the size of a buckshot, and envelops the posterior root of the fifth pair of nerves; it lies in a slight depression on the anterior face of the petrous portion of the temporal bone. It is outside of the dura-mater, although covered by a reflection from it, and is in immediate relation with the internal carotid artery. In the sphenomaxillary fossa, the superior maxillary nerve gives off
the posterial dental which supplies the molar teeth, and about midway of the infraorbital canal it gives off the anterior dental which supplies the incisors, cuspids and bicuspids. In addition to the above the superior maxillary nerve supplies the integument on the side of the head, Meckel’s ganglion, with sensor filaments, antrum, orbicularis palpebrarum, integument and conjunctiva of the lower eyelid, muscles and integument of the nose, muscles integument and mucous membrane of the superior lip, and the labial glands. Associated with the fifth nerve are six ganglia, viz.: Gasserian; Ophtalmic; Meckel’s, or sepheno-palatine, triangular and reddish-gray; Cloquet or naso-palatine, small and oblong; otic; submaxillary.

From the above anatomy we can understand that in exsection of the superior maxillary nerve we might have slight paralysis of the orbicularis, lower eyelid, or side of nose, owing to the close connection with the nerves of sensation; also if the nerve is not exsected far enough back, then only the anterior teeth will be relieved from neuralgia. An operator would hardly be justified in making an exsection, much less in removing the Gasserian ganglion, without previous practice on the cadaver.

It will be observed that the infraorbital foramen points obliquely upward and outward, and that the infraorbital groove and canal are both in the maxillary bone. In making neurectomy of this nerve, the spheno-maxillary fossa is entered either from the zygomatic fossa, or by removal of its anterior boundary, which is the posterior wall of the antrum. It is taken for granted that a diagnosis has been made of a lesion affecting a nerve trunk or center; the possibility of the disease having a peripheral cause has been excluded, and it is desirable that no external cicatrices should be left; this necessitates operating through the mouth; therefore, anatomical knowledge, delicate skill, and the sense of touch, must be well developed; however, external incisions may not leave very unsightly scars, and with proper antiseptic treatment, should heal by first intention.

Knives, mallets, forceps, chisels, gouges, saws and scissors have been largely superseded by the surgico-dental engine, and this has been brought about through the influence and inventive genius of such dentists as Garretson, Bonwill, Cryer, Brophy, Marshall and Curtis. The engine can be driven by a hand-crank or electricity, and is made somewhat heavier than the ordinary dental engine; in it can be used saws from one-half to three inches in diameter; also
any form or size of bur or drill; from one to ten thousand revolutions can be made per minute with regularity and steadiness, and operations can be made with easy and greatly diminished risk.

Cryer says: "In operating with either saw or bur it is well to have a large bottle filled with antiseptic fluid suspended above the operating table, allowing the liquid, by the aid of a small tube, to flow over the parts while operating, thus preventing the bur from clogging, as well as keeping the parts free so that the operator can see just what he is doing."

In addition, we would suggest the use of a small rubber disk or cup over the end of the hand-piece in order to prevent moisture from entering it. Years ago Dr. Garretson realized that the manner of making surgical operations on the mouth, jaws, face and head was not satisfactory to the surgeon or patient; he knew that the trained dentist, with his manual dexterity, could adapt his methods and some of his appliances to surgical work on the above parts; he was among the first to use the engine in operations upon bone, and he found as others have, that it was of the greatest practical assistance. This is a surgical engine, because it is nearly a duplication of the human arm and hand. In plastic surgery, wherever tissues are to be united, there is no loss of substance and success is more certain when the engine is used. In the bones, whether taking away the whole shaft, leaving nothing but the periosteum, there is no necessity for opening into the bone further than merely exposing for access, thereby saving the severing of arteries or nerves; it can be used in fractures of the patella without opening into the membranes; in fractures of the skull the parts can be elevated without trephining; the vault of the cranium can be entered at any point without danger of injuring the dura mater; the superior or inferior maxilla can be removed without other access than by the mouth. With Cryer's engine osteotome any desired section of the skull can be removed without injuring the dura mater.

Operations on the jaws should, as far as possible, be made within the mouth, avoiding external incisions, and with the engine it is not necessary to remove as much tissue; thus healthy tissue can often be saved to assist in bringing about a normal restoration of function.

Resection of the second branch of the fifth pair of nerves was first practiced in this country by Dr. Carnochan, who commenced the operation by making a V-shaped or curvilinear flap exposing the
anterior wall of the antrum which was penetrated with a trephine, a smaller one being used to remove a portion of the posterior wall. The sphenomaxillary fossa was thus exposed, where the nerve was found and as much of it excised as possible. In seeking for the nerve in the fossa great care should be exercised, as it is desirable to have healing without degeneration or destruction of tissue.

Pancoast's operation consisted in making a trap-like flap across the ramus of the lower jaw; this was raised and reflected, the masseter muscle shaved from its attachment, and the coronoid process exposed and sawed off at its root and removed after detaching the temporal muscle; the muscle is thrust upward exposing the zygomatic fossa, across which, but overlaid with some fatty tissue, passes the internal maxillary artery which should be ligated; the external head of the pterygoid muscle is then detached from the great ala of the sphenoid bone; push aside any soft parts, staunch the hemorrhage, thus exposing the nerves of the sphenomaxillary fossa, which may be exsected with a pair of curved scissors.

Stoker's operation consisted in closing the eyelids by a single stitch passed one-quarter of an inch from their ciliary margins; this fixes the parts and prevents irritation; a curved incision is carried along the lower edge of the orbit and parallel to it, including the periosteum; an incision connects this with a point over the infraorbital foramen. The nerve and artery are found and separated, the nerve is clamped in a pair of forceps and divided distally. The periosteum of the orbit is next raised from its floor with a flat director, care being used to prevent tearing, as it is very thin, and tearing complicates the wound and results. The contents of the orbit are then raised from its floor by a retractor in the hands of an assistant and the canal laid open by a pair of bone forceps. The nerve is lifted out and detached back to the point of exit from the foramen rotundum. (When excised here Meckel's ganglion would be removed.) It may be cut or avulsed; the latter is preferable, as it may influence a seat of disease higher up.

Dr. Cryer operates, viz.: The eyelids are closed by a single suture, and a curved incision made along the infraorbital ridge to the bone; then a vertical cut downward to the infraorbital foramen; spreading the soft tissue, remove the periosteum from the bone covering the canal, and secure the nerve with a ligature; then pass a dental pulp-canal plugger into the foramen over the nerve, as a director and
guard along the canal until the point is in the orbit. By using a bur in the engine the bone of the roof of the canal can be quickly cut down to the protecting plugger, when the nerve may be lifted from the canal intact. Now pass the nerve with the attached ligature through the opening of a neurotome, which must be worked backward as far as possible; then holding the nerve tightly, revolve the cutting portion of the neurotome and the nerve will be severed close to the sphenopalatine ganglion (Meckel's).

Dr. Cryer makes another operation which he describes, viz.: Make a trap-like opening exposing the greater portion of the anterior face of the superior maxillary, find the foramen and secure the nerve as before, then with a bur in the engine remove a portion of the face of the bone immediately below the foramen, thus opening the maxillary sinus. Control hemorrhage as far as possible, and again using the engine, open through the inner and superior portion of the posterior wall of the antrum and enter the sphenomaxillary fossa, thus exposing the ganglion. By passing a long delicate pulp-canal plugger below the nerve as a means of protection from the engine bur, the bone of the floor of the canal may be cut away, using a long-shanked bur. After the floor of the canal has been removed, the plugger may be withdrawn and the nerve dropped into the antrum and passed through the fenestrated opening of a neurotome large enough to include Meckel's ganglion; pass the neurotome backward to the foramen rotundum, keeping the nerve tightly drawn, revolve the knife, sever the nerve and pull it away. Dr. Cryer has devised a neurotome which works admirably in these cases.

Dr. Garretson operated, viz.: Place the patient on a pallet and etherize, expose the anterior face of the antrum by a trap cut in the cheek, which trap may be triangular with a limited vertical cut reaching downward, or it may open toward the eye, thus exposing the branches of the infraorbital nerve which is to be dissected, caught by a forcep and held out of the way. Hemorrhage being controlled by ligatures, styptics, etc., the face of the antrum is cut away by use of a bur in the engine. With the nerve secured as a guide, the floor of the infraorbital canal is cut away and the nerve followed along the floor of the orbit. The posterior wall of the antrum reached, the bur is passed backward through it, the nerve still being preserved intact; remove with the bur enough of the posterior wall of the antrum to expose the sphenopalatine fissure; here the nerve is found
and passed through a neurotome which is pushed back to the foramen rotundum where the nerve is severed. Care is required to avoid cutting the nerve prematurely by the revolving bur.

In cases of neuralgia the ganglion of Gasser can be removed. This operation is comparatively new. Rose's operation consists in exposing the oval foramen and trephining its seat so as to expose the ganglion. Laplace makes his exposure over and around the ear. Horsley reflects a flap both of soft part and bone from the superzygomatic region and seeks the ganglion by pushing the finger along the side of petrous portion of the temporal bone. Dr. Andrews of Chicago has been successful in making this operation.

Dr. Garretson operated, viz.: Make a semilunar incision reaching an inch upward and one and one-half inches at base, this base to be the upper border of the zygoma; dissect up the flap thus exposing the bone, trephine, and with an osteotome saw out the vault of bone, force the bone outward breaking its base. The dura thus exposed, the fingers are delicately insinuated between the membrane and cranial floor and pushed inward until the ganglion is reached. Exposure of the ganglion is made by incising the envelope of dura which incloses it, care being taken not to wound the carotid artery; hook up the inferior maxillary nerve and cut at the point of passage through the oval foramen. Seizing the nerve cord, the ganglion, the upper surface of which adheres slightly to the dura, is pulled as freely as may be from its bed and cut or scraped away. The ganglion being removed, the bone and scalp are put back in place after carefully washing away all sawdust. A tent for drainage can be inserted in the trephine cut.—Ohio Dental Journal, Jan. 1898.

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ADAPTATION AND RETENTION OF ARTIFICIAL DENTURES. By A. O. Hunt, D.D.S., Chicago. Read before the Odontological Society of Chicago. While this is an old subject, yet it is new and will continue to be so until there is some better agreement as to the principles involved in the operation, and they will not be well established unless they are based upon actual conditions present in mouths. They must also be broad enough to apply to all the variations that present themselves.

Atmospheric pressure is one of the forces claimed as being essential in retaining the dentures, the pressure being produced by a central chamber in which a vacuum is produced. The force
exerted is estimated to be from a few ounces to fifteen pounds to the square inch. This claim is entirely faulty. A vacuum cannot be produced in this way, and if it could, would be of only very short duration. Again, if it were possible to get the benefit of such force, it would be better to have it extend over the entire surface of the denture than to confine it to a small central area. Still further, it cannot be applied to lower dentures successfully.

Capillary attraction or adhesion is another force mentioned as all important in the retention of the denture. As whatever force of this character that might be utilized is based upon the laws of cohesion and adhesion, the limit of its operation is so small that it would be insensible in an artificial denture. If, however, the force was greater, it would be better that it should apply to the whole surface than to a part of it.

The conditions presented in the upper jaw are peculiar many times. The idea that a mouth that is flat is more difficult than a deeper one to secure good results should not be entertained. In general, in from six months to a year after the loss of the teeth, there are not so many difficulties in the way of good results. After a denture has been worn for a long time with only a partial antagonism with a few opposing teeth, the difficulties are multiplied. So also when the mouth is edentulous and no denture has been worn.

When the best model obtainable is at hand, a careful digital examination should first be made of the surface of the mouth, to locate and define the depth and form of the soft spaces within the area to be covered by the plate. These spaces and their form and depth should be outlined on the model, the depth indicated by figures, as it varies greatly in corresponding locations in the same mouth. The model should then be scraped away in various places to proper depth so that denture will bear evenly over its whole surface, keeping in mind that the central or palatal portion will not change materially while the alveolar ridge is constantly changed by resorption.

For the upper jaw there are five localities where the denture will find a firm and reasonably permanent rest without undue pressure on the parts—the palatal surface, two on the labial surface immediately over the region occupied by the cuspids, and two over the malar processes extending to and above the maxillary tuberosities.

For the lower jaw there are four localities for a firm rest for the plate—two on the labial in the region of the cuspids and two on the
posterior buccal margins between the summit of the alveolar ridge and the attachment of the buccinators to the inferior maxillary, The greatest interference with a denture being retained in its place, as they are usually constructed, consists in the action of the muscles upon the margins of the plate to push it either up or down as the case may be, or oftentimes the posterior margin of the upper one extends up on the soft palate and is thrown down by its movement; or in the lower denture the posterior ends of the plate are so long that in opening the mouth the stretching of the tissues in front of the ramus move it forward.

While all the muscles may throw a denture out of position, yet by a proper form of the margins, some of them may be utilized as the most important force for retention; notably the buccinators and the orbicularis oris. A careful examination of the attachments of these muscles should be made, and in shaping the margins their movement should be opposed to each other in such a way that they will be compressed upon the denture and hold it firmly. If improperly made the patient never gets the use of dentures until they learn to hold them in place by the buccinators assisted by the tongue and the orbicularis oris.

With an even pressure over the entire surface of the plate in contact with the mouth, a free movement of the anterior frenum and the anguli oris muscles, the anterior border of the buccinator, the compression of the buccinator at the posterior borders and the compression of the orbicularis oris at the anterior portions, a free movement of the lingual and sublingual muscles on the interior surface of the lower denture, with plenty of room for the tongue, accompanied with a stable pressure on the hard or permanent parts of the mouth, will produce a perfect adaptation and retention of an artificial denture.—Dental Review, Jan. 1898.

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NOTES ON A CASE OF COMPOSITE ODONTOME. By Mr. Russell Barrett. Read before Odontological Society of Great Britain. The patient, aged 23, came to the Dental Hospital of London, July 3, when I saw him for the first time, complaining of pain and swelling of the right side of the lower jaw.

Previous History. Three weeks ago the patient had severe pain in the right side of mandible. He put on poultices to his face and a large swelling arose. He bore this for one week and then went to
his doctor, who lanced the gum; this gave him some relief and he went on without further advice until coming to the hospital. Has no recollection of any enlargement or swelling of the jaw previous to the three weeks, and has never noticed any undue prominences about the right side of his face. Cannot remember having had any teeth extracted on that side, and does not know any teeth are missing.

**Present Condition.** Patient thin and looks very ill and worn out by pain. Has well marked swelling over angle of right side of mandible and has slight trismus. On examining the mouth the second bicuspid and second and third molars are missing. There is great expansion of the jaw behind the first molar, and on the surface between masses of granulation tissue a rough, gritty substance resembling necrosed bone can be seen. On probing one can define a portion of the anterior and external borders.

I diagnosed the growth as an odontome, and after waiting for a model to be taken I asked Dr. Buxton to give the patient gas, and removed the mass with an elevator. It came away after some difficulty, with a considerable amount of the capsule attached to it.

The cavity was syringed out and packed with iodoform gauze, and the patient was told to come on the following Monday to have it repacked. On July 10, a week after the operation, on taking out the packing the crown of a molar tooth could be seen at the bottom of the cavity. I have seen the patient lately and the tooth is gradually rising to the surface; it will, I think, ultimately come into place and be of use to him.

The odontome is a rough, nodulated, irregular cube, measuring \( \frac{7}{8} \) inch antero-posteriorly, \( \frac{3}{4} \) inch from above down, and \( \frac{11}{16} \) inch across. Weight, 102 1/2 grs. On the anterior surface it has a well-marked groove, where it has molded itself around the root of the first molar, and on its under surface is a deep pit from absorption caused by pressure of the erupting tooth. The capsule under the microscope presents nothing but a fibro-cellular appearance. The growth itself is composed principally of hard and osteodentin, along with enamel. The enamel is distributed in a most peculiar manner, as it forms a lining to numerous tubes which permeate the growth.

I have read several books in the hope of finding something with regard to the growth of these tumors, but have been able to find only that they are due to aberrations of the tooth germs, and that during growth they give rise to no painful symptoms.
If this growth is an aberration of the germ of the second molar, it should have commenced to calcify at the fifth year, and have finished calcifying at the seventeenth year. The patient, however, says that neither he nor any of his relations had at any time noticed the swelling and undue prominence of the angle of the jaw; it seems almost incredible that such a disfigurement as was present should have been unnoticed for so long.

I should not like to suggest that the tumor grew in the short time the history extends over, but I think it was more rapid in growth than is usually the case with these odontomes. Three things seem to point to this conclusion: (1) The molding of the anterior surface around the root of the first molar. (2) The structure of the growth. The dentin is full of interglobular spaces, and the enamel is darkly stained and unfinished looking. (3) The enlargement of the angle of the jaw not having been noticed until recently.

Cohnheim's theory, that all tumors are due to developmental faults, seems to me to be well borne out in the growth of odontomes. He supposes that more cells than are necessary for a part are produced, the surplus remaining in an embryonic state until called into activity by some irritation or increased blood supply. A large proportion of tumors also occurs where the developmental process is complicated; as where two layers of the blastoderm join in the formation of an organ. All these conditions hold good in the formation of an odontome; and it seems to me more probable that a portion of the "tooth band" should have remained as a "resting spore," and ultimately formed the odontome, than that an ordinary tooth germ should have become so complicated.—Brit. Jour. D. Sc., Jan. 1898.

PATENTS AND ETHICS. By J. A. Chapple, D.D.S., Atlanta, Ga. So much has been said and written in late years derogatory of patents as applied to dental appliances, that one is inclined to drift with the current of popular opinion and add his mite to indiscriminate denunciation. It is possible this prejudice had its inception during the reign of the Goodyear Vulcanite patent, an octopus whose cormorant greed was indeed severely felt by the profession. But we are not disposed to visit the sins of the Goodyear patent upon those now in the market. On the contrary, a casual reflection upon the subject has forced the conclusion that the patent laws have contributed more to the benefits of the profession than all other forces combined.
When we affirm this proposition we must not be understood as indorsing patents as applied to certain methods or modes of practice, but to appliances only.

Now and then the public becomes the beneficiary of some genius who is satisfied with the compensation which accrues to him in the form of public indorsement. But it is the hope of material reward which has been the main incentive to at least ninety-nine one-hundredths of our most valuable inventions. The introduction of the engine, electric and mechanical mallets has made it possible to accomplish more in a given time and with corresponding remuneration. No one will attempt to controvert this proposition, or charge the patentees as mercenary or unethical. And if they are now living in the enjoyment of their well-earned reward, where is the man who would pluck one iota from their achievements or one cent from their exchequer?

Every one admits the great value of the dam; and if an inventor was ever justified in claiming a patent, Barnum was preeminently that man. But doubtless sensitive to the criticism of the so-called ethical class, he gave this almost incalculable boon to the profession, receiving as his final reward the expense of a burial at the hands of his beneficiaries! The fact must not be lost sight of, that while the principal patentees of dental appliances added to their own bank accounts, they also contributed at the same time to the arts of dentistry and to your bank account as well.

Improved instruments, of necessity, bring about new methods, and these in turn have enabled the operator to charge a fee corresponding to his outlay of money and mental effort. An office minus all modern appliances is soon shunned by the public, and justly regarded with suspicion. The intelligent patient expects to find you equipped with the latest adjuncts to your business, and is willing to pay for the benefits therefrom.

And now that we are discussing a very practical question, the natural query arises, Who pays for these patented appliances? We answer, the dear public. It is useless to try to conceal the impression which prevails throughout the profession, that the manufacturers are the largest gainers of patented appliances, and that the dentist alone is the principal contributor. We are not in the confidence of the manufacturers, nor are we posing as their champion defender, but as we remarked in the beginning of this article, we have
given this matter some investigation, and the truth demands that
we "render unto Caesar the things that are Caesar's."

The uncertainty of the value of, and usually high price asked for
a patented article deters the manufacturer from exclusive ownership. The patentee must assume some risk, and he does this upon the basis of a percentage, or what is commonly known as a royalty, the manufacturer realizing a reasonable profit upon the article made. When the demand for the article proves exceptionally great, as a matter of course, the manufacturer reaps a corresponding benefit, but so does the purchaser.

As will be readily seen, we have made no attempt at elaborate argument to sustain our position, but simply touched upon those points which naturally suggest themselves. In conclusion, we have no doubt but what this artificial sentiment regarding dental patents has deterred many from entering the inviting and fascinating field of invention. Considering the rapid strides made in dentistry by reason of improved appliances, the profession can well afford to modify its attitude toward patents, and instead of indiscriminate condemnation, should encourage and foster the genius whose ambition and necessities may yet evolve the crowning glory of dental art.—American Dental Weekly, Dec. 1897.

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NATIONAL HEALTH LEGISLATION. The recent epidemic in certain parts of the south has directed public attention to the necessity for broader and more efficient regulations for the protection of the public health. Many objections that were formerly urged against the proposition to place the quarantine power wholly in the hands of federal officials have been withdrawn, and that section of the country which heretofore has most strenuously opposed federal control has now asked congress to provide such control. The bill recently introduced by Mr. Caffery of Louisiana in the United States senate is in response to this demand.

For several years the medical and pharmaceutical press, and medical, pharmaceutical and other organizations have labored to create a sentiment favorable to the establishment by congress of a department of the federal government devoted to the interests of public health. The progress made appeared so encouraging three or four years ago that President Cleveland recommended the creation of a national department of public health. The recommendation, how-
ever, passed unheeded. Since then the agitation has been actively continued, but confined chiefly to the medical and closely allied professions. The present congress will be asked to take up the subject and establish the proposed department.

The Medical Standard has earnestly advocated the new department, believing that in its creation the national government will serve the interests of the people in an important respect, and that through no other agency can this service be rendered so effectively or so comprehensively. The creation of a department of the government, however, is a subject that congress approaches with great deliberation, partly because of the general reluctance to extending the powers of the government, and partly in recognition of the constant cry for economy which is ever being raised, oftentimes in the face of the fact that the economy demanded is the greatest form of wasteful expenditure.

Much as the proposed department of health is to be desired, it is believed, after a careful survey of the situation, that it will be impossible to secure favorable action from this congress. A strong reason for this opinion is the fact that congress has already been asked to create a new department of commerce and industry, and the promoters of the movement for such a department have proceeded with such system that the support of commercial and industrial interests of every kind in all sections are united in active cooperation, and the early success of the proposed department is apparently assured. Congress cannot be induced to create two new departments in one session, even though the influence to be brought to bear were many times stronger than that at present united in asking for a department of health.

In view of these circumstances, it would appear that the wisest course lies in introducing a bill in congress which will take the Marine Hospital service as a nucleus and establish an unattached bureau clothed with the authority for national quarantine that is asked for from the south. Under the direction of this bureau, then, such investigations as that proposed into yellow fever conditions in Cuba, and leprosy in Hawaii, which, it is reported, are to be made subjects of congressional action, may be conducted. The unattached bureau would not cost more than will the performance of the same duties under separate divisions, and certainly would prove far more efficient. Thus equipped and permitted to show the public its field
of usefulness, this bureau of public health will have every opportunity to develop at an early date into one of the departments.

In efforts put forth to promote objects of this nature, sentiment should give way before the practical problems encountered. In this agitation for a department of health there should be no reluctance to accept a compromise proposition, which will bring success as far as it goes and which is in entire harmony with the general purposes in view.

Let all interests unite on the establishment of an unattached bureau of public health, with authority over national and interstate quarantine. With this program a long step forward may be taken. Less should not be asked. More it is useless to ask from this congress.—Medical Standard, Jan. 1898

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PARTIAL SUPPRESSION OF TEETH IN A VERY HAIRY MONKEY (COLOBUS CAUDATUS). By Charles S. Tomes, M.A., F.R.S. Read before Odontological Society of Great Britain. This specimen consists of the skull and the skin of a male animal, and the abnormality of the teeth is such that the idea was at first suggested that it might be a distinct species, in which the teeth were in a state of reduction comparable to those of Proteles amongst the Carnivora.

A closer study of the teeth, however, and the absolute identity of the skin with those of other specimens negatives this idea, and it appears certain that it is an instance of reduction accidental in the individual, and comparable with similar examples of reduction which are occasionally met with in man.

These monkeys are remarkable for the great length of the hair all over the body, and especially for the beautiful bushy tail. As has already been mentioned, this specimen shows no abnormality in the quality, length, or disposition of the hair nor of the nails; nevertheless it is especially interesting to the student of odontology to find that this the only recorded case, so far as I know, of great reduction in the teeth of a monkey, should have occurred in a form which, so far as its hair goes, deviates pretty widely from other monkeys; the more so as Proteles also is distinguished by the possession of unusually abundant hair.

In the human subject partial suppression of the teeth has been found not only associated with redundant hair, but also with paucity
of hair, whilst Dr. Guilford records the absence of hair and abnormality of fingernails in a mother, daughter and son, who, however, possessed teeth normal in size, form and number. And again, hypertrophy of the teeth has been met with at least in one case of redundant hair (in the case of the hairy woman, Julia Pastrana, whose face was covered with hair), so that all we can say is that abnormality in hair is apt to be accompanied by abnormality in tooth development.

If the skull be compared with those of other males of the same species it is found to be only a trifle smaller in most dimensions, but in the maxilla and the mandible the deficiency in size is far more marked, so that it comes to have a higher facial angle than belongs to the species. The posterior tuberosity of the upper jaw bears its normal relation to the other cranial bones, so that the shortening lies mostly in front of this point; the mandible is also shorter (73 mm. against 82 mm. in other specimens) and weaker, whilst its width is nearly normal at the back but is diminished in front, and the chin is more vertical. All the facial aspect of skull, and especially the zygoma, malar bones, canine fossae, etc., have a porous appearance.

To pass to the teeth themselves, those present (either as teeth or empty sockets)—

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Although all the incisors are absent, the appearance of the alveolus is such as to suggest that they may have been once present, although they must have been very small; the upper cuspids are large, but the lower ones are mere pegs, and the premolars and molars are all much reduced. Although the teeth are so small, they have not in the least the characters of retained milk teeth, but on the contrary present on a stunted scale characteristics of the permanent teeth.

The upper cuspids have attained to almost their normal length and width so far as antero-posterior dimensions go, but they are thinned by being much flattened on their inner sides; the left upper cuspid, perhaps owing to its being thus thinned, has suffered from wear to the extent of its pulp cavity being opened and the den-
tin is stained by blood pigment consequent upon the death of the pulp. It is rather remarkable that these teeth, serving as sexual weapons rather than for the procuring of food, should have attained to a greater development than the other teeth. In the lower jaw the cuspids are mere pegs (one is lost but its socket remains) and the upper ones were antagonized chiefly by the premolars. In the left upper jaw a small peg-shaped tooth lies close against the cuspид—this is apparently pm. 3 of the full mammalian detention; then there follows an interval, pm. 4 lying close to and in series with the true molars.

Pm. 4 is lost on the right side, but its socket is there; on the left its crown is much reduced, is cylindrical and has little indication of cusps; all the upper premolars, apparently, had single roots.

In the mandible pm. 3 is reduced in antero-posterior length, but still is a fairly stout tooth with recognizable characters. Pm. 4 is lost on the right side, on the left it is much reduced as to its crown, which is cylindrical. It had clearly once two roots, but the posterior root has been absorbed and its socket has been filled up with bone, so that after a time this tooth also would have been lost. It is interesting to see this tooth, reduced in functional importance, undergoing absorption like a milk tooth.

Of the true molars m. 1 is the largest of the upper teeth; it has three cusps instead of four, there being but one inner cusp, and it has three roots. On the right side m. 2 and m. 3 are subcylindrical and almost peg-shaped; where on the left side they are lost, the sockets show that their roots must have been almost connate, there being but little indication of division into three roots.

The molar series does not reach as far back as the posterior palatine foramen, and the vacant alveolus is very thin edged; it, however, extends back to the normal extent; and the same condition obtains in the mandible, where there is as much as 19 mm. of vacant alveolus behind the teeth.

In the mandible m. 1 it is the largest (instead of being the smallest) of the molar series. It is ovate and subcylindrical and is so much worn that its cusp pattern is not traceable, though it can have hardly had very pronounced cusps; it has two distinct roots; m. 2 and m. 3 are smaller, cylindrical and only indistinctly two-rooted.

Only one of the teeth, viz., m. 1, in the upper jaw can be taken to show any indication of trituberculism in its reduction. It is
claimed by the advocates of the tritubercular theory that in reduction teeth show a tendency to revert to an ancient tritubercular type, and the frequent suppression of the posterio-internal cusp in the white races has been held to be a reversion of this kind. But in this specimen of Colobus, although reduction has taken place in many teeth, it is only in this one that any distinct three-cusped pattern can be seen, so that the specimen does not afford much evidence in support of the theory.—Brit. Jour. Dent. Sc., Jan. 1898.

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"POISONS" IN OHIO. Under the statute of Ohio requiring the "poison and cross-bones" label on all medicines "the indiscriminate or careless use of which would be destructive of human life," the commissioner of that state recently instituted suits against two Toledo druggists for selling certain proprietary preparations in samples of which analyses made by two department chemists disclosed the presence of poisons as follows, the results of the two analyses given under each preparation:

Mrs. Winslow's Soothing Syrup: 1. Contains morphine, about 1-10th grain to the ounce. 2. Per cent alcohol, 6 5-10; morphine, calculated as morphine sulphate, ¼ grain to the bottle.

Ayers' Cherry Pectoral: 1. Contains morphine, about 1-10th grain to the ounce. 2. Morphine, as morphine sulphate, per cent 0.364; about 2 grains to 1½ fluid ounces.

Scott's Emulsion of Cod-Liver Oil: 1. Contains about 1-10th grain morphine to the ounce. 2. Morphine, ½ grain to 1 ounce. Calculated as morphine sulphate.

Dr. Birney's Catarrh Powder: 1. Contains cocain hydrochlorate, 2.50 per cent. 2. Conforms to label. Cocain hydrochlorate, 2.45 per cent.

Dr. Agnew's Catarrh Powder: 1. Contains menthol, bismuth and cocain hydrochlorate. 2. Cocain hydrochlorate, 5.32 per cent.

Bromidia: 1. Contains 15 grains chloral hydrate to every fluid dram. 2. Conforms to label. Chloral hydrate practically 15 grains to 1 fluid dram. No alkaloids or coal tar preparations present.

Dr. Wheeler's Nerve Vitalizer: 1. Contains bromid potash and chloral hydrate. 2. Alcohol, about 10 per cent; chloroform, about 1 dram to 1 pint; chloral hydrate, about 5 grains.

We understand that the essential correctness of the above analyses is disputed by none of the manufacturers excepting Messrs.
Scott & Browne for their "emulsion," who, in a convincing interview, have entered a vehement denial, asserting that morphine has never entered into the manufacture of their product, and if any was found it must have been put there for a purpose.

The act of the commissioner has been fiercely assailed, but, it would seem, without sufficient cause. On the reports of his chemists he had no alternative but to take summary action by immediate prosecutions. These reports in the cases of the notorious catarrh powders, of the soothing syrup, "cherry pectoral," and "nerve vitalizer" occasioned no surprise, and as to "Bromidia," the analysis merely verified the accuracy of its label; but the sensation was in the alleged discovery of morphine in an emulsion which was very extensively advertised as a food. Should the analyses of this emulsion prove to be correct, the men responsible for the terrible wrong inflicted upon the innocent victims of their deception could not be buried in infamy too deep or lashed with punishment too severe. We cannot believe, however, that a reputable mercantile firm could be guilty of such criminal folly. We cannot but believe that the analyses are wrong; and if right, that they are samples innocently obtained from a source hostile to the fame and prosperity of the manufacturers. This belief is strengthened by the sworn protests of the manufacturers, whose challenge for a complete investigation is so specific and positive as to compel the conclusion that they are the victims of a grave injustice.

But whatever may be the accuracy or otherwise of these reports, we agree with the Western Druggist in the declaration that the principle underlying the law and these prosecutions in Ohio is sacredly right. Too long have the makers of catarrh powders and other infamous compounds pursued their way with impunity. Morphine and cocaine in innocent disguise have been luring their tens of thousands to moral and physical destruction, and all because the people have been too indifferent or our legislators too busy or too readily influenced by the corrupt pleadings of a nostrum-fed press to come to the rescue. Every state has laws against the indiscriminate sale of poisons, which are not to be delivered to minors, nor to be sold without registration of the "quantity, kind and alleged purpose," but these same poisons, if sold under a disguised name or under false representations and promises, may be sold without limit or restriction if only put up and offered as a patent medicine. What peculiar sanc-
tity attaches to a proprietary package or label that it should enjoy these remarkable immunities and privileges? A poison is a poison if sold honestly as a poison; it is more than a poison if concealed under the disguise of a "syrup," a "vitalizer," or any other of the seductive titles that human greed can devise. If we need laws against the sale of open poisons, we need them infinitely more against these venomous secrets whose sting is in the dark and whose victims are the unsuspecting, the innocent and the helpless.—*Medical Standard, Jan. 1898.*

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**VISUAL DEFECTS OF DENTISTS.** By David W. Wells, M.D., Boston. Read before Northwestern Dental Association, Oct. 20, 1897. Since accepting the invitation to address you I have made an investigation of my case books for the last five years, in order to discover what particular optical defects are found with the eyes of dentists. It has been my good fortune to number among my patients quite a percentage of dentists, and I have taken considerable pains to classify the records of these cases and work out the percentages of the different refractive errors. The results are as follows: Simple near sight, .02; simple far sight, .02½; simple disturbance of the ocular balance, that is, of the muscles which move the eye-balls, .06; far-sighted astigmatism and astigmatism combined with far sight, .32; near-sighted astigmatism and astigmatism combined with near sight, .54; astigmatism with disturbance of muscles which move the eyes, .40. All these patients have sought help for some uncomfortable symptoms, and of course it would be very impolite of you to suspect that in any case the correction of these errors failed to give relief; and this must be conceded to substantiate the deductions hereinafter drawn.

Notice first the small number in whom far or near sight alone, without other error, was present (two and a half and two per cent), and even the comparatively small proportion of lack of harmonious motion of the two eyes, unaccompanied by other defect, six per cent.

But what are those troubles which run up respectively to thirty-two, fifty-four and forty per cent? One trouble obtrusively prominent in these cases is astigmatism. Like an octopus, it clings to far sight at the rate of thirty-two per cent, and entwines itself about binocular disturbances in forty per cent of the cases; and drags down the near sights in more than half the cases,—viz., fifty-four per
cent. Let me explain that these figures amount in all to more than one hundred per cent, because this arrangement puts some cases into more than one class. Before making this classification and study, I had thought and argued that simple disturbance of the ocular muscles for turning the eyes was the prevailing complaint of your profession, and with astigmatism it is very prominent—forty per cent.

The position you assume in working over a patient is certainly a very unnatural one, and from the oblique poise of the head would seem, a priori, to be peculiarly liable to disturb the binocular balance; the reason for which will be given later. So from this investigation the visual defects of dentists are found to be astigmatism and unbalanced ocular muscles; and although of the latter idiopathic cases exist, probably one-half are second to astigmatism. This prominence of astigmatism as a cause of eye-strain is in accord with the findings of other observers, under all conditions where the eyes are taxed.

Dr. Risley of Philadelphia has made diligent and extensive examination of the school-children of his city, this critical oversight extending over a series of years. His object was to discover the cause of the well-known development and increase of near sight during the school years; and after experimenting with the most perfect hygienic arrangement attainable, like ventilation, correct entrance of light from left and rear, and adaptation of the height of the desk to the individual scholar, still the near sight increased in about the same proportion as before. But on further analysis of the records it was found that almost none of the eyes which were free from astigmatism developed near-sightedness; and working upon this clue he corrected the astigmatism of other beginners with proper glasses, and the increase of near sight was very decidedly checked. So he makes the bold assertion that "astigmatism is the turnstile through which near sight enters the school-room."

So our inquiry seems to resolve itself, first, into a consideration of the subject of astigmatism; and it is only within recent years that we oculists have appreciated how slight an amount may be productive of severe local and reflex disturbances. In fact, the lower degrees cause more trouble than the higher. The reason of this seems to be that the eye instinctively demands a clear image, and if the error be one which the accommodation muscle can overcome by excessive and contorted contractions, it will have the clear image.
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But nervous force thus extravagantly wasted is a serious draft upon the general store of energy. This explains why one's vision may be up to the average, and yet eye-strain in a serious form exist. But if the astigmatism is beyond the power of the lens muscle to correct, these attempts are not made and the patient may get along very comfortably, but with greatly reduced vision. But with the slight error, sight is obtained by main strength and—shall I say stupidity? Certainly, if the "means of grace" are known and neglected.

Astigmatism was first carefully described by Thomas Young in 1800, and it is now known, at least by name, to most professional men and to many of the laity; but to understand its potent influence for ill requires a clear knowledge of what it really is.

The word is derived from Gr. stigma, a mark or point, and a—not literally, not a point; that is, by a tilting of the lens or the spheroidal shape of the cornea, a departure from the true spherical curve in some meridian, a luminous point is not reproduced as a point, but elongated into a line at the angle of the defective meridian. Horizontal and vertical lines cannot be clearly in focus at the same time, and as letters and objects are distinguished by the lines that bound them, the accommodation plays a sort of "see-saw," alternately focusing lines in different directions until the object is seen. In the lower degrees the crystalline lens is often contorted to overcome the difficulty. The normal eye when focused for vertical is also focused for horizontal and oblique lines; and so when reading a flat page the focusing need be done but once and maintained throughout the page.

In contrast with this, is it strange that the unnatural continuous focusing required of the astigmatic eye should derange the nervous system? The symptoms may be local or remote. When we "cut in" (as the electrician calls it) to the circuit of our nervous system, the resulting disturbance may be anywhere along the line, presumably at some weak point; so the symptoms of an eye-strain may be pain or inflammation in the eye itself, or neurotic headache, frontal or vertical, insomnia, gastric disturbance, chorea, migraine and vertigo.

Of course you are all aware that in this way carious teeth may cause neuralgia of the ophthalmic branch of the trifacial, but I am inclined to think that this condition as a factor in the etiology is rare. I have seen a number of cases where, in desperation, all of
the teeth have been extracted, sound ones, too, and, neuralgia still persisting, permanent relief has been afforded by glasses correcting a slight astigmatism. So just a word of caution in these cases: Be positive there is no uncorrected astigmatism. As before mentioned, vision may be up to or even beyond the normal. With a persistent neuralgia in or about the eye and no manifest refractive error, the palalyzing of the accommodation with a mydriatic should never be omitted, less some latent trouble be passed over. Sub-occipital headache at the so-called "base of the brain" is almost always pathognomonic of some defect in the binocular vision; but we will dispose of one eye first.

In contrast with this astigmatic eye, the perfect eye may be described as one in which a luminous point is reproduced as a point on the retina, and a clear conception of this fact would have relieved the physiologists from their unsuccessful attempts at explaining how we see things right side up when the image on the retina is inverted. The discovery of this image on the retina, the similarity between the eye and a photographic camera, has been a stumbling block to the majority, and I have yet to find a single text-book that is trustworthy on this subject. They have all fallen into the error of thinking that we look at the image on the retina, when in reality we look at the object itself.

The great physiologist, Michael Foster, who is just now affording us such a treat in his Lowell Institute course on the brain, gives the following: "As a matter of fact the field of vision, in one important particular, does not correspond to the field of external objects. The image is inverted. The rays of light proceeding from an object which by touch we know to be on what we call our right hand, fall on the left hand side of the retina. If, therefore, the field of vision corresponded to the retinal image, the object would be seen on the left hand. We, however, see it on the right hand, because we invariably associate right hand tactile localization with left hand visual sensation. That is to say, the field of vision, when interpreted by touch, is a reinversion of the retinal image."

Martin, in his work on "The Human Body," says, "a newborn child, even suppose it could use its muscles perfectly, could not seize a reachable object which it saw. It would not yet have learned that attaining a point exciting that part of the retina above the fovea (center) meant reaching a position in space below the visual
axis; but very soon it learns that things near its brow, that is, up, excite certain visual sensations, and objects below its eyes others; and learns to interpret retinal stimuli, so as to localize accurately the directions with reference to its eyes of outer objects and never henceforth gets puzzled by retinal inversion.’’

These two statements are fairly representative, and although clear and lucid, are, I think I can prove to you, not only inadequate, but erroneous. First. This reversal by one sense, the tactile, of the testimony of the outer world, as given by another sense, the visual, is not analogous with the other special senses; and during the learning lapses would occur, and pathology would furnish instances of mistakes. Second. Certain forms of congenital blindness, such as cataracts and complete closure of the pupil, can be remedied by operation. These children learn by touch the correct (erect) position of objects and their first impression when sight is restored would be an inversion of the object, according to the current theory. Nothing of this sort has ever, so far as I can find, been recorded. The case of a very bright child of six, with congenital cataracts came under my observation and I questioned her very persistently about what she saw when the bandage was removed; and she was so amused at the suggestion of ‘‘seeing things upside down’’ that it took a good deal of reassurance to convince her that I was not fooling, but in earnest. Third. This is a misconception, based on the old theory of special immediate creation of perfected organisms and finds no place in the scientific thought of to-day. It is inconsistent with the facts of evolution, which mean a regular progression from the simple by the relatively complex; and the explanation of the phenomena of sight must cover the primitive eye, as well as the perfected organ.

The study of embryology has shown that the eye develops as an offshoot from the first cerebral vesicle and when it reaches the surface is little more than a pigment spot, with a layer of epithelium. The function of such an eye could have been simply sensitiveness to light and the implication of the law of natural selection, that every minute change which was continued was of greater advantage to its possessor than a preceding stage, absolutely excludes the ‘‘tactile reinversion theory.’’ For the specialization of a sense organ in such a way that its evidence of the outer world was misleading (inverted) until corrected (reinverted) by some
other sense organ (touch), could not have been of more advantage to its possessor than a less highly developed organ which could be trusted; and natural selection would have carefully avoided propagating any such variation. The inversion is an accomplished fact as soon as the primitive eye is able to locate an external point in space, for it can never see the point till it can tell its direction; so there can be no sight beyond mere sensitiveness to light without estimation of direction.

The subsequent changes are all along this line of so perfecting the mechanism that a luminous point in space shall produce an irritant point on the retina. Thus there is no break in the contemporaneous development of the organ of seeing and the psychical act of seeing. They advance with equal step. There is no catastrophe; no period when the optical apparatus gives wrong impressions to the sensory. All organs of special sensation are simply so many doorways opening into special apartments (departments) of the external world, and so very aptly that intensity of stimulus just sufficient to call forth a sensation is called the threshold. All nerves of special sense differ from nerves of common sensation only in the differentiation and adaptation of their end organs to the particular stimuli of their respective external realities.

Although Emerson says that "thought is the property of him who can entertain it and of him who can adequately place it," yet I am pleased to acknowledge my indebtedness to Professor Le Conte, of California, Dr. Dennett, of New York, and J. Clark Maxwell, of England, for the three thoughts of the conjugate foci, outward projection, and the composite image. A cone of light emitted by a radiant point falling on a convex refracting surface is again converged to a point behind the refracting surface. These two points are called conjugate foci (literally yoked together), because the radiant placed at either focus will be brought to a point at the other focus.

In the normal eye, at rest, a luminous point twenty feet or more distant is focused as a point on the retina. If the luminous point be nearer than twenty feet, the refracting or bending effect of the eye must be increased (accommodated) so that the conjugate focus shall still be at the retina. As before stated, when the eye is able to reproduce a luminous point in space as an irritant point on the retina, the optical requirements for perfect vision are secured.
Now "outward projection" means that the retina is touched at this mathematical point, and, like all other senses, it refers the sensation back to the source—in this case along the central line of the pencil of rays. The size of the image on the retina of the largest object that can be seen at one time without moving the eye or the object is three millimeters.

Conversely, the field of vision—of clear vision—with an immovable eye is extremely limited. At the length of the arm a circle, the size of the thumb-nail, represents all that can be seen clearly, and it is only by rapid excursions that the eye sees in detail those portions that were only outlined before. The field of vision has been compared to a painting, which is hazy and indistinct except a circle one-half inch in diameter, in which the most minute details are worked out. This small area may be any portion of the picture which is desired by turning the eye toward that spot, but no two places at once. It is hard to believe this, for the eye, by rapid excursions, so quickly covers a large field that the separate sensations are fused into one.

Now, the analogy and bearing of this is important when it is understood that we do not see even this one-half inch object as a whole. Each mathematical point of which the object is composed sends out its bundle of rays, which are again converged to a point upon the retina, and from this irritation conveyed to the brain; sensation (sight) results, which refers the irritant right back along the ray-line of each point to its source. So point after point irritates the retina and is referred to its appropriate place in space, until the luminous object is reproduced in the external world by the outward projection of an infinite number of Luminous points.

To make this clear a very simple object should be used; let it be a vertical line. Now a luminous point at the top of this line produces an irritant point at the lower side of the retina, which is referred back to its source above and seen then in space. A luminous point at the bottom of this line produces an irritant point on the upper side of the retina and is referred back to its position in space, which is below. A point from the center is referred back to its place in the center for the same reason. And so with a point midway from the center to the top, and a point midway from the center to the bottom; and the process goes on simultaneously for each point of which the line is composed, and a sort of mental com-
posite results, which is the exact counterpart of the object, occupying the identical position in space, somewhat as the spiritual body is conceived to be immanent in the natural body.

To recapitulate: By the law of conjugate foci a luminous point in space corresponds to an irritant point on the retina. By the law of outward projection it is referred to its proper place in the object, and, as the object is not seen as a whole, an infinite number of such luminous points of which the object is composed are referred to their respective positions, and furnish a synthetic conception, which must be erect because each of its constituent points is in its place.

If I have dwelt at some length on the necessity of the eye being able to reproduce points, it may serve to explain the blurring that exists in far and near-sightedness, where the eye is either too long or too short, and is therefore out of focus; and what should be focal points of light are, instead, diffusion circles. But especially should it emphasize the trouble that may arise in that "not a point" condition, astigmatism, when innumerable mathematical points may produce a clear line in one direction, while in the opposite meridian diffusion circles are overlapping, forming a blurred line.

So far we have spoken only of the single eye, but we have two eyes instead of one, for a very important reason; that is, for the estimation of distance. To be sure, this can be done to a certain extent with a single eye, but all of us who have had occasion to pick up instruments with one eye engaged have no doubt about the advantage of binocular vision. The process is interesting from its analogy to the technique of surveying. The baseline is the distance between the two eyes, and this factor remains a constant. Now, at either end of this base line is set up a surveying instrument, which measures the angle of the object with the base line; so the problem resolves itself into, "Given two angles of a triangle and the included side," which we solve by a lightning process. So long as the eyes are so directed that the retinal images fall upon corresponding areas, the external projections are superimposed and there results a single impression, with the third dimension depth added to the previously flat picture.

This is the principle of stereooscopic pictures; the photographs are taken from either end of the base line, and the stereoscope is simply a contrivance of lenses to superimpose the two. This balance is maintained by a nice adjustment of the six external muscles of each
eye; but if either eye deviate slightly one image no longer exactly covers the other, and a blurring or even double vision results. This does not mean that one is "cross-eyed," for when that stage is reached binocular vision no longer exists; one eye is completely ignored and its image not noticed. But it is the slight error, the wrong tendency, of which the instinct for clear vision demands the correction, which gives rise to the unpleasant symptoms; and these may be of almost any degree of severity, and may be either local or remote; but as before stated, dull, constant suboccipital headache is seldom lacking.

The prevalence of astigmatism with disturbance of ocular balance, in forty per cent of the cases analyzed, would certainly suggest a causative relation between the two; and this is easily explained when it is remembered that the act of focusing each eye for a near object, and the act of converging the two eyes till they both point toward the same near point are necessarily associated. Both sets of muscles, the ciliary, which do the accommodating; and the internal recti, which do the converging, receive their motor fibers from the same third nerve. Normally, both muscles contract at the same time, and so, like a pair of horses, when one is called on, both respond; but with the gymnastic efforts of the ciliary to correct astigmatism the convergence muscle can do nothing but "prance," as pulling would give double images.

That astigmatism induces disturbance of these convergence muscles is no mere theory, for where they coexist, and the astigmatism alone is corrected, the binocular error either disappears entirely or is so much lessened that a prism of less strength than that first indicated suffices to give relief.

That this "outward projection" is analogous to the law of direction and outward projection of other nerves may need some illustrations. The well-known fact that animals which have muscles for moving the auricle turn the ear toward the source of the sound, is evidence that they appreciate the direction of that sound and adjust the receptive apparatus to a more advantageous position with reference to the sonorous body. A very simple experiment will convince one of this outward reference to its source of a tactile irritant. Touch the cheek of a blindfolded person with a pencil; then vary the direction of the pencil, but make contact at the same point. A difference of thirty degrees is easily recognized, and the irritant referred along
the line of the pencil toward some familiar object across the room; the irritated nerve reaches out for the source. The familiar tingling of the last phalanx of the little finger from an irritation of the ulnar nerve at the elbow is another attempt.

Commencing with nerves of common sensation, it should be noted that immediate contact is necessary—the thing must be touched; and in the lowest of special senses, taste, the thing must be touched, and touched intimately—it must be soluble.

Smell is one step higher; here finely-divided particles of matter are brought from a distance by the medium of the atmosphere, and touch the nasal mucous membrane: and reference is made through the connecting medium, the air, to the source.

Hearing is another great step; the tympanic membrane is touched by the vibrations of air caused by the sonorous body. These vibrations are borne along by the conducting apparatus till the special nerve, the organ of Corti, is touched, and the sound is referred back through the lymph and ossicles to the drum, and thence back through the air toward the source, or sonorous body. Since Newton, scientists have recognized that for one body to act upon another at a distance, some medium must intervene. So with sight, the provisional ether is that intermediate something which reaches from the luminous point and "touches" the retina. The unlimited extent of the ether gives to sight unlimited range, and, although light travels one hundred and eighty-six thousand miles per second, it takes three and a half years for light to reach us from the nearest star.

The light which reaches us to-day from some of the more distant stars left them before America was discovered; before Jesus was born; before the pyramids were built, and, for all we should be able to see, they may have ceased to exist long ago, though their light still shines.—*Dental Cosmos, Jan. 1898.*

**Artificial Teeth for German Soldiers.**—The German war office has determined to furnish artificial teeth gratis to such soldiers as may need them.

**Diagnosis of Pregnancy.**—Dr. Park, of Philadelphia, reports that pregnancy may be diagnosed as early as twenty days after its occurrence by a study of the triple phosphates in the urine. The feathery appearance disappears from the tips of the crystals sometimes from one side only at first, followed by a like disappearance from the other side. If the fetus dies the normal appearance is renewed. This diagnosis of course affords the advantage that it can be made without suspicion on the part of the patient.—*Am. Gyn. and Obst. Jour.*
Letters.

CRITICISM OF PATENTS BY DR. HOWE

Dear Dr. Crouse: New York, January, 1898.

Your recent circular with a sample of alloy, and one just received with a sample piano-wire broach, are at hand. I shall try the alloy carefully, and will be glad to avail myself of the opportunity to get broaches at a lower price, but I write especially to call your attention to your attitude regarding secret preparations and patents, which seems to be adding injury to that already inflicted by these evils.

I have taken pleasure in the past in commending your course in the formation and conduct of the Dental Protective Association, in which you have rendered us all great service; but now that you have gone in the trade of making and supplying us with material, it seems to me that by adopting the methods which have always been detrimental to the ethical and material interests of the profession, you are likely to inflict upon dentistry so great an injury on its professional side as to more than counterbalance the material benefits you have conferred.

I refer in the first place to continuance of the practice, common in the trade, of advertising alloy and cement made from secret formulae, and claiming superiority while withholding all information.

We cannot expect to be treated on an ethical plane by tradespeople or their employes, who have no other object than to make money, nor can we always expect the average dentist who thinks he has discovered a good thing to disclose the secret, if by so doing he thinks he will lose money. But I confess to have been greatly disappointed when the earliest advertisement of supplies by your company included an alloy made by you, without disclosing the formula.

This, together with your excessive price, $10, for your patent handpiece, made me conclude that I would not take shares in the Supply Company's stock, and made me feel like writing you in this way at that time. It was deferred, however, for more urgent things, and would probably have been indefinitely postponed but for your recent circular, which came just at a time when I was urged to say something at a coming dinner about the evils of secrets and patents.

This led me to think that perhaps I ought to write you, to say that it seems to me your action in the interest of your Supply Company, taken in connection with your professional standing and rep-
resentative position, is likely to have a more demoralizing effect upon professional standards than any recent event.

It is generally believed that professional development for dentistry started when secrets began to be disclosed, when journals and societies and schools were established to spread knowledge and to inform all who would learn. The fact that tradesmen soon went into journalism, and that they have traded on secrets and patents to our damage, has made it clear to the observing that their interests were not the interests of the profession.

If the disclosing of secrets and freedom of knowledge are signs of a professional spirit, why should anyone who claims to be in good professional standing think himself privileged to dispense secret compounds for professional use? So far as I am aware, dentists who have gone into this form of trade have generally lost caste, but they have been tolerated, and the objection to it has never been so pronounced as it should have been or this relic of non-professional days would have been stamped out.

Your company, however, is likely to do additional harm by confusing the moral sense of your dental shareholders—as they presumably receive larger profits from secret preparations, they are tempted thereby to overlook the ethical offense, and the rising generations of dentists, as well as those already here, see that the claim of dentistry to be a liberal profession is good only to the point of its supposed effect on the pocket.

The secret is as serious an enemy of professional progress as the patent, because if one may retain information that he considers valuable for the purpose of making money, the professional spirit that gave origin to the early liberal movements will soon die out, and the tendency will be for each one to figure how he can make the most out of any new idea, irrespective of ethical claims. Whereas, the most evident evil that is inflicted by the patentee is the exaction of an exorbitant price.

In this latter respect dentists have suffered in a great measure, because their ethical standard has not been such as to make it disreputable for a dentist to take out a patent. This is the fountain head of almost all our patent woes, and will so remain until there is a change in this respect, or in the patent laws, or in both.

If Donaldson had cared for professional standing, and for an ethical standard that forbade obtaining a patent, more than he cared
for the money he could get out of the latter, there would be no trouble over the broach he made. But the ethical standards of dentistry have been either so low or so lax that men of high standing have not hesitated to patent the most trifling things. They are the offenders against their professional brethren, and not the tradesmen to whom they sell the power to extort and to hinder improvements.

There seems to be no consistency in denouncing those who are in trade, when they use such power, put into other hands by those of our own number, who profit by the deal and escape the condemnation they deserve; and I have regretted very much that you seemed to place yourself and the Supply Company in a glass house from which to throw stones at the tradesman. It seems to me as if withholding the formula of your alloy and obtaining a patent on your handpiece places you as a dentist on the same plane with Donaldson and the other dental patentees who have sold us out to the trade. Furthermore, in the price you charge for the handpiece you seem to me to be taking the same amount of advantage of the situation as the S. S. White Company do, only it happens that on piano-wire broaches they think they have a monopoly and can therefore put their hands deeper "into the pocket of every dentist."

It has seemed to me as if you were missing a great opportunity to place the dental supply business on a higher plane than it has been, and that as a dentist you might have set a notable example of professional spirit, and have been in a position to strike at the source of most of our patent evils, which lies in the low state of ethics among us, that permits a man to retain his standing among dentists after patenting his invention.

I have written to you thus because I have had a high appreciation of much that you have done, and if my view of the matter is incorrect I should be glad to be better informed, for I wish to be as near right as possible in my judgment. I remain, sincerely yours,

J. Morgan Howe.

REPLY TO CRITICISM BY DR. HOWE.

Dr. J. Morgan Howe, CHICAGO, Feb. 15, 1898.

Dear Doctor:—Your letter to me is published in full in this issue of the Digest. I asked you to allow me to publish it, because the questions you bring up are not well understood by the profession. All the discussions on this subject that I have ever seen have been
misleading, because the evils were attributed to wrong causes, and as you make the same mistake, your conclusions are faulty. As regards professional patents, you commit the error of not making a clear distinction between those which are legitimate and illegitimate. There is a wide difference between protecting meritorious invention and sham patents, and they must be kept separate in this discussion.

I believe that the patenting of new and useful appliances has been of the greatest benefit to us as a profession. The fact that an inventor can protect his devices and thereby receive compensation for his labor, is surely a greater stimulus to effort than as if whatever he accomplished, although it might be the labor of months or years, had to be shared equally with others or given away. Although I have no ability in this direction myself, I cannot see why an inventor should not have material compensation for his labor.

A stronger reason why this patent protection on legitimate inventions has been a benefit to us is the fact that when the inventor has gone as far as he can, the drawings and crude plans are given to the manufacturer, who must go to the expense of perfecting them so that they can be made useful, and the fact that when they are ready to market he is protected, makes it safe for him to go to this extra outlay of money. Consequently, implements are furnished to us in a much more perfect shape, although perhaps at an increase in price over what they would be in a crude state.

In the arguments from an ethical standpoint against patents I have never seen nor heard a presentation which would stand a careful analysis. By confounding the facts in regard to legitimate invention with the dishonest and unscrupulous methods practiced under cover of sham patents, a line of reasoning is made to look plausible, although when dissociated from legal invention it presents an altogether different picture. In my work of the Protective Association, which you so kindly commend, I soon found that the greatest wrong inflicted upon our profession was not license patents, which were bad enough in themselves, but the abuse which was many times greater than all these combined was the invalid patents on appliances which we use in our practice.

Space will not permit me to go into a detailed account of these abuses—this will be discussed in another communication to the profession soon—suffice it to say that nine out of ten of the patents on
our implements supplied in the past would not have stood a legal test; but as the situation has been, with most of the dental supply people combined in a trust, and no one to look into the matter, a sham patent answered their purpose just as well as though it had been legitimate, and the extent of this kind of abuse has been much greater and has cost the profession many times more than the royalty claims, such as those imposed by the Goodyear Vulcanite Rubber Company, the International Tooth Crown Company, and other less prominent organizations.

It was to remedy this abuse, which had been submitted to with scarcely a man in the profession knowing the wrong done him, that caused me to organize another corporation, to operate in connection with the Protective Association and thus band us together in a way to secure more permanence to the organization, and also to make us masters of the situation. No other consideration that I can imagine would have induced me to undertake so enormous a task, but with valuable aid from some members of the profession and others outside I have been moving along carefully and developing the business as best I could.

I have furnished four-fifths of the money necessary, and have at last gotten the Supply Company in a condition where it is no longer a financial burden to me personally. Now if the wrongs which existed are not remedied, it is not I, but just such men as you and others, who know the situation and yet give the movement no support, who will be to blame. In the meantime I am practicing dentistry for a living, for I have given what services I have rendered to the Supply Company and Protective Association gratuitously, there being no salary connected with either. All the above statements can be easily verified, and should convince you that if others desire a reform as much as I do, we will have it.

Now let us see if your criticisms and fears are justifiable—the "patent handpiece with the excessive price," for instance. It is very evident to me that your knowledge of the supply business is deficient. That handpiece is one of the most economical things ever offered, and there is not a dollar added as patent royalty. I did not invent it, in fact never invented anything, but I bought the patent for the Supply Company so as to be able to make every part as perfect as possible, which has necessitated a large outlay before getting any profit. This point has already been explained.
You must remember that one important item in any pursuit, whether mercantile or professional, is sufficient profit to warrant its continuance, and the expensive way in which dentists require the supply business to be conducted makes their supplies more costly than they should be, but this problem cannot be discussed here.

The other absurd proposition is that the formulae of alloys should be published. The publishing of formulae for alloys, and the attempts by so many to furnish alloys from these formulae, has been detrimental to the dental profession, as it is one of the reasons for the great array of worthless preparations now on the market. They have been made in all sorts of combinations, with no regard to the laws which govern the chemical union of metals, and no one make has shown the same qualities twice in succession. Out of seventy or eighty tested scientifically, there was not one that an honest practitioner would use if he knew how defective it was, but these defects could not be detected when the amalgam was first put into the cavity, so that many of the worst have by some miscalculation become very popular, and much injury has thus been done to patient and operator before the faults became apparent. The careful observer must have seen the constant failures, no matter how carefully the work had been done, when the test of time was applied to these fillings in the mouth. The above facts will explain to any intelligent mind the cause of the almost universal imperfections in amalgam fillings.

With the above picture before me, how could I best help my profession? Not by giving them a formula, but, realizing the seriousness of the situation, I wished to see them furnished with an alloy on which they could depend. With this object in view I had the Supply Company engage an expert metallurgist for this work, and as no one but a practical dentist can test alloys knowingly, I gave him all the assistance I could. After many months of expensive labor and experiments, to say nothing of the cost of complicated instruments whereby perfection and uniformity could be assured, why should the conclusions arrived at be made public? This course would not only be manifestly unjust to the stockholders, but would probably result in a repetition of the defective and deceptive mercantile methods now in vogue.

Now, Doctor, I trust that I have answered your questions. Before I close let me ask what you are doing to benefit your pro-
fession, or by what right you criticise or "throw stones" at those who have at least tried to do what they could to help their fellow practitioners. You criticise the present methods of conducting a dental supply business, but you offer no solution of the difficulty. Remember that reforms are not brought about by criticising others, nor by standing aloof because the methods adopted are not in accordance with your views.

Hoping that I have explained my position, I remain,

Yours truly,

J. N. Crouse.

LETTER FROM CANADA.

To the Editor of the Digest, Montreal, Feb. 19, 1898.

Dear Editor:—We are glad to hear that the dental board of the Province of Quebec have the revision of the Dental Act in hand. We hope they will succeed in reducing it to a third the size it is at present, and make it so that it can be understood, as the present one is beyond the comprehension of the legal lights.

On the 7th instant the Montreal Dental Club held its first annual dinner at the Hotel Carslake; it was a success in every respect and will be repeated. It is probable that this body will hold a dinner before the summer vacation, and we hope the ladies will be invited.

The members of the Dental Association of the Province of Quebec had the pleasure two years ago of entertaining the members of the Vermont State Dental Society. They now reciprocate by inviting us to their annual convention which will be held at Rutland, Vt., March 16-18.

Fraternally yours,

Montreal.

Baltimore Letter.

Dear Digest: Baltimore, Feb. 14, 1898.

As a reader of the dental journals I cannot but be struck with the amount of time and energy expended, just at present, upon the discussion of matters having reference to the management of the affairs of the dental profession. Every monthly that comes has a new "Richmond" who knows just what to do to make an ideal profession. What is the wonder, after trailing through the heat and mire of these discussions, that one's fevered imagination disturbs his slumbers with visions of immense sausage factories with capacious vats, built especially for the reduction to their ultimate elements of all dental examiners; or that in his dreams he is visited by mysteri-
ous forms who tell of escaped examiners hidden under a log in a dense wood, to be produced and vatted for a certain consideration; others fled to the marshes of New Jersey, living in a muskrat burrow, feeding on roots and herbs; yet another hiding in the graveyards of the Quaker city. Merciful heavens, protect the hunted.

The vision passes, and in its place stand long lines of college professors, tall and short, young and gray, marching off to Cuba to fight the yellow fever and the Spaniards; none has escaped, all are alike doomed.

Then appears a figure like the woman of ancient Alexandria, bearing in one hand a bucket of water and in the other a torch, declaring—"With this torch will I set fire to Heaven, and with this water will I quench the fires of Hell, that men may serve God for the love of Him alone."

Oriole wants to unfurl a flag of truce and let the breeze of good fellowship and love of humanity float it out over a united profession. Enough of boasting, fault-finding and name-calling. Contrast the work the colleges are doing to-day with that done ten years ago, but not with that which should be expected fifty years hence, and congratulate the men who, when the day's work in the office is done, labor yet far into the small hours of the night that they may fulfill their obligations to the students and to the profession at large.

Does someone say there are exceptions to this that we would criticize or legislate against? Not so, my brother, the exception will not survive the loss of self-respect; he will soon drop out when he gets lonesome. Then why should a man be less a brother because he is a member of a board of dental examiners? Unless, perchance, he is driven with the hot iron of ridicule and unfriendly criticism to think and say things in retaliation which are unseemly. Give him a chance, if he is to be a permanent fixture, to right himself and look amiably about upon his surroundings. Do not deny that these men, too, are willing to pay the price of their promotion, and if there be those who can't pay, they too will drop out; the debtor soon grows shy.

Above all I plead for a broader conception of professional relations, self-abnegation, ambition for the advancement of the whole, absence of personal interference with matters which should be settled by organizations. If an editor, a writer, a professor or an examiner be righteously indignant, let him spend his surplus
energy in scientific research, in telling of a better way to fill teeth or treat a disease, and we will all vote him a more decent, companionable fellow. Journalism, colleges and examiners will all grow better.

Our western man has lost his suit and his attorney has introduced into our legislature an amendment to the dental act, involving a change in the charters of dental educational institutions and providing for the licensing of such as he. It is possible that the law approved by the state association will meet with some opposition from this source in spite of the fact that the approved measure would afford relief to the young man. This goes to prove Oriole's contention, that after the imprudent and unwise execution of law, the officers must face an indignant public. The people make and unmake laws; they must be finally heard.

Cordially yours; Oriole.

PHILADELPHIA LETTER.

PHILADELPHIA, Feb. 21, 1898.

Dear Digest:—Some days ago we learned that a young man who has been visiting the dentists of this city in the capacity of salesman for a western house, and who has never lost an opportunity to disparage "Fellowship" alloy, is now making personal attacks upon Dr. Crouse. He is not satisfied that dental materials should stand solely upon their merits, but says we are all deceived by "our friend Crouse." Not only does he criticise Dr. Crouse's private affairs, but he questions his integrity in conducting the affairs of the Protective Association.

This young man further states as a means of prejudicing the minds of the Quakers, that Dr. Crouse claims for "Fellowship" alloy "that it contains no copper and does contain a percentage of gold." Now as we all know that no such claim has been made for this material, and as we have the greatest respect for and confidence in Dr. Crouse, you can imagine that this young man did not leave Quakerdom in as sanguine a condition as he entered. He received some wholesome advice from several personal friends of Dr. Crouse, and was informed that false statements did not help him to sell goods.

When this information was given to us, and it came from reliable sources, we thought of the aged lady who was always able to find ground for thankfulness in everything. When the fact that she
only had two teeth was referred to she replied, "Yes, and I thank the Lord that they meet." So we feel thankful that the young man in question is still young and will have time to profit by experience and learn that it is not best to allow business enthusiasm to carry him into indiscretion.

We hear considerable complaint just now about the recent action of our newly appointed state board of dental examiners. It was announced that the board would hold its examinations at a time suitable for all the colleges of the state except one, and that it would hold another meeting two months later for the convenience of this one college. All arrangements were being made to that end, but now the mandate goes forth that this must not be, lest the students of the one school shall not receive the same treatment as those of the other four. Now the graduates of the four schools must wait in idleness and under much expense for two months, simply to satisfy the notion of the fifth. The official proclamation has been sent out to give notice of the change of time of examination and college men tell us there is no redress; at least, not at present.

The Dental Protective Supply Company is to be congratulated upon its latest achievement in tooth making. We have just seen some of the last baking at the Philadelphia branch. They are made from beautiful molds and are of excellent texture—two points seldom met with in artificial teeth.

We suppose you have noticed the recent attacks made by the Items of Interest upon one of the colleges in this state for its mode of advertising. There is no doubt much room for complaint; if the schools are not ethical they cannot expect very high standards from their graduates. At the same time, however, it would be well for some of the journals which are constantly theorizing upon the different phases of this subject to remember that ethics, like religion and charity, begin at home. The essence of any of these is in the every-day practice or living of them. The most complete code of ethics ever written is the little Golden Rule.

A very interesting paper was presented at the last meeting of the Odontological Society upon "Empyema of the Antrum." The essayist was Emma E. Musson, M.D., one of the brightest professional women of our city. The subject was discussed by Drs. M. H. Cryer, D. Braden Kyle, C. N. Peirce, George W. Warren, and W. G. A. Bonwill, and much interest was manifest upon all sides.
We regret to record the death of one of our members, a hard and
faithful worker and one who for years had been active in society
matters. Dr. Alonzo Boice has passed from this life since your
last issue.

Cordially yours, The Spectator.

NEW YORK LETTER.

To the Editor of the Digest, New York, Feb. 18, 1898.

Mr. Editor:—It will be noticed that we have reported an unus-
ual number of deaths lately, and all acquaintances. In noting an
account of the first use of the mallet on our own teeth by Dr. Atkin-
son in 1863, we remember that all at that clinic except ourselves
are dead.

The filling was on the proximal surface of the left superior third
molar. The tooth had been aching, and a filling of Hill’s stopping
had been placed in the cavity some months previous. The first
pieces of gold that Dr. Atkinson placed at the cervical border he
dipped in pure creosote. It was a fad of his at that time, but we
had the taste of creosote for months afterward. The filling is now
becoming defective, after all these years of use, but the wear seems
to be on the grinding surface, and not at the cervical border. The
instruments had coarser serrations than those now used, and the
mallet was a hard rubber one. We give the details, thinking they
may interest the younger fraternity. Little do they know how their
fathers plodded for their good.

We wish to give a word of warning—look sharply after rough
edges on the teeth. You may become alarmed for your patients at
what you will see. We recently had a serious case. A lady, hav-
ing an upper denture occluding upon a goodly number of lower
natural teeth, came to us in agony. She could not tell what the
matter was, but had to write it out on paper. Our examination
showed the cutting edge of the cuspid abraded to a beveled form,
the longest portion being on the lingual edge, and on it a little fra-
ture like a saw tooth. For some two months the tongue had been
continually moving from point to apex across the irritant; the agony
had become unendurable, and all the tissues on that side of the
tongue were frightfully congested. We at once removed the rough-
ened edge as best we could, and then gave a teaspoonful of a satu-
ated solution of salicylic acid, to be held in the mouth for a minute,
and by thoroughly cauterizing the entire oral cavity we presently
gave the patient some relief. After prescribing a mouthwash and gargle we sent her home and she steadily improved from that time, so that now the use of the tongue has become normal.

We did not tell the patient the danger she was in, but it was very plain to us. An acquaintance of ours has a well matured cancer in the mouth from the same cause, a fractured tooth. Concerning the death of General Grant, Dr. Frank Abbott, of New York, whose patient he was, states that he had a slight irritation at the base of the tongue, caused by a broken molar tooth, to which he paid no attention. He continued to smoke; the tooth continued to irritate the parts, lacerating the surface, and by and by the tissue began to develop new cancer cells, and almost simultaneously with the development of new cells was a breaking down and development of a characteristic epithelial growth. The diseased process began to extend down the pharynx, involved the lymphatic glands, and when it reached a point that made it almost impossible for him to tolerate the pain he applied for relief, but it was too late.

We echo Professor Peirce's views concerning the application of the term "stomatologists" to the new National Association. Let the younger members in the future use it if they are qualified to take full surgical care of the mouth. How much glory did our profession get by catering to the medical profession for recognition? This stomatological move is a dog of the same breed, except that he has a shorter tail and a larger mouth.

What a prolific writer is Brother Black. We think the coming profession will appreciate his writings more than the present, judging from what we hear. We wish that the walking might be good, for we should like to be in attendance at the odontographic clinic in Chicago. It is immense.

We just learned this sad piece of news. Dr. N. W. Kingsley has been ailing for some time, and is to-day a very sick man. To add to his misfortune, Miss Smith, who has been his very competent assistant for many years, dropped dead a day or two ago. Dr. Kingsley has many admirers of his skill and personal character, and all wish him a speedy return to health.

We recently saw the agent for "Elite Advertising" of the Astoria-Waldorf, but we did not think it would benefit us. He had a list of prominent dentists who thought otherwise, which was shown to prove that leading dentists do approve of elite advertising.
Here is an item given us by Dr. Hillier, of New York, which we think valuable, for stamping the grinding surface of gold caps. Take a cuttlefish bone, and with a ribbon saw split the bone and press the plaster tooth into the inner surface of the bone, made available by the split. This will give a depressed impression of the cusps. Then cut gates for the impresses and place together another portion of the slab split off. You have a simple little ingot, and with fusible metal that will melt at boiling water point you obtain a metal die; very simple, but quickly made and very efficient. If one has a number of plaster teeth in a model and desires to use one or more, split off the number needed for use and proceed as described.

Poor Barrett! Woodman, spare that tree. The editorials of the Digest are truly "items of interest." Who thinks a disease can be patented? A bright out-of-town dentist asked us what we thought of illustrating dental offices, and we answered that it told its own story. It reminds us of a statue or bust once shown in a picturesque journal, and a man out west likened it to something—what was it? The Western Dental Journal had it.

We are satisfied on good authority that all the gossip concerning Dr. Baker, the newly appointed dental commissioner of Connecticut, does not in any way involve his reputation as a dentist or as a gentleman. His standing as a practitioner, his high social position and his property holdings are all quite phenomenal. We learn from a reliable source that he was so popular the governor of Connecticut offered him a position on his staff, but he refused it in favor of a friend whom he thought better fitted. He was then asked if he would take a position as dental commissioner, and accepted. To be sure he has no diploma, but few who hold diplomas are his superiors. We ourselves have none, but we have taught in four dental colleges.

The monthly meeting of the Odontological Society was held Feb. 15, and the paper of the evening was "The Manifestations of Syphilis in the Mouth," by Dr. L. Duncan Bulkley, of New York. The discussion took an easy style that begot freedom of expression, such as is not often seen among dentists. We attributed this to the rare gift of the president, Dr. S. G. Perry, who generates this atmosphere. Dr. E. S. Gaylord and Dr. F. P. Hodson were the clinicians. The latter gentleman exhibited some matrices of great simplicity.
and economy. Dr. Gaylord gave a clinic in gold filling, and his personality in operating must be seen to be appreciated. His facial expression cannot help but inspire confidence in the patient.

Clinics are to be made more and more a feature of this society—a commendable proceeding. We believe that this society has it in its power to retrieve anything it may have lost by dissension. Chicago to our mind shows wisdom in its liberal instruction. Clinics have done more than any one thing to make societies what they are, and New York owes much in this direction.

The First District Dental Society held its regular monthly meeting Feb. 8, and the essayists of the evening were Dr. John T. Usher and Miss Martha Smith, the latter from Kansas City, Mo.

Cordially, New York.

NEW JERSEY LETTER.

To the Editor of The Digest, Newark, Feb. 23, 1898.

Mr. Editor:—The past month in society circles has been taken up largely in making the final touches to the new dental law, and in preparations for the annual dinner of the Central Dental Association.

Several new features were introduced into the dental law, making it equal if not superior to the ideas of Dr. Ottofy. They are substantially as follows: "That the state board may, without the customary examination, issue its license to any applicant who shall furnish proof satisfactory to it that he has been duly licensed, after examination, to practice in any state, after full compliance with the requirements of its dental laws, and has been lawfully and reputedly engaged in said practice for five years preceding his application, provided however that his professional education shall not be less than that required in this state." It has also a provision to prevent any unlicensed person from practicing under cover of the name of a registered practitioner.

An article is aimed at the "associations" as follows: If any association or company of persons, whether incorporated or not, shall engage in the practice of dentistry under the name of a "company" or "association," or any other title, such company shall keep displayed in a conspicuous place at the entrance to its place of business the names of each and every person employed by said company in the practice of dentistry.
It also provides for an annual registration. These features make it to our mind one of the best laws in existence, and that it will soon be on the statute books seems very probable.

The annual meeting of the Central Dental Association was held on the evening of the 21st instant at Newark, when two hundred dentists from all over the country sat down to a feast of good things.

Hon. James M. Seymour, the mayor of Newark, responded to the toast of "Newark and Her Industries" in a very eloquent speech.

Prof. Dwight L. Hubbard, dean of the New York Dental School, spoke of "Professional Requisites, or Quantity versus Quality." He maintained that basic principles should be taught students more thoroughly, and not general or special lines of practice; that money making should not be the dominant feature in choosing and practicing the profession, but that honesty of purpose and desire to benefit humanity should be the ruling principles, and that incidentally these would the sooner and surer bring financial success and the true and lasting confidence and respect of the people; that too often the aim of the student was to finish his course in the shortest possible time, which was a bar to his future success and usefulness; that natural ability counted for much in the future verdict of the people, and that theory alone would never suffice to bring the looked-for success.

Dr. O. E. Houghton, of Brooklyn, spoke of the friendly relations which have always existed between the societies of Brooklyn and New Jersey.

Dr. Louis Ottofy, of Chicago, spoke on "Faculties versus Examiners." Dr. Ottofy eloquently maintained that a high preliminary standard of education was necessary to raise the standard of the profession, and that the Faculties would sooner or later see it, and so again restore perfect harmony between the two organizations, to the benefit of the whole profession.

Dr. R. Ottolengui, of New York, talked on "Not for one faction, but independent dental journalism for the whole profession." Dr. Ottolengui said that the *Items* under his editorship would make three special lines of action the coming year; to secure an amendment to the patent laws to prevent any patent being issued on any method for relieving pain in the mouth; for a uniformity in the dental laws of the various states, and for building up the Dental Museum at Washington.

Among those present were D.s. C. A. Woodward, J. Morgan Howe, E. A. Bogue, J. Bond Littig, S. E. Davenport, V. H. Jackson, all of New York; Prof. Taylor, of Hartford; Prof. Stellwagen, of Philadelphia.

At midnight the company dispersed, and another year's history was added to the C. D. A. Cordially yours, "HORNET."
FUTURE OF THE DENTAL PROTECTIVE ASSOCIATION.

Shall the work of this body be continued, and if so, on what basis? Since the International Tooth Crown Company has again started suits in New York within the last few weeks, and other license-patent companies are preparing to begin when the way is clear, it is a good time to consider whether the Association shall be kept up, and what shall be its policy. Will it be best to continue to protect non-members as well as members, although the former do not unite with us nor contribute to the support of the organization?

We have been urged both ways. Many wish us to continue as in the past, but others, who seem to be in the majority, make a strong appeal to have matters so arranged that only the members will be afforded protection and those not in the Association will have to take care of themselves.

We have received hundreds of letters within a month that this has been the cheapest protection and the most profitable investment ever made; and, in fact, as conducted it has been an expense of only $1 per year to each member for the last ten years.

We would suggest a better plan than either of those proposed, and in view of the recent suits instituted in New York it can easily be accomplished at this time. If each member of the Association will impress upon his neighbor what has already been accomplished by the Protective Association and the necessity for cooperation at this particular time, the membership of the Association can be easily doubled or tripled. Why should this not be done?

ARTICLES AND LETTERS THIS MONTH.

The case reported by Dr. E. C. French is good evidence of what nature can sustain under the most trying conditions, and it also shows that if pulps are properly capped they will live, which should give more faith in this practice. We saw the tooth and to all appearances the pulp tissue was in normal condition, and there is
no telling how much longer it would have remained so had not an abscess formed on the end of the other root.

The address by Dr. W. L. Skidmore contains two or three valuable suggestions. He lays stress upon the benefit accruing from associated effort. When all the dentists in a small place meet together for consultation and discussion of affairs, it cannot help but result in good to all of them. These clubs also educate the dentists into attending state and national dental organizations. As Dr. Skidmore says, the most prosperous men in the profession are those who attend society meetings and read dental journals.

While cases of electroplating are not rare, the one reported by Dr. F. N. Brown presents some peculiar features. We would suggest that a little air might have remained when the crown was cemented on, and this allowed the saliva to act on the cement, and the acid aided the process of electroplating.

The article by Lee S. Smith is worthy of careful thought and consideration. As he says, a man who tries can always get to the top, and lack of ambition is the cause of most failures in dentistry, as well as in other pursuits.

The letters this month are full of interesting gossip as usual. We would call special attention to the one from Dr. J. Morgan Howe and our reply to it. One phase of this subject is admirably dealt with by Dr. J. A. Chappie on page 112 of this issue. We apprehend that this subject of patents, formulae, ethics, etc., will bring forth much discussion, as it is one which is occupying the attention of the dentists at present.

TENTH ANNIVERSARY OF ODONTOGRAPHIC SOCIETY OF CHICAGO.

One of the most notable clinics ever held was the recent one under the auspices of the Odontographic Society of Chicago, Feb. 21 and 22, 1898. There were seventy-six distinct clinics, the largest number ever given at one meeting. The society received great stimulus, as there were one hundred and fifty new applications for membership.

There were two hundred and fifty guests at the banquet at the Palmer House Tuesday evening. The banquet and the whole meeting also were especially beneficial in a social way, as new acquaintances were formed and old friendships strengthened. Be-
sides a host of city dentists there were many present from other states as well as points adjacent to Chicago.

The papers read Monday afternoon and evening were very interesting and valuable. Dr. J. H. Woolley, of Chicago, read a paper on "The Application of Heat in Dentistry for the Destruction of Pathogenic Germs." In the discussion it was denied that sufficient heat could be applied to the teeth to kill microorganisms, but it was agreed that by getting the teeth thoroughly dry germicides acted more readily.

Dr. C. R. Taylor, of Streator, Ill., read a paper on "Metal Posts for Anchorage of Fillings in Incisors and Cuspids." This method was used considerably twenty years ago, but at that time a thread was cut on a gold pin and this was screwed into the tooth, while Dr. Taylor's plan was to anchor the post with cement.

The third paper was by Dr. G. V. Black of Chicago, on "The Welding Property of Gold, with Demonstrations." The chief point made was that gold should be thoroughly and uniformly annealed. He recommended annealing over mica instead of drawing through the flame of a lamp. Many of the facts in this paper were given to the profession in 1869, in an exhaustive article by Dr. Black before the Illinois State Dental Society. At that time the important fact was first made public that to make a cohesive gold noncohesive it was necessary only to subject it to the vapors of ammonia.

The paper which probably elicited the most discussion was the one read Monday night by Dr. J. Taft, of Cincinnati, on "The Influence and Power of Association in the Dental Profession." He gave a resume of the first society, and from that on those societies which had since influenced the profession for good. Dr. Taft omitted one important organization, the Dental Protective Association, but the discussion brought out the fact that this, probably more than all other associated effort combined, had benefited and strengthened the profession.

Dr. E. S. Talbot, of Chicago, gave a paper on "Degeneracy as Applied to Deformity of the Jaws and Irregularity of the Teeth," and gave quite in detail his observations in this and foreign countries. There was not much discussion, for, as one speaker said, the opinions on this subject were a matter of the future rather than of to-day, as not enough facts were known as yet to form definite conclusions.
“Some Thoughts on Alveolar Abscess,” by Dr. A.W. Harlan, of Chicago, was the last on the program. The chief point was using the medicinal preparations in a more dilute form. The essayist condemned the use of sulphuric acid, and it is our opinion that this agent is being too generally used for enlarging the pulp-canals.

**Notices.**

**FALLS CITIES DENTAL CLUB.**

The midwinter meeting of this organization was held at Louisville, Ky., Jan. 22, 1898. The afternoon was devoted to clinics, and a banquet followed in the evening.

**NORTHERN IOWA DENTAL SOCIETY.**

At the annual meeting of this society, held at Mason City, Sept. 7-9, 1897, the following officers were elected for the ensuing year: President, Dr. G. N. Beemer; Vice President, Dr. A. N. Ferris; Treasurer, Dr. G. H. Belding; Secretary, Dr. Wm. H. Steele.

**ILLINOIS STATE BOARD OF DENTAL EXAMINERS.**

The next meeting of the Illinois State Board of Dental Examiners will be held in Chicago, March 12, 1898, in the rooms of the Board of Education at the Schiller Building. All applicants should notify the secretary of their intention of taking the examination.

J. H. Smyser, Sec'y, 70 State street, Chicago.

**DELTA SIGMA DELTA BANQUET.**

Chicago members of the dental fraternity, Delta Sigma Delta, had a banquet at the Victoria Saturday night, Jan. 29, 1898. The banqueters were from the supreme and Beta and Eta chapters, the three Chicago chapters, and they filled the hotel dining-room. The program of toasts was as follows: "Welcome," R. B. Tuller; "Past, Present and Future," G. V. Black; "The Supreme Chapter," A. H. Peck; "Our Literature," Louis Ottofy; "New Material," G. W. Schwartz; "The Condition of the Goat," T. J. Gilmer; "The Glad Hand," Don M. Gallie; "Beta Chapter," C. M. Rankine; "Eta Chapter," H. F. Echternacht. College songs, mandolin and vocal music, and recitations were interspersed between the toasts, and an elaborate menu was discussed.

**LATEST DENTAL PATENTS.**

<table>
<thead>
<tr>
<th>Patent No.</th>
<th>Description</th>
<th>Invention By</th>
<th>Location</th>
</tr>
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<tbody>
<tr>
<td>596,450</td>
<td>Tooth-brush</td>
<td>Fred S. Allen</td>
<td>Valparaiso, Neb.</td>
</tr>
<tr>
<td>596,399</td>
<td>Speculum</td>
<td>George R. Fox</td>
<td>Plaquemine, La.</td>
</tr>
<tr>
<td>596,254</td>
<td>Dental disk-holder</td>
<td>George W. Watson</td>
<td>Passaic, N. J.</td>
</tr>
<tr>
<td>596,667</td>
<td>Dental chair</td>
<td>Nicholas M. Rose</td>
<td>Bowie, Texas.</td>
</tr>
</tbody>
</table>
597,099. Artificial tooth, Houston M. Carroll, assignor of one-half to J. P. Oldham, San Antonio, Texas.
597,359. Fountain spittoon, George E. Johnson, assignor to Peerless Fountain Cuspidor Company, Fort Wayne, Ind.

TRADE MARKS.
31,003. Dental plugs or other fillings for teeth, either temporary or permanent, Edward F. Andrews, Detroit, Mich.
31,073. Fancy and perfumed soaps, perfumery, mouth-washes, tooth-washes, tooth-pastes and powders, toilet powders, hair pomades, and other oils and greases for toilet use; Lever Bros., Limited, Port Sunlight, England.
31,186. Chemical compound used as an antiseptic, Knoll & Co., Ludwigs-hafen, Germany.


News Summary.

Correction by Dr. Beers.—Dr. W. George Beers, of Montreal, Canada, writes that he is making a specialty of consultation, but has not retired from practice, as was stated in our Canadian Letter for November.

Dr. George W. Warren Honored.—At the winter semi-annual meeting of the senate of Rutherford College last week the honorary degree of M.A. was
NEWS SUMMARY.

conferred by a unanimous vote upon Dr. George W. Warren, chief of the operative clinic of the Pennsylvania College of Dental Surgery. Rutherford College is one of the oldest institutions in the South and has previously recognized members of the medical and legal profession in Philadelphia.

APPLICATION FOR PERSPIRING HANDS.—Borax, salicylic acid, of each 15; boric acid, 5; glycerin and proof spirit, of each 60. Apply with rubbing three times daily.—Les Nouv. Rem., xiii., 601, after Wien. Med. Pr.

HEALTH IN CHICAGO.—The report for December, 1897, gives the total deaths during the month as 1,790, or 1.10 per 1,000 inhabitants, the rate for December, 1896, being 1.12 per 1,000. Of these 1,790 deaths, 361 were persons under 1 year old and 204 from 1 to 5 years. The causes were: Diseases of the nervous system 260, pneumonia 221, consumption 168, diseases of the heart 135, bronchitis 106, acute intestinal diseases 77, diphtheria and membranous croup 78, cancer 70, typhoid fever 35.

AUSCULTATION OF THE MOUTH.—Professor Galvagni calls attention to the valuable information to be derived by auscultation of the mouth in regard to incipient tuberculosis, etc. The rales are reflected from the bucco pharyngeal cavity as from a sounding-board. He also notes a peculiar jerky glottic sound, not in the inspiration, but commencing in the pause, attaining its height about the middle of expiration, diminishing and vanishing completely at the commencement of the inspiration. It coincides with the rhythm of the pulse, and has been noticed in several tuberculous patients, and in one case of gastralgia of uterine origin.—Gazzetti degli Osp. e delle Clin., Dec. 5.

WHAT IS A SALT?—The term “salt” was originally applied to the residue obtained by the evaporation of sea-water. It was later applied to designate substances of a similar nature which, like salt from sea-water, were capable of separation into two distinct parts—a basylous and an acidulous radical, and from this idea arose the definition that a salt was a substance obtained by the combination of an acid and a base. The acids and bases, therefore, were not, under this definition, considered to be salts, but placed in a separate category. As the chemical constitution of substances came to be better understood, however, it was seen that there was no essential difference between the constitution, e. g., of hydrochloric acid and potassium chlorid, especially when the solidification of hydrogen and the formation of alloys of hydrogen with metals like palladium furnished evidence of the metallic nature of the element hydrogen. Bases also exhibit, on consideration, the same kind of analogy to salts. For potassium hydroxid may be regarded as composed of the metal potassium combined with the radical hydroxyl. The term salt now includes both bases and acids, and its signification has been rendered much clearer by recent investigations on the condition of matter in solution. These tend to confirm the view that salts may be regarded as binary compounds of the general formula $\text{M}_x\text{R}_y$, in which $\text{M}$ stands for any electro-positive group or metal and $\text{R}$ for an electro-negative element or acidulous radical. When dissolved in water substances of this nature undergo more or less dissociation into their ions $\text{M R}$, which carry electrical charges equal in quantity, but of opposite sign.—Pharmaceutical Journal.
Obituary.

DR. WM. B. VAN VLECK.

Wm. B. Van Vleck, D.D.S., died at his home in Hudson, N. Y., Jan. 14, 1898. He was born in Kinderhook, Nov. 13, 1818, and came to Hudson at the age of twenty-one. After studying dentistry for some time with his brother, Henry K. Van Vleck, he removed to New York city and for a year and a half was a student under the late Harvey Beddell. He then returned to Hudson, where he spent the rest of his life, following for over half a century the duties of his profession. Dr. Van Vleck was one of the organizers of the District Dental Society and never lost interest in its welfare. He practiced in this city but was well known throughout the state and always ranked among the leaders in his life's work. His son, Dr. Charles K. Van Vleck, was associated with him in the latter days of his active work, but about eight years ago ill health compelled him to abandon the profession he had followed so long and so faithfully. Political honors did not appeal to him. The pleasures of public life could not overcome his love of home. Of a retiring nature, he often refused offers of public positions, and sought his family and friends. Old in years he was young at heart, and the last days of his life saw no change in his kindly nature. His circle of friends was large, and though he had exceeded the allotted three score years and ten, he did not allow increasing age to interfere with the friendships formed in other days. He was of the old school, ever the genial gentleman, and to them there are no successors.

MEMORIAL MEETING TO DR. BOICE.

On Saturday evening, February 12, the Philadelphia County Dental Society held a memorial meeting to pay a just tribute of esteem to Dr. Alonzo Boice, who died February 2, 1898. The members present each in turn spoke of his many virtues; and letters were read from many members who were unable to be present. A committee was appointed to draft suitable resolutions.

The following were unanimously adopted:

Whereas, in the death of Dr. Alonzo Boice, the profession has lost a public spirited and liberal hearted supporter; and his family a most kind and devoted member.

Resolved, That we, the members of the Philadelphia County Dental Society, of which Dr. Boice was a prominent member, do hereby express the sense of the deep loss that we have suffered in the death of our late associate, and record the expression of our feelings and sympathy, and,

Resolved, That these resolutions and the minutes of the memorial meeting be entered at large on our minutes, and a copy of the same be published and be sent to his bereaved family.

Committee, L. Ashley Faught, Charles E. Pike, Joseph R. C. Ward, P. V. Guerry, Joseph Head.
SUCCESSFUL CASE OF REPLANTATION.

By A. N. Ferris, D.D.S., Waterloo, Iowa.

In June, 1895, I extracted a right superior molar, because on account of the tortuous, crooked roots and miniature canals I was unable to treat the abscessed condition. In the operation the anterior buccal root was broken off at its union with the crown, and I extracted it. I then disinfected and filled the canals of the unbroken roots, filled the cavity of the tooth with alloy, smoothed the surface where the root had broken off, and replanted the tooth. After a few days of slight soreness it became as useful as ever and is in good condition at the present time.

DENTISTRY SUFFICIENT UNTO ITSELF.

By W. E. Driscoll, D.D.S., Manatee, Fla.

Of all that I have read eulogistic of the career and character of Dr. Thomas W. Evans, nothing has so impressed me as these lines from the resolutions of the American Dental Club of Paris: "He was first, last and always a dentist, and proud to be considered one, and despised that 'snobism' which makes some men ashamed of the profession to which they owe all their success in life."

This, emanating as it does from those best able to know the facts, constitutes to my mind the crowning feature of his personality, which should exalt his name forever among dentists. How often we have to blush for the sycophantic display by prominent dentists toward the medical profession. So persistently is this manifested in many cases that one marvels why they do not take themselves where they think all the honor resides.

Lawyers and ministers must be trained in all the fundamentals of oratory for a length of time and to a degree of perfection that have no parallel in the groundwork of medicine and dentistry. So
with their professional duties, there is a similarity in the preparation of sermons and pleadings, both calling for mental labor, which finds nothing so near alike in medicine and dentistry. A man or set of men belonging to either of the former professions who would appeal to the other for "recognition" would be considered good candidates for a lunatic asylum.

The regular duties of the lawyer and minister keep fresh in mind those basic acquirements which are common to both professions. In the practice of dentistry, however, one has so little to remind him of his anatomical studies that by the time a graduate becomes expert in the real requirements of his profession by practice, he has so far forgotten his anatomy that he would fail to pass an examination should he desire to relocate in another state.

There is not one thing in the line of regular practice which a dentist and physician can do with equal propriety. The only honorable and professional course is for every dental and medical practitioner to send cases coming to him for treatment to the domain in which they belong. If they were not independent and separate professions there would not be this complete and all-pervading difference. Let each one store his mind with every fact of importance in any science that will make him a broader man and a better dentist; but that is far different from wearing badges or accepting degrees which may or may not be of real honest worth.

An educated preacher can attend a four or five months' course of law lectures, and probably be admitted to the practice of law in any state of the union, but does any one suppose that a physician can be transformed into anything worthy the name of dentist, as one must now practice, in any such short time?

All who have been readers of our periodicals during the past twenty years will remember what determined efforts were made up to about ten years ago to divide the dental profession. One body was to assume all the character, honor and prestige, while those left were to be stigmatized as common, unprofessional mechanics, to be employed, when the high-caste men cared to notice them at all, to do the menial part, the purely mechanical work, but they were not even to be allowed to extract teeth, although every state permits almost anyone to do this with absolute freedom.

That movement failed so utterly that it is probable it will never be attempted again. Still, as intimated by the eulogists of Dr. Evans
in the resolutions quoted, there are still men in our profession who show in many ways that they are ashamed to be called dentists. Some have adopted the name "Oral Surgeons," others "M.D's, practicing the specialty of dentistry," others "Stomatologists," and in fact had made more shifts to save their pride than I can recall, but without avail, for the public settles the matter and calls them dentists.

Let us, like Dr. Evans, magnify our calling so far as we can. Let each one honor dentistry as he did, and there will be no need of aping another profession. He proved there was ample room for any man's ambition within the ranks of the dental profession.

TREATMENT OF FRACTURED MAXILLARIES.


I hope I may not be considered presumptuous in attempting to discuss a subject so important as the treatment of fractured jaws. The motive which prompted me to select this as my subject was not a wide experience in treating fractured jaws, or anything very new or original I had to offer concerning the management of such cases, but since beginning the practice of dentistry it is a subject that I have taken a deep interest in, and one that is of great worth to every practitioner of our beloved profession.

The force which produces a fracture of the upper jaw must as a rule be direct and of great violence. A kick from a horse, a blow from some machine, the impact of a pistol ball, are among the most common causes of this injury. The fracture is often comminuted, and is sometimes followed by concussion of the brain, or with fracture of other bones of the face, or at the base of the skull. Associated as the upper jaw is with no less than 19 bones, such results create no surprise. This extensive connection of the superior maxilla will explain the modus of the singular accident presented by Packard, where a man's head was caught between a hoisting machine and the floor, causing the entire separation of the face from the cranium. Fractures of the upper jaw are often caused by force transmitted from the malar bone, this bone remaining sound. This portion of the face being prominent is likely to receive the vulnerating body first. But the bones most likely to participate in fractures of the superior maxilla are the malar, the nasal, the palatine, and the pterygoid process of the sphenoid.
A cardinal principle to be observed in the treatment of all fractures of the superior maxilla is to preserve and replace all fragments and splinters, the tendency to heal in this bone being greater than in any other bone of the skeleton. That the best results may be obtained it is necessary for the dentist to have a perfect knowledge of the normal relations of the jaws and teeth, and a thorough familiarity with all appliances calculated to produce the best results, and at the same time give the most comfort to the patient. The general surgeon is invariably called upon to attend these cases, but now the more enlightened ones request that a dentist be also called, for they at once recognize their absolute inability to overcome the mechanical difficulties that may be presented in the case at hand. It is to our profession that all honor is due for the wonderful progress made in the treatment of fractured jaws, for the most approved methods and best appliances have emanated from dentists, and this as a specialty in surgery belongs entirely to the dental surgeon.

The fractures of the lower jaw are divided into the body, ramus, and processes and are generally caused by direct force either upon the side of the bone or upon the chin. When involving the body they may be situated at any point from the angle to the symphysis of the bone; they may extend through the entire thickness of the bone, or be confined to the alveolar process. Generally there is not much difficulty in determining a fracture of the lower jaw, although when the separation is incomplete it may not be so easy. There is a fixed and deep pain, which is generally increased by any movement which disturbs the quietude of the jaw, as opening and closing the mouth, swallowing, or even taking a deep inspiration. We might suppose from its position that the inferior dental nerve would frequently suffer damages in fractures on this bone and consequently give rise to serious trouble, and yet such injury is almost unheard of. Swelling of one or more of the salivary glands is occasionally met with, and may end with an abscess opening into the mouth or upon the neck, but fractures of the inferior maxilla usually do well when the proper treatment is given. Tardy union is not uncommon, but non-union is very rare. It is believed that saliva has some influence in retarding the union of the bone, and the presence of the smallest particle of necrosed bone will defeat the healing process.

The diagnosis of a fractured jaw is unmistakable, the most prominent symptoms being pain, swelling and crepitation, and hemor-
rhages when displacement of the teeth has occurred. When any doubt exists as to location of the fracture in the lower jaw, grasp the bone on each side and then introduce the index fingers into the mouth, the fingers resting upon the teeth, and with slight in and out movement you will locate the crepitation at the point of fracture. In the upper jaw use the thumbs instead of the index fingers.

Fractures are simple when only the bone is divided without piercing the integuments; compound when laceration is present and direct communication between the outside air and the fracture; and comminuted when the bone is broken or crushed into several pieces at the same point and communicating with each other. Fractures of the inferior maxilla, if the body of the bone is involved, are almost always compound in the direction of the mouth, but when the ramus, coronoid process, or condyle are fractured, the bone is too deeply seated for the injury to extend into the mouth unless caused by a gun shot or missile.

Teeth that are loosened or fractured should not be taken out, for they nearly always become firm and useful afterwards. But should a nerve become exposed in the tooth by accident it is best to destroy it, so as not to cause the patient any unnecessary pain. Before taking the impression for an interdental splint always carefully remove any tartar that may be around the teeth, or else you will have as a consequence a loose-fitting splint. You now take impressions of both jaws, always taking the impression of the uninjured jaw first, so as to reassure the patient that it will not be painful, and for impression material I always use modeling composition, as plaster paris is objectionable to the patient and will invariably get into the lacerations if any be present. I favor Dr. Gunning's method of taking an impression—that is to hold the jaws as near the normal position as possible, sawing your model afterwards at the point of fracture, and articulate it with the upper teeth, recementing it with plaster. But should any mistake occur in the articulation the failure of your splint is assured, so you necessarily have to be very careful in the articulation of your divided model with the upper jaw.

Fractures of the superior maxilla require but little treatment compared with those of the lower, because the bones are immovable and you have no trouble keeping the fractured parts together. I always make my splints for the lower jaw so as to prevent the use of the jaw
in any way whatsoever by the patient, for in all cases that I have seen where the jaw was used to masticate I have invariably seen so excessive an amount of bone follow as to deform the patient for life—an osseous tumor at the point of union that only an operation will remove, and this is caused by the continued irritation that follows the constant slight rubbing together of the points of the fractured bone in masticating.

I will now briefly report two cases recently treated with wonderful success. The first case is that of a barkeeper, forty-five years old, who had been shot with a .44 Colt’s revolver at close range, the ball entering left side of lower jaw between third molar and first bicuspid, plowing out the intervening teeth and bone. The ball was buried under the tongue, having greatly lacerated the soft tissue of the mouth. After removing all the small particles of bone and the bullet from the lacerated parts, I held the jaw as nearly as possible in its normal position and took the impression with modeling compound. I of course took the upper jaw first, and after getting my models ready I took my saw and cut the model of the lower jaw midway the point of fracture, and carefully articulated the fractured model with the upper teeth, which I had no trouble in doing. I then reunited my broken model with plaster. The splint covered all the lower teeth on both sides and was made so as to touch the upper teeth on both sides and in front. Putting this in the mouth I carefully secured the jaw with a four-tail bandage. In three weeks I removed the splint and found a beautiful reformation of the lost bone, having no excessive bone whatsoever, and but for the small scar on the outside, to-day you could not tell he had ever been shot. I replaced the lost teeth with bridge-work.

The other was a machinist, twenty-four years old. He was standing by a machine when a piece of heavy timber was caught in one of the wheels, and swinging around it suddenly struck him with the sharp edge on the chin, knocking the six anterior teeth imbedded in the alveolar process back in his mouth, making a complete separation. I simply took the piece and by a little work succeeded in getting it back in place, and then beginning with the bicuspid at the right side I wired all the intervening teeth around to the corresponding tooth on the left side, and an uninterrupted union followed; the patient using his jaw all the time for mastication, and strange to say, all the displaced teeth presented every indication of possess-
ing nervous sensation. I am firm in the belief that the nerve reunited and is now in a healthy condition.

You should always be careful and keep the mouth thoroughly cleansed with antiseptic preparations, and after a few instructions your patient will become quite expert at doing this for himself. I use a strong solution of carbolic acid in a metal abcess syringe for this purpose.

ARE DENTAL STUDENTS PROPERLY EDUCATED?


Why is it that so many graduates of dental colleges know so little about practical dentistry at the completion of their college course? Many of them admit that they really know almost nothing concerning the actual operations they are called upon to perform in daily practice, but even if they do not acknowledge their inability, all dentists of experience can readily see it. If only one or two in a large class, instead of a great number, were unable to perform necessary dental operations, we would be justified in the conclusion that the fault lay more with the students, and that they had entered a profession for which they were entirely unfitted.

The number of unqualified ones is so large, however, that we are forced to ask if the system of teaching dentistry is all that could be desired. Is it right or just to take the valuable time of these students, to say nothing of taking their money, only to have them discover that the object sought for has eluded them? Does it show that the men at the head of our institutions have grasped the true idea of education? Are they not deluded simply by custom? Is not the idea that dentists should be educated in several allied branches, as well as in the dental, erroneous? Have they not been deceiving themselves with the false notion, that in order to know how to perform operations in one profession it is necessary to study the requirements of another a greater part of the time?

Education in its true sense should always be encouraged, yet the vast majority of students who enter dental colleges do so because they are mechanically inclined, and not because they are students of books. If they desired to become physicians they would enter medical and not dental colleges. Yet in defiance of the natural tendency of their minds, they are turned completely about and forced to pore over studies they dislike and consequently never learn. After
the examinations are finished the only thing they remember with clearness is that they studied certain subjects. It then suddenly dawns upon them that they have received a very thin veneer of several different studies, which is worn off by the first contact with the world. I know it is the custom to say that these students are being educated, but any teacher knows that crowding a mass of matter into a person's head is anything but education.

Far better would it be for all concerned if one-half the ground were covered thoroughly than the whole of it in such an unsatisfactory manner. It is impossible to take individuals who are not inclined to study, and by compelling them to listen to lectures and to pore over books for three years make educated beings of them. If it is necessary for men to be educated in order to become dentists, their education should begin before entering the college and not afterward. Anyone who examines applicants for admission knows that very few of them have sufficient education to even begin the study of the numerous branches laid down in the college curriculum.

Dentists by acknowledging the necessity of stating the medical branches to such an extent, admit their own inferiority. They might with equal justice declare that it does not require three years to learn dentistry, so the students are obliged to study medical subjects in order to utilize the time. The sum and substance of education is the development of the mind, and after our school days are over the mind should be developed first along the line which it is to follow through life.

I therefore contend that it is vastly more important for dentists to know more about mechanics than medicine. When I say mechanics I refer to every single detail associated with the successful manipulation of all dental materials. Too often are dentists afraid to use the term, and they skirmish about for some word to apply in its place, when they know full well that their vocabulary will not furnish one. They are well aware that the greater part of dental operations are purely mechanical, however much they may object to acknowledge it. If a high degree of skill be attained, however, instead of being ashamed to use the word, they would rather glory in it, for I doubt not the mechanical skill required of a dentist is seldom exacted in other vocations. It is necessary for him to possess steady nerves, a cool head, a high degree of manipulative skill, and a mind hypnotic in its influence, because the obstacles to
be overcome by his knowledge of mechanics are greater than in almost any other calling.

Furthermore, it is of vital importance that special faculties be trained without which dentists cannot succeed. Observation is one of the chief powers required by dentists. As a rule the graduates are not weak in their understanding or judgment regarding dental operations. For instance, they can easily understand why a cavity should be prepared, as they are taught this; in fact it is so easily grasped that it tends to weaken the observing faculty. The principal difference between many dentists can be traced to the power of this one thing. A great many men are heavily handicapped throughout their whole lives simply because they have not been endowed by nature with a power of close discernment. For the benefit of such men it is necessary that some means be devised for their proper training. All institutions of learning seek to strengthen the weaker faculties of the students, and our dental colleges should strive to accomplish the same.

I mention the faculty of observation simply as an illustration, and not by any means as the only one in need of training. If students were obliged to devote more time to the cultivation of certain faculties by methods which might be devised, instead of spending so much time on studies which they glided over only to discard when released from mental slavery, it would be far more beneficial to them and much better for the public. The so-called system of education which is thrust upon them does not develop their minds; in fact, it stunts their growth. Whereas, if a more natural system were in vogue, the mental development would be more salutary, and those so inclined would be better able to apply themselves to any particular study, with far better chance of successfully mastering it. It requires three full years to gain a fair knowledge of the art and science of dentistry; all superficial and surplus instruction should therefore be abolished.

TONSIL TUMOR.—A recently developed unilateral non-inflamatory new formation in a subject past middle life is suggestive of malignancy, especially if the growth is hard, dense and of rapid progress.—Newman.

DECOLORIZED ALUMINUM.—The American Druggist states that gray or unsightly aluminum may be restored to its white color by washing with a mixture of 80 gm. of borax dissolved in 100 gm. of water, with a few drops of ammonia added.
SUPERNUMERARY TOOTH IN THE PALATINE VAULT.
By R. Cadwallader, M.D., Fall River Mills, Cal. A young man (Indian) came to me to have a tooth pulled. I ran over his mouth without finding a faulty tooth in his head; every one was perfect and sound. He called my attention then to its location. I found a tooth exactly in the median line of the palate on a transverse line between the two first molars. There was no photographer within forty miles, or I should have had the vault reproduced with the tooth in situ. I extracted it with some difficulty. It measured one-half inch in length, with a hooked root which penetrated the vault.

The recent work on "Anomalies and Curiosities of Medicine" contains a short note concerning supernumerary teeth in this situation, and states that Fanton-Touvet gives an example of a supernumerary tooth implanted in the palatine arch. It would be useless to theorize as to how it came there. It could be developed only from a dental center displaced, or else be a deciduous tooth forcibly implanted by some accident. Against this latter are its anomalous shape and the statement of the young man that it had been there ever since he could remember.—Medical Record, Feb. 1898.

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UNUSUAL CASE OF BLOOD CYST OF THE POSTERIOR NARES. By John N. Mackenzie, M.D., New York. The patient was a young lady of 23. As a result of the imperfect extraction of a tooth, there was necrosis of the jaw, with subsequent exfoliation of bone, leading to a more or less complete obliteration of the lower portion of the antrum. This happened five years before consultation. For three years before consultation she had suffered with symptoms referable to the orbit and antrum. On examination a small glistening point was seen, resembling the appearance seen in fibroma of the nasal cavity. The right side of the nose was occluded. The mass looked very much like a child's toy balloon. The envelope of the cyst was extremely attenuated looking as if it was scarcely a line in depth. I made an appointment with her to return the same day, but in the meantime a spontaneous rupture occurred, and when I examined her the next day I was unable to find any trace of the
growth. The inflammatory process which originated the trouble probably started in the antrum as a result of the necrosis of bone, and from this the edema and subsequent formation of the cyst had resulted. I consider this a unique case. Some cases of large serous cysts have been reported.—Jour. Am. Med. Assn., Feb. 1898.

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ACUTE INFLAMMATION IN THE MAXILLARY SINUS.
By Wadsworth Warren, M.D., Detroit, Mich. Acute involvement of the antrum of Highmore, less than empyema, deserves more consideration in connection with hypertrophic conditions in the nose, because of the annoyance to which it gives rise, and on account of its causing, through frequently recurring attacks, a chronic inflammation and thickening of the sinus, and the possible origin of an empyema. In Hajek's ambulatorium in Vienna the comparative frequency of empyema of the various accessory sinuses is approximately as follows: For 200 cases of empyema of the maxillary sinus there are about twenty ethmoid empyemas, eight frontal sinus empyemas, and four of the sphenoidal sinus. It may be seen from this that the vast majority of all affections of the accessory cavities of the nose involve the maxillary rather than the frontal, ethmoid or sphenoid cavities. From this it is reasonable to infer that the acute involvements of mucous surfaces, less than empyema, and which subside often spontaneously and under appropriate treatment do not recur, involve the maxillary sinus much more commonly than other cavities.

In a long series of post-mortem examinations by Zuckerkandl in cases in which chronic nasal catarrh existed without any history of accessory cavity empyema, that author found in a large number of cases very decided pathologic changes in the mucous lining of the antrum, and very rarely slight changes in the other cavities.

There is an anatomical reason why inflammation in the maxillary sinus is much more common than in the frontal sinus or anterior ethmoid cells. The opening from the middle meatus into the antrum lies at the bottom of the hiatus semilunaris and is directed downward and forward, while the opening into the frontal sinus and ethmoid cells is at the upper part of the hiatus and directed upward and forward. Again, in the case of the antrum, the opening into the nose lies in the upper part, close up beneath the floor of the orbit, not facilitating free drainage, while the opening from the other sinuses
lies near the bottom of those cavities and permits good drainage except when the passage is obstructed.

Fig. 1, prepared from an anatomical specimen in the writer's collection, is a longitudinal section through the left naris close to the septum, and shows the outer wall of the left nasal cavity. The middle turbinate which overhung the hiatus semilunaris has been entirely removed. A bristle is passed into the antrum through the stratum maxillaræ, which opening occupies the normal position at the lower end of the hiatus. At the upper end of the hiatus is a small opening not shown in the cut, leading to the anterior ethmoidal cells and the frontal sinus. In preparing the specimen the saw has opened the frontal and sphenoidal cavities. The mouth of the Eustachian tube is shown just behind and on a level with the posterior extremity of the inferior turbinate. The bristle entering the antrum is directed downward and slightly forward and enters the top of the cavity just beneath the floor of the orbit.

Another figure is a transverse section of the right side, showing the septum, the right nasal cavity, and the antrum. The specimen that furnished the illustration was from a case in which existed an acute rhinitis with involvement of the antrum. Within the antrum are seen large tumefactions resembling cysts, which in reality are only swellings of the mucous membrane caused by the acute inflammation and infiltration. The secretion in such a case is muco-serous and not purulent.

The following cases may serve to illustrate the symptoms produced by and the means of relieving this condition: Case 1.—Male, aged thirty-one. Septum strongly deflected to the right side with a long bony ridge on the convexity. Right middle turbinate hypertrophied and in apposition with the ridge. Patent subject to repeated attacks of acute rhinitis. While diving in about ten feet of water he struck the soft bottom, and both nostrils were partially filled with mud. Within a few hours another severe attack of rhinitis occurred, which in addition to the ordinary symptoms was accompanied by pain on the right side of the face, slight bogginess and edema of the right lower eyelid, and tenderness to pressure in several of the right upper teeth. Patient complained that these teeth felt longer than the others. Three days after the beginning of the attack and at the time the intranasal swelling usually decreased, there was a profuse, clear, yellow serous discharge from the right
naris. The discharge occurred when the head was bent forward or to the left, and ceased when the head was held erect. After about ten days of palliative treatment it ceased entirely. The spur was then removed with the saw, and the anterior portion of the middle turbinate lightly cauterized. In the year that has elapsed since the operation there has been no recurrence of the unilateral discharge.

Case 2.—Female, aged eighteen. Chronic hypertrophic rhinitis. Patient complained of an unnatural discharge from the right nostril. There were slight hypertrophies along both turbinates on the right side. In the right naris the lower turbinate was hypertrophied throughout its extent. The anterior portion of the middle turbinate was hypertrophied. After cleaning out both nares, applying a four-per-cent cocain solution to the middle turbinate, and waiting a few moments, having the patient’s head bent forward, an unnatural, flaky, odorless, muco-purulent discharge appeared under the edge of the middle turbinate. The course of the irritating discharge could be traced posteriorly on the right side of the pharynx, where it had set up secondary inflammation and thickening. In this case I removed the anterior tumesced portion of the middle turbinate with the cold snare and etched the wounded surface with trichloracetic acid. After this treatment it was possible to see with good light the lower part of the hiatus similunaris. With the use for a few weeks of a mild antiseptic spray the discharge from the sinus ceased entirely, and the secondary trouble in the pharynx disappeared. Nine months afterward there had been no recurrence of this discharge from the sinus.

Case 3.—Female, thirty-five years of age; gave a history of an injury four years ago to the anterior wall of the right maxillary sinus. It had been four or five months in healing, and the site of the injury was marked by a depression and cicatrix. I could get no history of dead bone and there was no fistula. Examination of the nose showed an immense fibrous hypertrophy of anterior extremity of the right middle turbinate, beneath which several small mucous polypi protruded. After removing with the snare the anterior extremity of the middle turbinate and the larger polypi, the mucous surface about the hiatus was cauterized extensively. Following the operative measures patient used an alkaline spray for a few weeks.

In this case also there was a definite history of an unnatural discharge from the right nostril, influenced by position of the head, and
evidently as a result of this muco-purulent discharge a secondary inflammation of the pharynx confined chiefly to the right side. Six months before I saw this patient she had an acute right otitis media with rupture of the drum and considerable subsequent discharge, from which under appropriate treatment she had recovered at the time she came under my care, though there remained slight thickening of the drum and partial occlusion of the Eustachian tube. After correcting the local condition in the nose, daily dilatation of the Eustachian tube with the compressed air apparatus for a few weeks completely restored the function of the right ear. During the six months subsequent to this treatment there has been no recurrence of the discharge from the sinus, nor of the polypi. The patient, further, has practically perfect audition in the right ear and no pain or discomfort. In this last case the middle-ear catarrh was undoubtedly secondary to and directly caused by the entrance into the tubal orifice of some of the muco-purulent discharge from the inflamed maxillary sinus. When recumbent in bed the secretion would naturally flow over the mouth of the tube.

I submit in conclusion the following propositions: (1) That the condition described, an acute involvement of the maxillary sinus, less than empyema, is a definite pathologic condition, of not very rare occurrence. (2) That it may be recognized by the unnatural unilateral discharge influenced by the position of the patient's head, by the local symptoms, and the secondary inflammation and thickening caused by the discharge. (3) That it is accompanied by (probably as a casual factor) some partial obstruction to the ostium maxillaræ, and is relieved when this obstruction is permanently removed.—Medical Age, Feb. 1898.

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CASE OF HYPERTROPHY OF THE GUMS. By Mr. Whittaker. Read before Manchester Odontological Society. About eighteen months ago patient noticed swelling and soreness of gums on right side and in upper jaw; about the same time, or a little later on, the gums of the lower jaw began to swell, and swelling began to extend all round the gums. Fourteen months ago patient was advised to go to Blackburn Infirmary by Dr. Fraser, who had previously seen her and given her mouth-washes and medicine. At the infirmary patient remained about seven months, and had her gums removed twelve times during that period—seven times without an
anesthetic, and five times under chloroform. She had her gums cut, cauterized and removed in various ways, but they grew again and became as large as ever in a few days. Patient has suffered much from toothache during the last eighteen months, especially from a tooth on the right side, the 2nd right upper molar. This tooth troubled her just before her gums began to swell, and patient tried to have it extracted, but all the dentists she went to refused to draw it. At the first operation at Blackburn Infirmary they tried to extract this tooth during the operation under chloroform, but failed and broke the tooth, part of it remaining in the jaw and this piece is still in. Patient said that her teeth felt loose when gums first started to swell, and that they feel loose now early in the morning, when her face is also swollen; patient has a bad taste in her mouth, and matter oozes up from the roots of the teeth, which are covered with tartar in the morning.

An operation was done on the 13th. Ether. Enlarged gums in the upper jaw were chiseled away and the gums were then cauterized. Other portions were removed with curved scissors. The last molar tooth on the left side was extracted. The lower jaw was not touched. On April 30th chloroform was given and the gum on the lower jaw was freely removed from the external surface with scalpel and dissecting forceps. The raw surface was well cauterized with the thermo-cautery.—Brit. Jour. Sc., Feb. 1898.

PHILOSOPHY OF EXUDATIVE INFLAMMATION. By John Rogers, M.D., New York. Read before New York Institute of Stomatology, Nov. 2, 1897. The reaction which follows a traumatism or the introduction into the tissues of microorganisms is conveniently called an exudative inflammation. It is a term which expresses the difference between the more violent reaction, which is accompanied by redness, heat, pain and swelling, and the less violent and in general more chronic response produced by other forms of injury. For injury of one character or another is now conceded to be the origin of such changes as cirrhosis of the liver, endarteritis, the degenerations of phosphorus-poisoning, the manifestations of syphilis, new growths like sarcoma, etc.

The exudative form of the process is the most common. It occurs not only after the lodgment in the tissues of microorganisms, but also after every traumatism. It is nature's response to an injury,
and the changes which take place are of a conservative and reparative character. To show this it is necessary to examine each stage or step in such a reaction. In its simplest forms the exudative part of the process is not so prominent as the part which is reparative. If, for example, a simple incised wound is made, aseptically, in the skin of a rabbit, the reaction is manifestly reparative. A true exudative inflammation follows, but the exudate is slight. Plasma, white and red cells, escape from the divided vessels. Fibrin rapidly forms and glues together the severed edges of the wound. The neighboring vessels dilate, and there is some emigration of leucocytes, which absorb the fragments of inert debris resulting from the few fixed cells killed by the stroke of the knife. Incidentally it is worthy of note that a cell does not perish unless its nucleus is damaged. This incorporation in the white cells of living or inert particles will be discussed later, but is mentioned to show the correlation of all the different phenomena of an exudative inflammation.

At the same time with this clearing of the field karyokinetic changes are observable in the neighboring fixed cells. Out of one cell two are formed. The nucleus first shows striations, which collect at opposite sides, and around each half thus made protoplasm is heaped up and the cell divides. The result is an epithelioid cell or fibroblast; it is formative, rounded or irregular in shape, and larger than a leucocyte. The fibroblasts gradually elongate and shrink, and processes develop; in short, new connective tissue develops from the preexisting fixed cells and the parts are restored to their original condition. The important part in this reaction is the proliferation of the fixed cells. It is brought about by indirect or direct division, by mitosis or amitosis, as it is technically called. By mitosis is meant division preceded by certain changes within the nucleus which are accompanied by the formation of peculiar lines and figures. By amitosis or direct division is meant the splitting of the cell and its nucleus into two without any preliminary alterations. In direct division the cell is not supposed to be as vigorous as in indirect division.

If we examine the phenomena following a more extensive aseptic wound the exudate is found to occupy a more prominent position. An example is furnished by snipping off a piece of the surface of a frog's tongue. Under the microscope there is seen to be an initial
acceleration followed by a slowing of the blood-current; at the same time the vessels become dilated and congested.

Thoma has demonstrated that the well-known marginal position of the leucocytes which ensues is due to the difference in specific gravity of the red and white cells. Also that the emigration of the leucocytes takes place in the line of junction of the endothelial cells of the capillaries and small veins. Diapedesis of the red cells occurs at the same points, as does also the escape of most of the plasma. The latter forms a coagulum over the surface of the wound and occludes the divided vessels. Then follows the repair of the injury by granulation. The preexisting fixed connective-tissue cells and the endothelial cells of the capillaries proliferate. From the connective-tissue cells are produced epithelioid cells or fibroblasts; these are amœboid, and with difficulty to be distinguished from the leucocytes which have emigrated from the now congested vessels. The fibroblasts are embryonic in character and actively multiply; they collect in small heaps, into which a prolongation of an endothelial cell of an adjoining capillary is sooner or later pushed. This solid prolongation may join with others from its own or another vessel. Eventually it becomes hollow, and blood circulates through it. Meanwhile the wandering cells, which are derived mainly from the leucocytes of the blood, and probably to a less extent from the proliferation of the preexisting, fixed, connective-tissue and endothelial cells, cover the surface of the wound and infiltrate the coagulum formed just after the reception of the injury. The numbers of the wandering cells correspond directly with the amount of irritation and consequent destruction to which the surface of the wound is subjected. The same thing can be said of the exudation of plasma. If an ill-fitting shoe is constantly rubbing an ulcer of the heel, pus is present in abundance. Remove the shoe and stop the injury to the growing cells and the pus vanishes.

The purpose of the wandering cells is to act as scavengers; they incorporate and digest or carry off detritus, and the greater the emigration the more permeable the vessels become and the greater is the escape of plasma. Some of the scavengers disintegrate and are absorbed by others; many are cast off as part of the pus; a smaller quantity pass into the lymphatic system. A large number of the wandering cells serve as food to the growing fibroblasts. They probably do not, however, change into fixed cells, although the latter do
become wandering cells. The amount of plasma, as previously remarked, corresponds with the cellular activity. In an aseptic wound it serves a flushing out and a nutritive purpose. It aids in the removal of effete matter and supplies nourishment to the rapidly growing cells.

My object in thus hastily reviewing the most prominent features in healing by primary union and by granulation is to emphasize the fact that in these processes there occurs an exudative inflammation, which is anatomically the same as that which follows bacterial infection. That, in short, every manifestation of what we call inflammation, every term to which the ending of "itis" is added and many to which it is not, signifies that the body, made up of many elements, defends itself by assigning to each element a definite duty, which each performs according to need. The marshalling of all the forces may only be evident when microorganisms are to be combated. All are constantly in line and ready to repel attack, but only one or two companies of the army may need to be called into action for a minor injury like an aseptic wound or contusion. For thorough understanding of what is meant by inflammation it is necessary to carry in mind a comprehensive view of the whole field.

We pass now to the more violent form of exudative inflammation, that which follows the lodgment and growth within the tissues of microorganisms. In this the white cells are so numerous and the debris so abundant that the inflammatory reaction is more commonly designated as suppurative. But it differs anatomically only in degree, not in kind, from the reaction following a simple aseptic traumatism, and its purpose is the same, namely, the repair of the injury.

If a little of a pure culture of the staphylococcus pyogenes aureus is inoculated under the skin of a rabbit a circumscribed abscess develops. In and around the point of inoculation there is a degeneration and death of cells coincident with a multiplication of the bacteria. The surrounding vessels are congested and there is an emigration of leucocytes, some of which are mono- and others polynucleated. There is also an exudation of plasma and some diapedesis of red cells. A little later many of the bacteria can be made out in the interior of the emigrated white cells and in the endothelial cells of the neighboring capillaries. This incorporation of bacteria in living cells will presently be described as the process
of phagocytosis. The multiplication of the bacteria gradually ceases, then the central portion of the disturbance becomes pus, or a mass of broken-down debris, bacteria, fatty matter, white cells, etc., and is discharged externally, leaving a cavity to be healed by granulation. An example of a less favorable termination is furnished by the inoculation of a chicken with the vibrio of Metschnikoff. In this instance the bacteria do not remain localized, but spread from the point of infection almost without hindrance into the blood-vessels and lymphatics and the general circulation. There is extensive degeneration of all the cells near which the bacteria appear. This includes the cells which constitute the walls of the vessels, and with the destruction of the walls of the vessels hemorrhage occurs. At the same time in the region of the bacteria there is a copious exudation of a sero-sanguinolent fluid; but there is no emigration of leucocytes and no phagocytosis, which are two significant points of difference between the localized abscess and the general infection. In the former the leucocytes are numerous and close around the bacteria; in the case of general infection there is no massing of leucocytes; the few which appear are evidently degenerated and quickly perish.

To be complete, croupous, necrotic, or diphtheritic inflammation should be mentioned. But it mainly differs from the localized abscess and the diffuse cellulitis with general sepsis in that a mass of cells perish more or less rapidly and together, instead of slowly and one after another. Furthermore, in croupous inflammation the dead mass does not disintegrate and liquefy till after the lapse of some little time. But the philosophy of the minute phenomena is practically the same, and it is to this I want to call your attention.

The first elements to be considered are the wandering cells. Many are derived from the proliferated fixed tissue-cells, but the larger proportion have been proved by Cohnheim to be the emigrated leucocytes of the blood. These differ in their appearance, size, probable ultimate origin, and staining reactions. One of the latest classifications of human leucocytes enumerates six distinct kinds. Of these at least two have been ascertained to have definite functions.

Their presence or absence around an injurious body is dependent upon the latter's attractive or repulsive powers, upon a positive or a negative chemiotaxis, as it is called. This simple fact was not grasped till attention was called to the approach in water of a certain
fungus towards oak-bark, and its retreat from a substance like sodium chlorid. Then other low forms of life, including the unicellular amœba, were found to possess the same property of voluntary movement in approaching their prey or leaving a dangerous neighborhood. Observation speedily extended to the leucocytes or unicellular organisms in mammals, and their behavior in this respect towards bacteria.

If a capillary tube containing in its center certain microorganisms is planted under the skin of a rabbit it will speedily become filled with leucocytes, and in this instance the bacteria have positive chemiotactic properties. Other species of bacteria similarly implanted show negative chemiotactic properties—they repel the white cells from their neighborhood, and within certain limits this indicates that the animal in which this property is manifested will be overcome by the growth of the bacteria. But as it was observed that the fungus which was at first repelled by sodium chlorid can in time, by deprivation of water, be made to approach this substance, so, as regards bacteria and the emigrated leucocytes, can a negative be made to change into a positive chemiotaxis. Recent study has somewhat modified this view, in that now it is known that all bacteria exhibit, at the outset of their parasitic existence, a greater or less amount of negative chemiotaxis. The more speedily this changes to positive the better for the host.

Let me give an example of this change. It has been stated that the vibrio of Metschnikoff repels the leucocytes of a chicken into which it has been introduced, and that this is followed by the death of the chicken. If, however, the chicken is previously rendered immune to this vibrio and is then inoculated with a virulent culture, the usual negative chemiotaxis is found to have become decidedly positive. The chicken which would ordinarily die survives, and indeed manifests but slight evidence of disturbance. Metschnikoff was the first to show that the leucocytes which exhibit this positive chemiotaxis towards bacteria subsequently ingest and destroy them; and he believed that this destructive power of its leucocytes alone determined the survival of the animal. If the leucocytes were repelled from the bacteria and so could not absorb them the animal perished. The process is much more complex, as will be presently demonstrated. Comparative pathology has supplied the most of the light on this subject.
The amœba—a unicellular organism comparable to the leucocyte—approaches and ingests certain living organisms or diatoms which serve as its food. In the amœba the diatom lies in a cavity containing an acid fluid, and by this is gradually disintegrated. But if certain other forms of minute life are taken up by the amœba the digestive fluid in the vacuole is not, and the absorbed microorganism does not perish, but grows and kills its host. There are found in the bodies of the entire animal kingdom analogous, unicellular, amœboid organisms which originate in and belong to the tissues, named from their derivation mesodermal, and the discovery of analogous properties in these cells throughout the different animal species is the proof of what may sometime be surmised but not always demonstrated in man.

Investigation has shown that the same laws prevail throughout the whole animal kingdom. Even the very lowest forms of life, in which there is no nervous system and no closed vascular system, are afflicted with parasites, which are approached, ingested, and thus destroyed by the wandering, mesodermal, amœboid cells or leucocytes. If the parasites are not thus destroyed, the host perishes. A little higher in the animal scale the leucocytes begin to appear to be of more than one variety; they have different staining properties and different functions; some are phagocytic, that is, have the power of ingesting parasites, others are not so. In the mammalia the differentiation, as might be expected, becomes most marked. Man is known to be provided with two or at most three classes of leucocytes, which, as they appear to have distinct duties, require some description. The other varieties are as yet mainly of scientific interest and need only be mentioned. The hyaline leucocyte is phagocytic, exists most abundantly in and near the serous membranes, and has a single nucleus, which stains with basic, aniline dyes. The finely granular oxyphilic cell is the ordinary pus-cell; it is oxyphilous, or stains with acid dyes, and is also phagocytic. The coarsely granular oxyphilic cell or the cosinophile leucocyte, stains with acid dyes, is polynucleated but not phagocytic. Its properties are not, strictly speaking, proved, but are inferred from what is known about closely analogous cells in lower animals.

It is necessary now to return for a moment to the theories of Metschnikoff. The discoverer of phagocytosis believed that this process alone controlled recovery after bacterial infection. That it
is of great importance is shown by a simple experiment of much practical applicability. The guinea-pig is immune to inoculation with the spores of tetanus bacilli. Ordinarily the leucocytes approach and absorb them, and the animal recovers with but slight symptoms of disturbance. But if the spores are first encased in paper and then implanted in the pig, the leucocytes cannot come in contact with the spores, and the guinea-pig dies. A similar course of events can be supposed after infection of a mass of devitalized human tissue. The dead matter acts like a fence enclosing the bacteria. It prevents the latter from being reached by the wandering cells.

It is well known that debilitated persons are an easy prey to every kind of infection, and some of the earliest experiments clearly indicate that the general vitality of the individual is an important factor in phagocytosis. The chicken, for example, is immune to anthrax. The spores of this bacillus are taken up by the leucocytes, but seem very resistant; they are difficult of digestion, and they survive in the leucocytes a considerable time. If now the bird is immersed in cold water and its strength thus impaired, the spores begin to grow and destroy the phagocytes; eventually they kill the chicken. The white rat is similarly immune to anthrax. But if the rat is first made to turn a wheel until exhausted and is then inoculated, the result is the same in all respects as in the exhausted chicken—death. It was long doubted whether phagocytosis of living bacteria ever occurred; but now there is no question but that it does. It has been proved by numberless experiments; but the estimation of its importance has not been so easily settled.

One of the principal reasons for questioning the efficacy of phagocytosis as Metschnikoff understood it, was the fact that bacteria were often found to be dead before any leucocytes approached them. Then it was discovered that simple defibrinated blood had decided germicidal properties. The shed serum was actually more fatal to bacteria in many instances than that found in living tissues. Further experimentation demonstrated that the antiseptic substance of the serum was associated with the leucocytes; for an exudate rich in leucocytes was more bactericidal than the serum obtained by defibrination. This led to a study of these cells, and in the higher animals, as mentioned before, several distinct classes of leucocytes were identified. Kanthack and Hardy led the
way in elucidating their functions. The frog is immune to anthrax. They found that anthrax bacilli suspended in frog's lymph were approached by leucocytes containing granules which stained with eosin. These granules were discharged and the bacilli apparently paralyzed or killed. The oesinophilous cells then withdrew, and were succeeded by mononucleated cells staining with methylene blue. These acted as phagocytes.

Thus something which had to do with the fluid part of the blood and tissue, or at least with the unformed elements, usually affects the bacteria before phagocytosis can occur. A well-known example of the power of this mysterious something is furnished by the clumping and loss of motility of typhoid bacilli in Widal's test for typhoid fever. The cell-free serum of an individual suffering from this disease, when mixed with a culture of actively moving typhoid bacilli, causes the latter within a few moments to cluster together in a mass, to lose their motility, and to perish.

All the antidotal serums are obtained from the blood of immune animals, and are now known to contain two substances, one of which is bactericidal alone, the other both bactericidal and antitoxic; that is, it destroys the bacteria and in addition neutralizes their products. These substances are of complicated composition, and have been compared by Behring to the electricity in a magnet. It seems impossible to isolate or measure them. They are not analogous to a simple antiseptic, for if they were, the more of an immunizing serum which could be administered to a diseased animal the greater ought to be that animal's resisting power. Such is not the case. Neither do these bactericidal and antitoxic substances neutralize bacteria and their poisons like an acid does an alkali; for if a guinea-pig and a mouse are simultaneously injected each with an equal amount of immunizing serum and tetanus toxin, the larger animal will die while the smaller will survive.

The immunizing body or bodies, as there are more than one, have been given the name of alexins. They are probably derived from the nuclein of the wandering and fixed tissue cells. By injecting a vegetable irritant into the pleural cavity of guinea-pigs Buchner obtained a germ-free, purulent exudate, more bactericidal than normal blood. Kossel has proved that when the nuclein is separated the residue of exudate loses much of its bactericidal power, but the solution of separated nuclein still possesses it in an active form.
In this connection it is well to mention the investigations of Hankin. Following the lead of Kanthack and Hardy, he claims to have seen the granules in the eosinophilous cells of a purulent exudate collect on one side of these cells and then disappear. Coincidentally with this disappearance of granules from the cells the bactericidal power of the serum increased. Enough has now been established to prove that at least some of the cells produce in presence of bacteria alexins or defensive proteids, which affect injuriously the bacteria before or in conjunction with the phagocytes.

As long ago as 1890, Tizzoni and Cattani stated that these defensive proteids were of the nature of an enzyme, or digestive ferment. The diatom contained in the vacuole within the amoeba which devours it is destroyed by an acid fluid in this vacuole. The anthrax bacillus is similarly seen to disintegrate within a vacuole in a leucocyte of frog’s lymph.

If attenuated anthrax bacilli are implanted in a glass tube under a rabbit’s skin, many are found to be dead before phagocytosis has occurred. But both those within and those without the cells, dead and disintegrating in both instances, present the same general characteristics and reactions, and it is reasonable to suppose that the same agent destroys both the intra and the extracellular organism. That this is a ferment seems to have been proved by Leber. He excited an aseptic, purulent inflammation by inserting a sterilized copper plate in the anterior chamber of a rabbit’s eye. This exudate freed of cells was then found to be capable of digesting protelid material.

Another rather noticeable analogy of the alexins with the digestive secretions of the body is furnished by the reaction of the blood in the course of an infection. Many experiments show that an increase in its alkalinity favors immunity, and Calabrese has demonstrated, by inoculation of susceptible animals with cultures of gradually increasing strength, that the alkalinity of the blood increased with each inoculation, and that it reached its maximum when the animal had become completely refractory to infection with the ordinary amount of the most virulent bacteria. Infection of susceptible animals showed there was at first an increased alkalinity, but this very soon subsided much below normal and remained so till death. It is probable, then, that the germicidal bodies of serum are only soluble or can only act in an alkaline medium.
Thus it has been shown that the liquids of an exudative inflammation have a manifold action. As a great part of the elements concerned in the combat with bacteria come from the vessels, the importance of the latter's share in the process is manifest. There is an experiment which emphasizes this fact. If the common femoral vessels in one leg of a rabbit are ligated and the leg below the point of ligation inoculated with pus cocci, a violent phlegmon and possibly gangrene results. Inoculation of an uninjured rabbit with a similar amount of the same culture produces only a localized abscess.

The fluid part of the exudate, then, flushes out the sewers, it carries off detritus, it supplies extra nourishment to the cells designated for repair and protects the system from invasion. The endothelial cells have some selective power on what passes by them. They remove or add certain substances to the plasma, and in addition have phagocytic powers. They can put forth processes and seize and incorporate bacteria, which, if they have escaped the emigrated leucocytes, are thus hindered from entering the general circulation.

The nervous system is intimately connected with all that occurs. But its action so far as known is as mysterious as ever. Beyond a few facts there is nothing definite. Histology has demonstrated that each cell of the heart has its particular nerve-filament, and as the heart is but a dilated vessel, it is presumable that each endothelial cell has its filament. Thus, with the aid of the central and peripheral vasomotor centres, the cooperation of the vessels in every inflammatory process is assured.

That the central nervous system does control to a certain extent the progress of events during a bacterial infection is shown by the following experiment. Divide the vasoconstrictor nerve in one ear and the vasodilator in the other ear of the same rabbit. Then inoculate both ears with the erysipelas coccus. The ear in which the constrictor nerve has been cut rapidly recovers, while the other undergoes gangrene and perishes. If, now, in a fresh rabbit all connection with the central nervous system is severed by cutting all the peripheral nerves of the ears, and the ears are then similarly inoculated, the inflammation still appears and runs its course. Hence the central nervous system is merely an adjuvant in the various phenomena. It is simply a modifier of the process, important but not
essential. The same may be said of the temperature which accompanies an infection. Nothing very definite is known about it.

I have thus attempted to show that an inflammation is nature's response to an injury; that anatomically the difference between the reaction to a simple traumatism and the reaction to bacteria and their poisons is more one of degree than of kind. It is all an attempt to overcome a disaster, and the greater the disaster the more workmen—the more reparative elements—are required. When there is much debris to be cleared away a greater amount of labor has to be performed, and the parts concerned show great activity. In a simple incised wound there is but little destruction of tissue, and a few wandering cells are scavengers enough. A slight congestion of the vessels supplies most of them and enables the fixed cells to repair the damage. A large contused wound requires greater activity.

The solvent power of the cells is exerted upon the necrotic matter of an aseptic wound as upon bacteria and their products. This is manifested clinically by the aseptic wound fever, as it is called. It is the manifestation of the absorption of the ferments generated in the solution and removal of the dead matter in an aseptic wound. Microorganisms provoke the same general response to the injury which they occasion. There is the congestion and swelling from the dilatation of the vessels and the exudation of plasma. With this goes the emigration of the leucocytes. There is always an initial negative chemotaxis, although this may be of so short duration as to be scarcely perceptible. It is probably to allow the bactericidal substances, the fluid part of the blood, to at least weaken the bacteria. I speak of it as though there were conscious effort in the cellular elements, but I mean it in an evolutionary sense. It is a derivation of ages of cellular growth, combat, and development. Some of the wandering cells first approach and excrete a ferment. This may or may not be the same as that secreted by the phagocytes, which follow and absorb and digest both living and dead particles. The bactericidal action of the unformed elements and phagocytosis are two processes which go hand in hand; there is much doubt about the relative importance of each. But the general consensus of opinion seems to place phagocytosis in the secondary position.

This property of phagocytosis is possessed by the amœboid leucocytes of the blood and lymph, by many fixed cells, such as the endothelial cells of the vessels and serous membranes, by the epi-
thelial cells of the intestine, which can ingest the cholera vibrio, and by the cells of the splenic pulp. As soon as the destructive agency permits, repair by proliferation of the connective-tissue cells begins and proceeds as in an aseptic wound. Over all, with the mysterious general vitality which seems to be centered in it, is the guiding influence of the central nervous system.—*International, Feb. 1898.*

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**HINTS BY A LAZY MAN.** (1) You can buy prepared square cakes of pumice stone which are very convenient for cleansing the hands, polishing dirt off tables, and softening the stiff bristles on your chin before shaving. Only be sure and get it all off your chin before using soap and your razor. (2) After removing the bolts of your flasks, dip the screw in a bottle of oil convenient for the purpose, and they will always be easy for use again. (3) A first-rate laboratory bench-block may be improvised by securing on the table one of the rubber-tipped door-stops sold for the purpose of keeping doors from damaging the wall. They can be screwed into the table anywhere and in any position. (4) If your hands are dirty you will dirty rubber in packing sets, and the dirt remains, and even seems to penetrate deeper than the surface you wish to polish. The pumice block is a good thing to clean solid rubber before you pack. (5) A common soup ladle, with holes made in the bottom to let the water out, is useful to lift hot flasks out of hot water. (6) A small hoe, used to scale fish, is useful for scraping hard plaster from the bench. (7) Articulators and head-rests are two articles which the capacious brains of our mechanics should improve. (8) I never need rubber scrapers—hardly ever. If you prepare your pattern plate properly and are not too mean to buy well-made pattern wax, your plate should come out ready for the sandpaper. (9) Do not use oil or shellac varnish to keep the second part of the plaster from sticking to the first in filling flasks. Keep a pot of the soapsuds after soaping the plaster; run water over it. It will not stick. (10) You can buy at any hardware store a neat, round and cheap asbestos plate on which to put rubber when you are packing. Clean and convenient. (11) You can buy in rubber stores rubber fingers, which are useful if you have to finger foul mouths, and are just the thing to have on the finger of the hand which you use in the mouth when keeping the lips and tongue out of the way in extractions. (12) If you use beeswax or compound,
have it ready rolled in thin sheets to save time. (13) Sulphate of potash always kept uncovered loses its value for hardening plaster. (14) If you insist upon placing a porcelain crown, either with or without a collar, upon a very hollow root with an opening larger at the neck than towards the apex, do not use amalgam as a retaining cement around the metal pivot. Thoroughly dry the root cavity; wipe it out finally with the merest suggestion of oil of cazeput, then pack it tightly with warmed gutta-percha—not the pink used for pattern plates; heat the metal pivot; work it into the gutta-percha, packing as well as you can. I prefer it to anything else. (15) After operating for patient afflicted with pulmonary tuberculosis, sterilize your instruments, hands, etc., as carefully as if you had been operating for a patient suffering from syphilis. (16) Some of the trouble which occurs in the vulcanizing of dental caoutchouc is occasioned by a haphazard way of raising and retaining the temperature. If the directions advise you to keep the temperature at 315° Fahr. for one hour and a quarter, it is a mistake to keep it at 320° for an hour. In the matter of proper vulcanizing, the slow and sure method in heating and cooling is the best. (17) If you buy a new drug, do not use it until you know all that is worth knowing about its action and uses, and if a poison, its dangers and its antidotes. (18) A properly adjusted Auer light is away ahead of any electric light, if you are obliged to use artificial light at the operating chair. It is nearer the natural light of day than any other. (19) Keep your dental engine, chair and spittoon covered from dust at night. Do not use too much oil. Dirt is the bane of the dentist. (20) If you have rough hands from handling flanks, etc., wash well with hot water and soap when going to bed; rub vaseline on them thoroughly, and pull on a pair of large-sized gloves. Too lazy to say more just now.—Dominion Jour. Jan. 1898.

CARE OF VULCANIZERS. In spite of the fact that the vulcanizers sold by reliable manufacturers are submitted to severe tests by hydrostatic pressure—some of them to a pressure of nine hundred pounds to the inch—explosions have not been infrequent, generally due to the ignorance of the assistants who watch them, or pretend to watch them, during the process of vulcanization, and not a little to the carelessness of the dentists themselves, who fail to impress upon the students that these little steam boilers require as
much attention as boilers of a greater capacity. In the first place, it does not pay to use cheap vulcanizers any more than cheap German tools and instruments, or the cheaper grades of artificial teeth. In the next place, one should familiarize himself with every part of the machine; realize the importance of keeping it and its belongings clean, and adhere strictly to the rules laid down by the manufacturers. Where thermometers are used it ought not to be forgotten that too rapid and too great heat at starting, especially if the flame is allowed to surround and reach the top cover, may deceive, and that the thermometer at 320° may really indicate only the temperature of the cover and not that of the flask inside. The safety disk used on some modern vulcanizers should not be forced on too tight, as this weakens them. The boiler should on no account ever be perfectly full of water: at least, one inch or more of steam room should be left above the water. When the heat is first applied, the valve for the escape of steam should be opened for a few minutes to allow a free escape of steam, as this leaves in the boiler, after the valve is closed, an atmosphere of pure steam, and precaution should be taken not to use any more force in closing the valve than is necessary to make it steam-tight. We are warned, too, not to daub too much blacklead or soapstone powder about the packing: In fact, it is better never to use any if it can be avoided. Oil should never be used, as it rots the rubber packing and may become gummy and cement the core to the pot, to the damage of the rubber packing. Too frequent use of the blacklead and soapstone wears away the screw thread. In heating up, the flame should not be larger than will cover the bottom of the boiler. If students can have these simple instructions put into their brains, it may save some of them from having their heads blown off. If they will not attend to them they deserve to be killed. Thermometers, in the cities, ought to be relegated to the list of things which are obsolete in the laboratory. Proper gas regulators and steam gauges should be used and dentists owe it to themselves and their students not to neglect every proper precaution in the use of these laboratory demons.—Dominion Dental Journal, Jan. 1898. * * *

ITEMS FROM B. H. TEAGUE, D.D.S., Atlanta, Ga. To Crown Hollow Roots.—When a very "hollow" root presents for a pivot-crown, fit the latter as best you can after filling the root, then lay aside. Roughen the thin walls of the "hollow" where there is least
danger of perforation. Now insert a soft wood pivot whittled to
the shape and size of the metal pivot in the crown and around it
pack amalgam to the margin of the gum. When it becomes hard
drill out the wood and place the crown, which may now be done
easily and satisfactorily.

Separating Cast from Wax.—If in separating bite-plaster casts
from the wax, the plaster teeth are broken and scaly, flow thin
plaster over the fragments left in the wax and replace the cast in
the bite. When the plaster hardens, separate carefully and the cast
will then be perfect.

For Irritated Gum.—The transparent amber-colored oil-cloth of
the drug-stores is a very serviceable material to put between the gum
and irritating regulating fixtures.

Best Engine Band.—The most serviceable engine band is the
steel spiral spring band.

Waste Receptacle.—Get in the habit of putting waste cotton,
ibulous paper pellets, worn disks and ligatures into a small box,
basket or vase placed on the cabinet, and stop littering the floor
around the chair.

Glycerin Lubricant.—Glycerin is better than water to "wet" a
diamond drill with, when cutting enamel or drilling into an artificial
tooth.—American Dental Weekly, Jan. 1898.

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CASE OF HÆMATOMA. By J. H. McCutchan, M. D., Evans-
ville, Ind. E. C——, aged twenty-five, good physical condition, no
syphilitic history, family history good, complained of bleeding at
the mouth, loss of appetite, headache and constipation. On exam-
ination of the mouth the gums were found to be covered by numer-
ous, well-defined hemorrhagic tumors, varying in size from a pin-
head to one-eighth of an inch in diameter; on further examination
these hemorrhagic tumors were found to extend back over the
palate and pharynx. The rest of the body was well nourished and
normal in appearance; no other abnormality could be discovered at
that time. The tumors were cauterized and the patient was put
upon tonics, astringent preparations and iodids. Under this treat-
ment he seemed to recover—the bleeding stopped, the tumors disap-
ppeared and the headache ceased. After a week's respite, however,
these abnormal conditions returned in intensified form, the tumors
appearing not only on the gums, palate and pharynx, but also on
the trunk, arms and hands. Treatment availed nothing. At the end of two weeks the patient had an attack of hemiplegia involving the entire left half of the body. Speech was unimpaired and the mental faculties were retained, but there was entire loss of motion, together with partial loss of sensibility. The patient was placed upon large doses of the iodids, which seemed to have a very happy effect, but only temporarily, as he lapsed into a comatose condition and died two weeks after the paralytic attack. The post-mortem examination revealed an extensive haematoma involving the whole motor area of the right cerebral hemisphere, the brain substance in close proximity being broken down and degenerated, while over the entire brain surface were scattered small hemorrhagic tumors corresponding in size to those found on the gums, palate and pharynx.—Medical Record, Feb. 1898.

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CARBOLIC ACID. By Dr. A. L. Benedict, Buffalo. Pure carbolic acid is a white, crystalline solid, of characteristic pungent odor. For convenience a small amount of water (5 per cent) is usually added so as to melt the crystals. With larger proportions of water an emulsion is made until the carbolic acid is reduced to 5 per cent, when the solution is again perfect. That is to say, the carbolic acid takes up a small percentage of water, and water a small percentage of carbolic acid; neither will dissolve with a large proportion of the other.

From the development of rosalic acid, carbolic acid which has been kept for some time, unless air is absolutely excluded, becomes red in color, but this change is of no practical importance.

Carbolic acid is a poison to protoplasm in all forms. Thus, it is antiseptic and in strong solutions absolutely germicidal; it is also destructive to animal tissues. It forms whitish sloughs wherever the strong acid comes in contact with the skin or mucous membrane; it corrodes the stomach; reaching the kidney in diluted form it causes congestion and often actual inflammation, with dark greenish urine, as in poisoning by any of the aromatic organic compounds, having the radical C₆H₅. About a teaspoonful is said to be necessary to cause death of an adult, but much smaller doses have produced serious kidney trouble and dangerous immediate symptoms. Being very soluble it is easily absorbed, so that surgeons have noticed unpleasant symptoms from using it as an antiseptic, and fatal
results are said to have resulted from its use in weak solutions to wash out the stomach or other cavities of the body. Like almost all antiseptics which are at the same time powerfully irritating, carabolic acid is a local depressor of nerve tissue. Surgeons frequently noticed, while this drug was in vogue as an antiseptic, a numbness of the fingers, especially along the opposed surfaces, where the skin is thin. Thus, the numbness may give the peculiar sensation of being web-fingered.

In using carabolic acid in any cavity of the body, or on any surface where it is kept long in contact, attention must be paid not only to the strength of the solution but to the total amount present. Twenty centigrams, or about five drops, is a fair internal dose, and not more than twice this quantity should be used, unless for practically instantaneous contact, when we can be sure that the excess will be removed. For external use, cleaning instruments, etc., a solution strong enough to have much value as an antiseptic within a reasonable period of time cannot be tolerated by the hands. Small instruments, however, may be immersed in carabolic acid containing 5 per cent of water, and can thus be disinfected in a few minutes.

In dentistry carabolic acid is used as an antiseptic, an anesthetic (local), a caustic (to close the tubules by making an albuminous film), and a stypic (through the same action).

Antisepsis in dentistry is certainly of great importance. Since Miller and others have shown the practical relation between bacteria and dental caries; it may be held as malpractice to convey bacteria from one mouth to another in which a cavity is being cleared for a filling. An amalgam filling has some active antiseptic power, but a filling of gold or silver can scarcely have more than a mechanical action in preventing the progress of caries, and it may be that the decay at the periphery of such a filling is due to lack of antiseptic precautions on the part of the dentist who cleared but did not clean the cavity. The application of pure carabolic acid to a cavity, just before inserting the filling, is good practice, both from the need of antisepsis and the indications for closing the tubules, obtunding the nerves and checking such hemorrhage about the base of the tooth as may have been caused by the slipping of an instrument. Still, it is questionable whether oil or cloves of cinnamon, or almost any other aromatic oil, would not be preferable. For disinfecting instru-
ments, the best method is boiling in a weak solution of soda, solutions of carbolic acid being inefficient unless after prolonged soaking. To disinfect a foul cavity or for use in the mouth generally, hydrogen peroxid (25 to 50 per cent of the 15 volume solution) is better and safer than carbolic acid, acting to oxidize the bacteria present as well as their poisons. The use of hydrogen peroxid to bleach the teeth is now well known. Formaldehyde, a recent favorite, is one of the most active antiseptics known, but it is irritating and even painful if used on a raw surface or on a mucous membrane. Of the standard solutions, containing 40 or 50 per cent of gaseous formic aldehyde, a one or two per cent dilution may be used in the mouth.

It may be said, on the whole, that while carbolic acid is a useful application in dentistry, there is scarcely an occasion when something better, or at least more elegant, may not be substituted for it. The pain of operating is due very largely to overheating, from the too continuous use of the drill, or the too rapid stroke against the filling. If the dentist is careful never to allow his instruments to become hot he will inflict very little pain, and will need a local anesthetic only in rare instances—and then it is difficult to say where he will find one that is thoroughly satisfactory.

Physicians are frequently called upon to stop a toothache until a dentist may be consulted, and it may be that dentists themselves can profitably use measures which will allow a supersensitive tooth to regain a condition of comfort before the radical relief of the decay is undertaken. Carbolic acid might be used on cotton for this purpose, and, being less treacherous, is to be preferred to a solution of cocain, which may cause sudden faintness from very small amounts. Oil of peppermint, cloves, etc., may be used for the same purpose and are superior to carbolic acid. Sometimes a patient has a violent antipathy to one or more aromatics, but may be willing to use another. Thus it is well to keep several essential oils on hand. I have occasionally used a mixture of about equal parts of tincture of iodin, oil of peppermint (or alcoholic solution of menthol), oil of wintergreen and carbolic acid. The possibility of damage to tooth structure by iodin must be considered, though most dentists consider it harmless. Usually, too, the carbolic acid may be omitted without loss of efficacy. Such anesthetic and antiseptic mixtures are applied on cotton, forming a temporary filling.
It must not be forgotten that the merely topical remedies which are used in dentistry may be swallowed or absorbed, and thus produce serious constitutional complications. This is especially the case with such powerful drugs as cocain, opium, arsenic, and especially carbolic acid. Without doubt there have been many instances of nephritis, of gastritis, and of various functional disturbances due to capillary congestion caused by the too free use of carbolic acid in the mouth. It should not be forgotten that many patients are idio-syncratic, and that doses of some toxic remedies that would not be appreciated at all and would produce no effect on some people, on others induce the gravest symptoms, and carbolic acid or preparations of mercury are amongst the most active of them. For these reasons, and because the former is such a violent irritant, its use should, whenever possible, be avoided by dentists, and as it is almost exclusively employed as an antiseptic, some other preparation can readily be used in its place. Of course, when its obtundent effects are desired, the amount necessary is so small that only carelessness would cause injury by it.—Dental Practitioner, Jan. 1898.

ETIOLOGY AND TREATMENT OF GLANDULAR ENLARGEMENTS IN THE NECK. By A. G. Miller, M.D., Edinburgh. It is a marvel to me that in these days of investigation and discovery of organisms and other causes of disease, the very common, evident, and in many instances easily removed causes of glandular enlargements in the neck are so often ignored, or at any rate overlooked. I have seen many cases in which the removal of a bad tooth, or the curing of a chronic pharyngitis or tonsilitis, would have prevented gland trouble and saved much disfigurement. *Causa sublata, tollitur effectus.*

There are many varieties of glandular enlargements, but I shall refer to only two—the *simple chronic* and the *tubercular.* I have selected these because they are the most common, because they are often difficult to diagnose and differentiate from one another, and because they best illustrate the subject of my paper. Before dealing specially with the *etiology* of gland enlargements I shall say a few words on *diagnosis.*

Simple enlargements are not usually discovered nor advice sought on account of them until they have existed for some time. The patient is usually a child; often delicate looking, but sometimes
quite healthy otherwise. On examination one finds one or more lumps of an almond shape, firm but not very hard, not sensitive, freely movable, enlarging very slowly, and with a history perhaps of an acute or subacute attack of inflammation. Sometimes the invasion is insidious.

Tubercular disease of glands on the other hand has three distinct stages. In the first stage the condition is similar to what I have just described. In the second stage softening takes place (caseation) of one or more of the glands when they become matted together. In the third stage there is further softening (liquefaction) and fluctuation can be made out. The skin then becomes adherent, discolored and thin. The abscess, so-called, points, and if not opened, discharges its contents on the cutaneous surface.

Tubercular disease is readily recognized in the second and third stages, but in the earliest stage it is not easily diagnosed from simple nontubercular enlargement. Indeed, it is sometimes impossible to differentiate the two, because any simple chronic adenitis may become tubercular, and a tubercular affection may commence as a simple adenitis. If this be true it brings out a fact of great practical importance, viz., that there is a pretubercular stage. Personally I am firmly convinced that there is a pretubercular condition in many cases; and I am sure that a very large proportion of the cases of tubercular gland disease that I have seen might have been prevented by the timely discovery and removal of a carious tooth or some other cause of gland irritation.

It will make things easier if we now consider the anatomical relations of the cervical glands to the various parts of the head, face, and neck from which they derive their lymphatics. I have found it convenient to divide these glands into the following groups which differ slightly from the groups given in anatomical works: (1) Those at the back of neck—occipital group. (2) Those behind the ear—mastoid group. (3) Those in front of the ear—parotid group—which may be again divided into the superficial and the deep. (4) Those under the jaw—submaxillary group. (5) Those lying along the sterno-mastoid muscle—sterno-mastoid group—which may also be conveniently divided into the superior and inferior. (6) Those above the clavicle—supra-clavicular group.

These various groups of glands receive their lymphatics as follows (so far as I have been able to make out): The occipital from the
posterior part of the scalp; the mastoid from the scalp and ear; the parotid from the front of the head, the ear and several other parts. This group, however, requires further differentiation, and therefore I have divided it into the superficial and deep parotid groups. The former glands are served by vessels from the front of the scalp, the external ear and meatus; while the latter are connected with the orbit, nose, pharynx, middle ear and upper teeth. The submaxillary glands derive their lymph from the cheeks, lips, mouth and lower teeth. Of the sterno-mastoid groups, which, along with the submaxillary glands, are those most frequently affected, the upper series is connected with the tonsils, pharynx, esophagus and larynx; while the lower ones are related to the deeper structures, and are generally found to become affected secondarily to the upper ones. The last group (supra-clavicular) is connected with the intra-thoracic and axillary glands, and derives its lymph from thoracic regions mostly. (The superficial (subcutaneous) glands are connected with the skin, and are affected by cutaneous irritations such as boils, etc.)

The clinical importance of this grouping will be evident if we take some examples. A child has its occipital glands enlarged or suppurating. Employing the above classification as our guide, we at once examine the back of the head, and will most likely find some eruption or pediculi, or both, as the cause. If the posterior auricular glands (mastoid) should be affected, we examine the scalp and external ear. If the submaxillary glands be inflamed, we look at the lips and into the mouth for the source of irritation. If the glands in the upper cervical region be enlarged, there is a much wider range of investigation opened up. We may find the cause in the nose, throat, or middle ear. Once more, if the glands in the lower cervical region be affected, we will probably find, after investigation of the other groups of glands, that the upper cervical, or mediastinal, or axillary glands have been diseased first, and that the irritation has spread by contact to those lower cervical and supra-clavicular groups. I have noticed tubercular disease of last-named glands associated with oldstanding, quiescent, or to all appearance cured, phthisis.

Having demonstrated the importance and clinical bearing of the anatomical arrangement and relations of the cervical glands, we are in a better position for discussing the etiology of glandular affections.

Causes in my student days were usually classified into predisposing, exciting and maintaining. In the present day they are apt to
be disposed of under one term, *organisms*. Without desiring to undervalue in any way the influence of germs, I shall adopt the old-fashioned method at present as being more convenient.

1. *Predisposing causes* of glandular enlargement in the neck certainly exist. I shall refer to two, childhood and constitution or heredity. No one can deny that children suffer from gland affections more than older persons, and whatever explanation may be given or definition offered of the terms "constitutional proclivity" and "diathesis," there can be no reasonable doubt that some persons are more liable than others to gland affections, and also that this tendency seems to "run in families."

2. *Exciting causes* might almost be classed under the one head *organisms*. But we cannot get rid of the matter thus easily, for the question naturally arises, how do the organisms obtain access to the lymphatic glands? In answering this question we have to consider two points—first, the organisms (or their products) have to be absorbed by the lymphatic vessels; and second, there must be a favorable surface from which absorption can take place. These conditions are usually supplied by broken skin or mucous membrane, an inflamed surface, or a lodgment in some "pocket" or cavity of septic decomposing matter. I have already described how such open doors are provided—a scalp eruption, a carious tooth, adenoids, tonsilitis, pharyngitis, middle ear disease and so forth. These various pathological conditions provide the organisms, their products, and the surface capable of absorbing mischief. The natural function of the lymphatic glands is to receive the absorbed materials, to filter and make them innocuous. When this is accomplished all is well, but sometimes the septic poison is too strong, or the glands fail in properly performing their function, and then we have glandular infection, irritation and inflammation. We may say, then, that the exciting causes are organisms and their products, plus those conditions of mucous membrane, teeth, etc., which favor their lodgment and absorption by the lymphatics.

3. I now come to the third class of causes, and to this class I wish to draw special attention. The *maintaining cause* of glandular affections is often the persistence of the exciting cause as I have described and defined it. Remember that I am speaking of simple chronic and tubercular gland affections in the neck. These would not exist at all were there not some maintaining cause. A tem-
porary inflammatory enlargement often appears and disappears along with the primary cause. If the infection be intense or the glands weak, the irritation may lead to suppuration—the gland is destroyed, suppurates out, and there may be an end to the matter. If, however, a gland once irritated remains enlarged, refuses or is unable to recover, there must be some explanation, some cause of this. This cause I call the maintaining cause, and the maintaining cause is not infrequently the exciting cause unremoved. Let me press the argument yet further. Seeing that the organisms and their products cannot obtain access to the glands without an open door such as I have described, I take it that the real maintaining cause is the open door. Let me illustrate this. The glands of the neck become enlarged in connection with a tonsilitis or pharyngitis. If these conditions be cured the glands will recover of themselves. Again, the glands under the jaw are enlarged and painful in connection with a bad tooth. Let the tooth be extracted and the glands will cease from troubling. The irritation and enlargement of the glands disappear when the cause and source of the irritation are removed. But if the irritant be not removed the irritation is continued, the glandular enlargement persists or gets worse, and the patient suffers from chronic glandular enlargement.

Now this raises two points which must be dealt with. (1) In some cases glandular enlargements (chronic adenitis) remain after all apparent cause has disappeared. (2) Some cases persist after the cause is removed and the open door properly shut. Examples of these conditions (which are practically the same) are common in the experience of all, I am sure. In the former the tonsilitis or pharyngitis has had time to disappear, but the glandular irritation (or its effects) remains. In the latter case the tooth is extracted or the adenoids removed, but the glandular enlargement persists.

The explanation is the same in both cases, viz., some irritating factor has lodged in the gland itself, which the gland cannot destroy or expel, possibly on account of its natural inability to do so. That factor, I take it, is an organism, usually the tubercle bacillus. It has entered by the open door and refuses to be expelled—it has come to stay.

This brings up another interesting point. Persistent glandular enlargement after removal or disappearance of all discoverable sources of irritation may mean that the glands have become tuber-
cular. This, if true, is a most important fact. I have become convinced of it both by the course of reasoning which I have just detailed and also by my experience. Let me put it in this way. Is there doubt and difficulty in deciding as to whether, in a given case of glandular enlargement in the neck, the condition is simple or tubercular? If, on careful investigation, no evident source of irritation be found, or if some irritating cause has been discovered and removed, and yet the glands do not improve, then the presumption is that the glands are tubercular, or are at least in the pretubercular stage to which I have referred previously. Going back then to maintaining causes I would narrow them down for practical clinical purposes to two, the open door and the tubercle bacillus.

That brings me to my "practical application," in other words, to treatment. What I have to say will be very brief. (1) In all cases of glandular enlargement in the neck look for the cause and treat it, or have it removed at once, and generally the glands will get well of themselves, or with the help of some simple local application such as a carbolic compress. Many patients have been sent to me for excision of glands, whom I have been able to send home in a few days well or nearly so, after the extraction of a stump or removal of some such source of irritation. No local treatment is appropriate or of any avail so long as there is an irritating cause present. Remove the cause and the glandular enlargement will disappear. (2) Secondly, if all visible cause has been removed or has disappeared, and yet the glandular enlargement remains, remove the glands, even though you may not be quite certain that they have actually become tubercular. So long as there is chronic glandular enlargement there is risk of tubercular infection. My experience has been that, when glands have been removed "on suspicion," they have almost invariably turned out to be tubercular. I do not think it is safe to wait till one is perfectly certain. By that time, in all probability, more glands will have become infected, and the operation of excision will, when performed, be more severe, while the possibility of extirpating the whole disease will have become more doubtful.—Brit. Jour. Dent. Sc., Feb. 1898.

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NECESSITY FOR HIGHER EDUCATION IN DENTAL MATRICULATES. By Frank L. Platt, D.D.S., San Francisco, Cal. Read before the S. F. Dental Association, Nov. 8, 1897. "A
little learning is a dangerous thing;" and the greatest danger threatening the dental profession to-day is the little learning possessed by many of its members. We note the progress our profession has made in the last three-quarters of a century, and point with pride to the fact that in the same length of time no other liberal profession has kept pace with it in either general or special advancement. We see the gradual progress from the barbershop era of tooth-extraction to the establishment of dental colleges and the acceptance of dentistry as an honored and enlightened profession, second to none of the great branches of the healing art. All this is most commendable, and our pride of accomplishment may be pardoned by a charitable laity; but when we look about us and see how many fellow-practitioners we have of whom we are not proud; of whom we speak only in terms of derision or reproach, or, better yet, speak not at all; when we see the columns of the daily papers filled largely, as they are, with nauseous descriptions of public and private immorality, and the vicious advertisements of medical quacks, and find there prominently displayed in fitting company emblazoned announcements of the "dental parlor" with its "painless dentistry;" when we see our honored and much-abused profession prostituted to the level of one of the attractions in a modern department store, we cannot blame those who look upon dentistry as a trade, and view with more or less suspicion the followers of our calling.

We may indeed be proud of what our profession has done, in spite of all the obstacles with which it has had to contend, but we cannot but realize that something is fundamentally wrong with our system of dental education and practice of conferring degrees on men whose sole ambition seems to be to make what money they can out of their profession, regardless of how they drag in the slime of quackery what they have received and should regard and cherish as a sacred trust. But few, if any men of liberal education are to be found among the disreputable practitioners of dentistry. Success in professional life comes to an ignorant man only when he preys upon the ignorance and credulity of others. Deprive him of the support of the unthinking and the ignorant and his degree and diploma become but the worthless embellishments of a misdirected ambition.

There is no reason under heaven why an ignorant man or woman should be admitted to or graduated from a dental college, excepting that the college wants the fee and has so dwarfed its conscience that
the glitter of the matriculate's gold is brighter and more desirable than the honor and welfare of the profession it is supposed to uphold. Yet hundreds of utterly unfit students are graduated from our colleges every year; "dental parlors" increase and flourish, and everywhere reputable dentists are asking for a remedy.

Gentlemen, if only those students who have graduated honorably from a high school or similar institution of learning were allowed to matriculate; if all those who come before our state boards of dental examiners for licenses had to possess equal qualifications and to serve a three-years' apprenticeship with a reputable practitioner, the members of our "dental-parlor" brethren would diminish as rapidly as a kind and beneficent death would remove them from the scenes of their activity, or as would grow the respect and esteem in which our profession is held by all those whose opinion is worth having.

The success of quackery is its greatest encouragement, and while a non-discriminating public, reasoning only on a basis of cost when considering a dental operation, will lend its patronage to practitioners of ill-repute, so long will there be encouragement for others to join the ranks of those already without the pale of honorable association in their profession.

There never has been a time in the whole history of dentistry when more earnest work was being done, or more effort in every direction being made to advance the truly scientific branches of our art than at present. At no other time has so much been done to establish the correct relationship between the cause and effect and prevention of dental disease; never has dentistry been more deserving of the title of a learned and liberal profession than it is to-day; nor has there ever been a time when the quackery and the ignorance of many of our practitioners—graduates of dental colleges, if you please—has been so much of a reproach and disgrace. There are to-day about thirty thousand dentists practicing in the United States, and how many of them, let me ask you, are known anywhere outside of the little circle which bounds their daily lives. The names of a few are common to all of us, but the great mass of practitioners are unknown to the worlds of dental science and dental literature.

Almost one-seventh of the whole number of dentists belong to dental societies. Only one-seventh of all our fellow dentists are large-minded or liberal enough, or feel themselves sufficiently educated, to belong to their local and state organizations. And this state
of affairs, lamentable indeed, bespeaks but two things: the lack of broad and liberal education, and the enthusiasm and culture such an education gives. There are several dentists in San Francisco who have told me they would not join this society because they "could not write a paper," and "would not know how to do anything" if they did join. They are to be pitied rather than censured; they are good fellows and good dentists, perhaps, but they are living examples of the lack of education in the dental profession.

This question is serious and of vital importance to the future of our profession. If we are to keep pace with the scientific advancement of the day and keep dentistry in the front rank of the march of the liberal professions, we must educate men to a degree that will fit them for this work. We cannot equalize the natural endowments of all men, but we can, if we will, enforce upon them, from a theoretical standpoint at least, an equal start in the race for professional supremacy. I believe a time will come, and may I live to see it, when the degree of Doctor of Dental Surgery must be preceded by that of Doctor of Medicine, and these preceded by the degree of Bachelor of Arts.—Pacific Medico-Dental Gazette, Feb. 1898.

RELATION OF GENERAL MEDICINE TO THE SPECIALTIES. By Frank Billings, M.D., Chicago. Read before Chicago Medical Society, Jan. 18, 1898. Twenty years ago it was the rule to find in medical schools the following chairs: Anatomy, Physiology, Chemistry, Materia Medica, Pathology, General Medicine, General Surgery, Gynecology and Obstetrics, and Diseases of the Eye and Ear. As our knowledge of medicine and surgery has advanced these various principal chairs have become divided and again subdivided until a modern American medical school has thirty or more chairs, filled by as many professors. In the fundamental branches this has been necessary and of great good to the advancement of medical knowledge. Histology, physiological chemistry; bacteriology, special pathology, surgical pathology and general and special therapeutics are some of the offshoots of anatomy, physiology, chemistry, materia medica and pathology. These special chairs became necessary as our knowledge increased. Important as these special studies are individually, they are but parts of the fundamental branches of medicine and should never be studied entirely separate and alone. Physiological chemistry is a part of chemistry
and of physiology; histology, normal and pathological, a part of anatomy and of pathology, respectively; bacteriology a part of pathology, and so on through the list. A full knowledge of the fundamental branch implies an equal familiarity with the special subject related to it.

I think no one will dispute the fact that the fundamental studies of medicine are more thoroughly taught now than formerly. The student is better drilled and is taught in a more rational way. There are faults, very gross ones, which still need correction. Specialism in the fundamental studies is too often separated from the main subjects and the relation between them is lost. Bacteria are properly studied in the laboratory as interesting individuals or families, and important and necessary as this special study is, it is practically worthless to the student if he is not taught how the bacteria may affect animals, what chemical changes and anatomical lesions may be produced by them, and the result of these bodily changes upon the animal.

The so-called practical branches have also been divided and subdivided. General surgery has had separated from it the surgical diseases of women, orthopedic surgery, venereal diseases, diseases of the skin, diseases of the nose and throat, rectal diseases, and there are so-called experts or specialists in abdominal surgery, brain surgery, etc. General medicine has been shorn of mental and nervous diseases, of diseases of children, of diseases of the stomach, of the kidneys, of the lungs and heart, etc.

On the whole this division no doubt has been a wise one, and has been made because the teachers found it the best means of drilling students. The result has been in many ways good. The graduate has commenced practice with a better knowledge of special subjects than in years gone by. His knowledge of how to do his work is better than formerly. He will recognize a kidney, a heart, a lung or a stomach disease with his instruments of precision in diagnosis better than his brother of twenty years ago. His education has been special in many ways, and often at the expense of a general knowledge, as I shall try to show. This is one of the faults of the modern method of medical teaching.

Formerly much time was spent upon the principles of medicine and surgery and these principles were applied to all the specialties which now exist as parts of general medicine or of surgery. The
division of the principal chairs and the assignment of hours for the purpose of teaching the specialties resulted in two things: First, the curtailment of the time formerly allotted to general medicine and to general surgery; and second, the necessity of lengthening the college course to make sufficient room for the special teachers. The abbreviation of the time given to the general subjects necessitated, or at least resulted in a change of the method of teaching. The principles of medicine and surgery now receive but scant notice. The time assigned to the teachers of the general subjects is filled by a simple description of the individual general diseases assigned to the teacher. In other words, the general teacher has become a specialist in a sense. Even the books upon general medicine and surgery have changed in the same way. The writers of most of these books confine themselves to the special cause, morbid anatomy, clinical course, diagnosis and treatment of individual diseases.

We may say that the time now given to the fundamental branches makes it unnecessary any longer to teach principles. I think this is not so. To understand the principles of medicine and of surgery it is not only necessary to have a good knowledge of chemistry, anatomy, histology, physiology and pathology, but, as mentioned in the first part of this paper, the student should understand the principle of the relation of these fundamental branches to each other—their mutual interdependence. As for instance, the chemistry, histology and physiology of alimentation in health and disease, in relation to nutrition, heat production, heat loss, auto-intoxication and excretion from lung, skin, bowel and kidney; again, the anatomy, histology, physiology and chemistry of the blood and lymphatic circulatory apparatus and of the blood and lymph in health and disease, in relation to every organ of the body. Principles of which the above are examples abound in medicine and surgery. It is probably true that the student has been taught all of the essential facts concerning alimentation in health, and he may know all about heat production in health, but what about alimentation in disease? Of diet in fever and in the various chronic diseases, in relation to heat production and as compared with the various physiological processes of health? What relation has a noncompensated mitral valve lesion to the other organs of the body, what is the morbid anatomy of the affected organs and what result has the altered functions of these organs upon one another and
upon the whole organism? Will a student who is taught isolated facts or theories correlate them? A few may, the many will not.

As mentioned above, the medical college course has been lengthened by all good schools. Why? On the surface it appears to be because the profession is advancing and demands better college teaching. This is no doubt true. However, there is another reason found in the fact that so many chairs have been added that it became necessary to make more time, which could be divided like the principal chairs and filled by specialists. More accurate knowledge is thus given to the student, but given in what form? Usually as propositions, true or false, dependent upon the special teacher's belief in certain theories, tried or untried. Students are thus stuffed with so-called facts, supported too often by no fundamental principle, which they must memorize for examination and then forget.

Our so-called improvement in medical schools is therefore true in a limited sense only. The student is well grounded in the individual fundamental branches of medicine and surgery and he receives more clinical instruction than formerly. But as to the principles of medicine and surgery, which are absolutely necessary to a broad and comprehensive knowledge of medicine and surgery, he is woefully deficient. In place thereof he has a smattering knowledge, a few memorized facts or falsities of medicine, of surgery and of the specialties. His teaching has not been comprehensive enough in any one of these branches to make him a specialist, and he is a poor general practitioner because the principles of medicine and surgery are unknown to him.

Furthermore, this method of teaching has stimulated many students to select specialties at the beginning of their practice. A student will even announce his future specialty when he enters the medical school. The result can be easily guessed, and in fact it may be seen every day in the enormous number of specialists in every limited field.

Formerly most specialists practiced general medicine or general surgery for years before adopting a narrower field. I remember when I was a medical student to have heard many times repeated that the people made the specialist; that success while a general practitioner in a certain field made a gynecologist, made a specialist of diseases of the eye and ear, made a nose and throat specialist
or made a stomach specialist. I believe the doctor is a better special practitioner because of the practical knowledge gained as a general practitioner.

I think the above statement can be verified and will be confessed by every physician or surgeon who sees many patients and who meets many of his colleagues professionally. We may all make mistakes and our judgment may be in error, no matter what our experience and knowledge, but the mistakes one sees made daily by men in special practice are too often the result of a limited general knowledge and experience. This statement applies of course more fully to the chronic than to the acute diseases.

It is probably fair to state that the great majority of the chronic diseases which we meet, especially in our office patients, are caused by bad hygiene. I use the word in its broadest sense, which will include under it the history of the daily life of the individual. The poor are exposed to the evil influences of poor food improperly prepared for the stomach; imperfect protection from weather changes because of inadequate clothing and badly constructed dwellings; vitiated air in tenements and in the places of work, and overwork of both children and adults. The well-to-do and the rich eat selected and perhaps well-prepared food, but too much of it, or take rich, indigestible material; live in overheated, poorly ventilated houses in winter; take little or no active exercise, and with late hours for pleasure at night and late hours for the sluggard’s sleep in the day.

Then the habits of all civilized mankind, both rich and poor, of over-indulgence in alcoholics, in tobacco, in tea, coffee and other stimulants; the worry and fret of mankind over personal griefs, the strife of competition and struggle for a living or for a social position of influence in the community must all be taken into consideration.

These are some of the factors which undermine the general health of the individual and produce dyspepsia, constipation, malassimilation, malnutrition, auto-intoxication. This state aggravated by the continued evil habits or surroundings of the patient may lead to the chronic diseases of the vascular system and this in turn to sclerotic changes in any or all the organs of the body and probably in the cord and brain. In this state of malnutrition and auto-intoxication, catarrhal inflammation of the mucous membrane or possibly of the skin may occur through the agency of bacteria which
find a proper soil for development in or upon such weakened tissues. When once under way, a resulting local process may aggravate the complex whole and appear as the primary cause. Indeed, a local disease may and does sometimes produce a general disturbance similar to that which I have described. But in the great majority of cases the primary cause will be found to be some unhygienic state, the correction of which is necessary to the recovery of the patient, even if it be also required at the same time to wash out the stomach, curette and replace the uterus, fit glasses to the eyes or remove a cluster of hemorrhoids.

How can one know these truths except by experience as a general practitioner? And yet one finds specialists of the kidneys who do not treat diseases of the cardio-vascular system or of the digestive system; specialists of the throat and nose who do not study the blood states or the nutrition of the patient; specialists of diseases of the skin whose knowledge of the digestive and excretory organs is limited; specialists of the ear who do not treat diseases of the post-nasal space and pharynx; specialists of the eye who cannot or do not recognize the effect of many of the general diseases upon the eye, its nerves, or upon the brain; who do not recognize general conditions, as for example, malnutrition, neurasthenia, etc., and the resulting effect upon the refraction of the eye; specialists of the digestive tract who know nothing of the nervous system or of nervous diseases, of diseases of the lungs or of the circulatory apparatus; gynecologists who do not recognize malnutrition, digestive disturbances and consequent toxemias; nervous specialists who do not recognize organic disease in the viscera of the chest and abdomen or morbid blood states due to hetero- or auto-intoxication as explanatory of the resulting nervous symptoms; and rectum specialists who know but little of the circulatory apparatus or of diseases of the abdominal organs. I have only hinted at the relations existing between certain organs and between morbid states. The real relation is more profound and more universal.

The lack of general knowledge of the pure specialist is, I think, bad enough; but the failure to recognize the important effect of auto-intoxication and of malnutrition upon all the organs of the body, whether due to faulty habits, to environment, to poor food, bad digestion with fermentation in the alimentary tract, to malassimilation, or finally to inefficient excretion of effete material, is deplorable.
Catarrh of the throat and nose due to the above condition is treated topically for months without the least attention to the general condition of the patient. Glasses are fitted to eyes which are emmetropic and in which the temporary error of refraction is due to weakness of the whole muscular system, including the ocular muscles. Headache due to an error of refraction which is caused by malnutrition and auto-intoxication is palliated with spectacles, while the fundamental cause continues. Neuralgias of the pelvic organs and congestion of ovaries and uterus due to morbid blood states, to neurasthenia and often to a weak or diseased heart, give gynecologists full waiting-rooms and afford them abdominal sections and jars full of normal ovaries.

The above named conditions give the dermatologist an opportunity to write volumes upon skin eruptions with a nomenclature terrifying in degree. The neurologist fails to recognize many of the functional disturbances of the nervous apparatus, and even many of the organic changes of the cerebro-spinal axis as originating in the conditions named. The stomach specialist washes out an abused stomach, starves a patient suffering with malnutrition and fails to find the over-full venous portal circulation of a lung or heart disease. The kidney specialist does not recognize the full import of toxemias, hetero- or auto-intoxications upon the blood-vessels and upon the kidneys, nor does he often realize how near to the kidneys are the organs of digestion and assimilation.

I appreciate the fact that there are special causes acting upon special organs which the respective specialist recognizes. I also confess that a single organ or apparatus diseased may affect the whole body and produce symptoms remote from the offending organ, with phenomena so confusing that the general practitioner is often confounded, while the gynecologist with speculum and knife, the oculist with lens, the rhinologist with adenoid scoop, the rectum specialist with pocket snipper, triumphantly point to patients relieved of backaches, neurasthenia, headaches, dyspepsia, constipation, nausea, vomiting, irregular heart, etc.

This same effect of a diseased organ upon remote parts of the body is, however, the stumbling block of the narrow specialist. He can see no farther than the organ he has selected as his own special plum. The man or woman is only the special organ he has selected to treat: the remainder of the individual is an attachment only.
DIGESTS.

Now, not only is specialization of to-day disorganizing the medical profession, but it is spoiling the patient. It is not unusual to find an invalid whose suffering depends upon one principal thing, visiting an oculist, a stomach specialist, a dermatologist, a urinalyist and several other specialists at one and the same time, acting independently of one another, while the family physician, the general man of the constellation, stands by as umpire, occasionally throwing in an anticonstipation pill.

Now we must have specialists. They should, however, be men of general experience. They should be as thoroughly grounded in the fundamental branches of medicine and in the principles of medicine and surgery as the general medical man. They should be capable of recognizing the general causes which may affect some special organ, and they should know what measures to pursue to relieve the patient not only by local but also by general treatment.

Our medical schools should teach more of the principles of medicine and surgery. The disease, both general and special, should be presented as examples of certain principles, and all deductions and conclusions should be referred thereto. Our young men should be taught to look upon the specialties as a part only of a whole—a part which may be understood only when the whole is mastered. To educate the student in this way it will be necessary to make the specialties according to general medicine and surgery, and to show him by practice that to become a successful practitioner in a special field he must first become a general practitioner.—*Med. Standard, Feb. 1898.*

**SYSTEM TO ASSIST IN THE IDENTIFICATION OF CRIMINALS AND OTHERS BY MEANS OF THE TEETH.**

By B. B. Marco, D.D.S., New York. Read at First District Dental Society of New York, Dec. 14, 1897. My idea is to introduce this system of identification into the Detective Bureau of New York. Once established here it will soon make its way into the army, navy and insurance companies. By the means of this system deserters of the army and navy, criminals, and, in fact, all persons can be more readily detected than by taking note of any physical peculiarity, which can be easily modified or changed.

My system is as follows: There must be a carefully prepared chart of the thirty-two teeth in the mouth, so that the examiner can have it before him and mark down each peculiarity as it presents itself.
First. Color, shape and size of the teeth. Second. Note any irregularity of the teeth. Third. If any teeth are missing, which ones. Fourth. Gold crowns, pivots, or bridges. Fifth. The filling of each tooth, and what materials used. Sixth. Any carious teeth. Seventh. Note if any plate is in the mouth, and of what material it is composed; number of teeth on same; also size, shape, and color of teeth and plate. Eighth. Note the four basal temperaments. Ninth. Shape of arch, as saddle or V. Tenth. Formation of the lips.

Let us take John Smith, prisoner. His picture is first taken; then the Bertillon system is next used for measurements, etc.; now let us add the identification by means of the teeth. Teeth have a yellowish cast, longer than they are broad, quite large, firm articulation; lips full; in upper jaw right cuspid far out of line; large gold filling in upper left central; upper first bicuspid, gold cap; in lower jaw, left central and lateral missing, left cuspid carious; arch, saddle-shaped; his temperament is bilious. Thus, you see, we have a description of a man's mouth as true and perfect as a photograph of his face.

The question might arise, Suppose he extracted his teeth? Well he would have to take out almost every tooth in his mouth to deceive the carefully prepared chart. A man may shave his beard and moustache, his hair and eyebrows; he may contort his face so as to change measurements; he may cross his eyes, twist his mouth, affect lameness or a stoop; but unless he extracts all of his teeth there will be some tell-tale among them that would betray him. As you know there is no certain means of identification, but, in my opinion, the teeth are the most positive. You cannot change the malformation of a jaw, nor the irregularity of teeth, after a certain age.

Now, we realize that any layman could not give a good and accurate description of the mouth; but the system can be so simplified that any ordinary country constable could both send or identify a description of the mouth; and in the cities, where the head officials are mainly men of marked intelligence and education, they could, with a little instruction, in a short time fill out a perfect description.

This system, after consideration, must appeal to you as being not only for the advancement of dentistry, but a useful addition to our already valuable Detective Bureau. What I ask in return is your cooperation in this matter.—*Dental Cosmos*, Feb. 1898.
CATAPHORESIS. By Henry W. Gillett, D.M.D., Newport, R. I. Read at New Jersey State Dental Society, July, 1897. One of the most important developments of the year in our knowledge of cataphoresis relates to the change in our views of the method by which solutions are transferred from one point to another. In considering the process to be a modified osmosis, we assumed that the current flow through the tissues resulted in a stream flowing from positive to negative, in which our drug was transported somewhat as chips float down a brook into which they have been thrown. Another view was illustrated by one writer who compared topical application of the drug to a nail held against the board, and the current to the hammer blow which drove it in.

These views have been materially changed in the past few months, and the writer's present estimate of the process would be better illustrated by the statement that, when we place a drug at one electrode, and pass the current, the opposite electrode becomes more attractive and the drug proceeds thither, just as a child will be content to be with its nurse at one end of the room till it discovers its mother at the other end. Then, if free to do so, it goes to the mother. Its sense of sight keeps it moving on step by step towards the goal, just as the current keeps the drug going on by making the area ahead of each molecule more attractive than the position which it occupies. It is a process of leading, rather than of driving, or carrying by force of current flow. This modification of our views is made necessary by the discovery that many drugs do not move in the direction of the assumed current flow, but rather in the opposite direction, from negative to positive.

The first published statement of experiments demonstrating this fact, which came to my notice, was that of Prof. W. J. Herdman. He demonstrated that potassium iodid travels from negative to positive as a compound molecule, and having reached the position it is electrolyzed or split up into its component parts.

Anaphoretic action of Iodin. Following out this line of experimentation, the writer reported at the recent meeting of the New York State Society experiments corroborating Dr. Herdman's conclusions concerning potassium iodid, and demonstrating that iodin, both in compound solution and in tincture, moves in the same direction, from negative to positive. In other words iodin (in these three forms at least) is anaphoretic (Herdman) instead of cataphoretic.
As these experiments will be published later, they will not be detailed here. They lead to the inference that the results following the cataphoretic use of iodin have followed rather because of the prolonged contact and consequent favorable conditions, than because of the deep penetration of the iodin. The direct effect of the current itself in modifying the local conditions may also have been a factor.

The rapidity with which iodin and its compounds travel through media in laboratory experiments, leads to the conclusion that its application anaphoretically should be made with extreme caution until we have more clinical evidence as to the results when it is so applied. The writer would consider it unsafe to make long application, or to use other than very dilute iodin solutions in that way. The saturation of gum tissue and alveolus, for instance, to a depth of one-quarter or one-half inch with a strong iodin solution can scarcely be other than disastrous. Iodin travels in cotton under a current of three milliamperes or less with considerable speed (one inch in ten minutes). Potassium iodid travels still more rapidly under a similar current (two and one-half inches in seven minutes being one record).

It is to be noted also that the statement that the transfer of the drugs comes to a stop midway between the two electrodes is an error. At least iodin and iodin compounds, so far as tested, go all the way to the positive electrode, when placed at the negative and exposed to the influence of a suitable current. — *Items of Interest, Feb., 1898.*

**Rheumatoid Arthritis.**—A skeleton was found in the course of some scientific explorations last winter in Egypt, which has shown, upon examination in London, every osteotic evidence of rheumatoid arthritis, and the case is of striking interest as showing the pathological conditions as far back as 3700 B.C., to which time there is abundant proof that this skeleton belonged.

**Cheap Crown.**—By W. C. Kerns, D.D.S., Piqua, O. Frequently we have cases where the patient is unable to pay for a gold crown. In such cases I make a silver band to fit the tooth, the same as if crowning, fit and adjust the band, and fill with amalgam, allow the patient to bite, then remove the surplus after it is hard, burnish, and you have an excellent cheap crown.—*Ohio Dental Journal.*

**Poor Dentistry Costs a Life.**—H. E. Pratt died yesterday after a two days’ illness. Last Tuesday he had the nerve in a tooth removed, and allowed a careless dentist to cap over the opening at once. Before many hours had elapsed the tooth began to give him great pain, and he grew rapidly worse. Physicians pronounced it a case of blood poisoning, and all efforts to save his life proved fruitless.—*Chicago Tribune.*
Criticism by Dr. J. Foster Flagg.

Swarthmore, Pa., March 23, 1898.

Dr. J. N. Crouse,

Dear Doctor:—With this I request that you will refrain from sending me any more suggestions of subscribing to the Digest.

Although I have never joined the "Protective Association," as I have never had any occasion to use any patents except those I was entirely willing to compensate for, I have yet been directly instrumental in having many join it who desired mutual protection. I have always urged it upon our classes, and in social and society conversations have always advocated it.

But your other work, as it has developed, I have no sympathy with, and the culmination in the shape of that obsolete "bastard" alloy which you offered as the "Perfect" alloy, and which was simply a spoiled "Submarine," and guaranteed by the enormous experience of "several months," you know exactly what my opinion of that would be.

I am sorry that you, with your protective record, found it needful to resort to that which you seem to have had to, and I desire not to be further reminded of it.

Truly yours,

J. Foster Flagg.

Reply to Dr. Flagg.

Dr. J. Foster Flagg; Chicago, March 26, 1898.

Dear Doctor:—Your letter just received. I did not know that you had been asked to subscribe for the Digest, as the detail part of that work is carried on by others, but I am sorry the suggestion gave you any annoyance.

I have often wondered why a man of your pretensions should urge others to join the Protective Association, and by so doing help protect you, and yet keep your own $10 in your pocket. Did it ever occur to you that you would probably have had more influence with your students and have stood in a more respectable light with your profession, off whom you have lived for many years, had you joined the Association? The effect on a man's conscience of allowing others to stand the whole expense, even though small, to which
he should contribute his share, is demoralizing, and you must have therefore belittled your character in your own estimation, as you certainly have done so in the eyes of your fellows.

Now as regards the question of alloy. I read with much amusement your bombastic communication in the American Dental Weekly for February 17. In that effusion you say: "At this late date in amalgam alloy work these two instruments (micrometer and dynamometer) are practically useless, as we have been thoroughly informed upon shrinkage and expansion for the last twenty years, and as there is no alloy sold which does not make an amalgam sufficiently hard for all services required."

In reply to the first part of this remarkable statement, if you have been thoroughly informed upon shrinkage and expansion for twenty years, it is unfortunate for those who have had confidence enough in you to use your alloys that you did not either employ some one sufficiently talented to prepare an alloy that did not shrink, or else abstain from swindling your fellow practitioners by selling them one which leaks so much that it is unfit for use as a filling material. "Darkening the tooth structure," which you claim for "Submarine," does not by any means save the tooth from destruction.

As regards the strength of various alloys, one of the greatest defects in amalgam fillings has been that they change their shape, and consequently position in the cavity, under force of mastication, and it has always been admitted that edge strength was generally lacking, yet you say there is no alloy sold that is not sufficiently hard, etc. If you had ever seen tests made with these instruments which you condemn as useless, you would be ashamed to make such statements.

The analysis of "Fellowship" alloy which you publish is about as nearly correct as you generally get things. No one of the older members of the profession will be led astray by it, and I denounce your analysis as very inaccurate simply for the benefit of the younger men who do not know you so well. The time has passed when you can fool the dentists, for they are beginning to think for themselves.

Now, Doctor, do not be at all alarmed that I, knowing you as I do, and seeing the miserable failures you have made in attempting to furnish a decent alloy to the profession, would copy anything from you. "Fellowship" alloy is not by any means a "bastard,"

nor are the metals contained in it antagonistic to each other. In offering it to the profession I have rendered them a great service, and have done what should have been done twenty years ago, viz., given them an alloy which was reliable and uniform. It was put upon the market only after I and the expert metallurgists whom I employed were thoroughly satisfied that it answered every requirement for an ideal filling material. Furthermore, this is the opinion in which it is held by all who have tried it.

Yours very truly,
J. N. Crouse.

PHILADELPHIA LETTER.

Dear Digest: Philadelphia, March 19, 1898.

Your recent editorial on the patent question has stirred up the editor of the Items of Interest to such an extent that he devotes fourteen pages of the March number to the subject. As far back as our memory can carry us in dental journalism, this is an unprecedented editorial—in length.

Our second source of recent enlightenment upon patents is in the form of a circular letter from R. B. Donaldson, of broach fame. His communication can be termed simply a begging letter. He endeavors to play upon the sympathies of the profession to such an extent that they call him blessed—for what we fail to see, unless it is his compact with tradesmen to extort large sums of money from his fellow-practitioners for a very trifling thing. We say fellow-practitioners, as a part of his plea is the fact that he practiced dentistry for forty years. Dr. Donaldson closes his letter by saying, "Perhaps it had been better had I remained silent until the judgment of the court had been announced." What a pity he did not consider that point more seriously before he sent out that letter—if he sent it out. We would invite Dr. Donaldson to read, as a reply to the aforesaid letter, your contribution to the subject in the February Digest in reply to Dr. Howe's queries.

We are very pleased to report that our state board of dental examiners has reconsidered the order concerning the time of holding the spring examinations, of which we wrote last month. The members of the board have righted themselves in this matter, but at once make another blunder, which to our mind is more serious and will be more far-reaching than their first would have been had they carried it out. This time they are sinning against themselves, by
allying themselves, in a measure, with a dental college. Now if there is any one thing they should do, it is to keep aloof from the colleges. We believe that the examinations would be just as fair and honest held in a college lecture-room as in a public hall, but such a proceeding places both the school and the board in a position to be criticized. It is hoped the board may recognize this shortsighted step and correct it ere it is too late. We think it a poor sort of professional spirit which shuts its eyes to existing evil or coming dangers, and it seems to us that the question of examining boards, their legal status, arbitrary powers, etc., is one of the perplexing problems of the future.

Some of the most valuable articles in the *Items of Interest* have for some time been the series on the "Office and Laboratory." Many have been enlightened by the knowledge that Dr. So-and-So had three rooms, floors carpeted, and was the possessor of some antique furniture; that another supported an office assistant, and a colored boy with a white jacket. Now we are presented with the photograph of the doctor's wife, at least we take it to represent such a personage. She seems very close to him. This is quite an acquisition to our knowledge of dental matters.

The Odontological Society met by invitation this month at the residence of Dr. Bonwill, and the doctor gave them a rare treat—an essay or talk of an hour and a half in length. Many of us regret that we could not avail ourselves of his invitation and hear him tell of his wonderful experiences abroad. We learn that Dr. Bonwill gave it as his opinion that the big guns in Europe, those who make the most noise about antiseptic treatment, sterilization, etc., are in actual practice not so cleanly nor so careful as the average dentist in this country. This is a compliment to America.

Cordially yours,

THE SPECTATOR.

NEW JERSEY LETTER.

*To the Editor of The Digest,*

NEWARK, March 21, 1898.

MR. EDITOR:—New Jersey is again to the front, the new dental law having passed the legislature last week. We now have a law inferior to none, and we think superior to all. It is simple, concise and to the point, and can and will be enforced—a fact which does not obtain with many of the laws in our sister states. Its main features have been told in a former letter.
We notice in a letter from a New York correspondent to the *Dental Review* that the writer, after a brief summary of the toasts at the annual meeting of the Central Dental Association, remarks that "Newark is such a journey from the metropolis that the Jersey boys must feel themselves complimented to get such attendance at their event as they did, and more complimented by the attendance of those from afar." We certainly do appreciate this, and would not be hosts unless we did. At the same time this seems to be a nice little way our friends from Gotham have of expressing themselves about almost everything that happens outside the metropolis. Of course we cannot agree with any such sentiment as this, as this portion of the United States has passed the limits of a country town and need no longer make pretentions that cannot be justified by facts. Our impression is that our friends from across the bay know where they can get a good dinner and plenty of good cheer, and realize that they can reach and return from Jersey sooner than they can from many points in their own city. We enjoy their company and try to give them a right merry time.

On the 21st inst. Dr. M. L. Rhein gave the C. D. A. a very interesting and instructive paper on "The Rational Treatment of the Dental Pulp." It was warmly discussed and made quite an impression. We predict that it will call forth much discussion from the profession, as its lines are very radical in contrast with the practice and precept of many from whom we often hear on scientific points.

Dr. Riley, the newly elected president of the C. D. A., presided for the first time at this meeting. It was auspicious that he had such a good paper for his initial attempt. He is full of fire, snap and ideas, and we prophesy a very successful year under his ever watchful guidance.

Dr. Gregory, as the new chairman of the executive committee, also made his first bow to the dental world as one of the managers of the association. He is already in active correspondence with a number of our confreres, with the view of having them favor us with essays during the coming year. He will have to look to his laurels to equal Dr. Barlow, who has had this in charge for a number of years.

Dr. Harvey Iredell, chairman of the electrical exhibit of the state society, is alive on that line, and has the promise of many exhibits
already. This department will be a very full one, and without doubt the most extensive ever shown at any dental meeting. He has the active cooperation of the editor of the Electrical Review of New York city.

We have just received a list of the members of the examining boards of the United States. Notwithstanding the severely adverse criticisms upon the N. A. D. E., which have been published in several of the journals during the winter, the association is stronger than ever, and is going on with its work regardless of these external irritations. The members are confident of their position, and that it is the right one. Fraternally yours, Hornet.

NEW YORK LETTER.

To the Editor of the Digest, New York, March 17, 1898.

Mr. Editor,—Editorials nowadays are not only numerous but spicy, and it does not follow that criticism means a personal quarrel. We have not had enough editorial discussion, but it looks now as if it would be more than plentiful. We recall one editorial which claimed that the personal pronoun “I” was the proper thing to use. We always thought that it was considered proper to give a leader to the writer of an article. We think an editor has a better place for display in the editorial columns than in the place of a leader, particularly in his own journal.

It is truly amusing to note how we are being turned about by efforts in the patent line. Money is the cry in this age, and the love of it is the root of all evil.

By some oversight we had missed reading until recently Dr. Williams’ reply to the proceedings of the New York Stomatological Institute. It is a real pleasure to peruse so clear and concise a statement as this article. We mention only the first seven lines, the ending of the first paragraph commencing the reply, “It is so difficult for human nature to get away from itself.” There is a big lesson in these two quotations, and if strictly followed in their teachings they would bring a harvest for good will and help on the greater advancement for knowledge. Any one who does not read Dr. Williams entire, providing he does not let prejudice dominate him, will lose much.

What a pity that there are some men who take criticism as personalities. No one is fit to edit a journal who allows such a thought to
enter his mind. We are sorry to hear such unjust judgment pronounced against those who have earned far more gratitude from their fellows. The sweetest reward, however, is one's own conscience, which keeps safely guarded the true motive of our purposes. No one can take this away. Alas, so many have given up with broken hearts, because their associates misjudged them. We must be free from all treacherous spirit; too much of it is apparent in New York.

We welcome New York correspondent No. 2, for he shows more than ordinary ability in this line.

Brooklyn seems to have a better prospect of being heard from in our journals. The profession in that city have kept too much aloof.

The new deal of the Odontological Society in the choice of an executive committee to direct the Dwinelle Clinic already shows energy and the bringing out of attractive ability—this month Professor Harlan; Delos Palmer, son of Corydon, and a four years' pupil of the late Dr. Atkinson; and Dr. St. George Elliott, who is famous for his ideas in useful devices. Dr. Elliott has covered a large area of the civilized world in his practice—the East Indies, Japan, London, and back to New York the second time, securing in all these places a large and successful clientage.

We see that Dr. Van Meter, Sr., has taken up the plugger after a period of retirement from a long and successful career in Rome, Italy. He is now at Tacoma, Wash., in the big northwest, full of energy and ozone. We learn that the tide of prosperity is coming back to the northwest, and we wish the doctor a successful career in his new venture. We knew him in the earlier days, and have lately made the acquaintance of his widely-known and accomplished daughter, Lady Bennett, of England.

The class of men we have met from this attractive northwest, so full of energy and ambition, has stirred our blood not a little, and we are almost tempted to push out. Our New Mexican trip a few years ago gave us such a feeling of exhilaration from the high altitudes that we have not yet lost the benefits gained. We were built up physically, and the harvest of fees which were freely bestowed by the guardsmen of our national frontier was not a small item; we were also treated with a princely hospitality. Our army and navy patients have been among the most appreciative, and we might in passing say that our visit to the different posts revealed a dire need of dental ability, as an auxiliary to the medical and surgical.
The following clipping from the New York Herald of March 16 indicates that Dr. Evans’ wealth is to come to the aid of dental instruction: ‘Dr. Evans’ Will Upheld. Paris, Tuesday.—The court of probate has rejected the petition of Rudolph Evans, the only surviving brother of the late Dr. Thos. W. Evans, who died here last November, for the appointment of a judicial administrator with a view of preventing the executors from taking possession of the testator’s estate. The court has granted the petition of the executors to take possession.’

The meeting of the First District Society this month was favored with a paper from Dr. Talbot, of Chicago, which was characteristic of his well-known ability as a writer.

The Odontological Society has awakened an unusual interest in New York by clinics, and they are of a kind that well repays the visitors. Professor Harlan was present and attracted more than ordinary attention, manifesting an intelligent and practical interest in the subject of pyorrhea alveolaris. His finely devised and skillfully made set of instruments were objects of much comment. A paper followed in the evening, which edified a large audience and drew out a good deal of quizzing. This is due to the fact that Dr. S. G. Perry has a very seductive and persuasive ability and ready wit in good training. We notice several of the former dissenter, who left this society, again in attendance. A hopeful reaction, and we predict that more will sooner or later follow.

Dr. Delos Palmer’s exhibition was well given, with ingenious apparatus. Dr. St. George Elliott gave a very unique exhibit. His pneumatic mallet is a real novelty, operated both by foot and electricity. The delicacy of construction was marked.

We met Dr. Kingsley just returned from a trip to the Bermudas, and we trust that he may soon regain his much depreciated state of health.

Cordially, New York.

Rate of Solution.—A. A. Noyes and W. R. Whitney claim to have experimentally established the law according to which solid substances are dissolved in their own solutions, and they express it in the following terms: ‘The rate at which a solid substance dissolves in its own solution is proportional to the difference between the concentration of that solution and the concentration of the saturated solution.’ This law has proved to be correct in the case of substances so widely differing in chemical nature and physical properties as benzoic acid and lead chlorid, and it is therefore assumed by the authors to be of general application.—Jour. Am. Chem. So., xix., 930.
NEW DENTAL JOURNALS.

We are pleased to welcome to the ranks of dental journalism two new monthly publications, the Dentist, published in London, Eng., and the Indiana Dental Journal, published at Indianapolis, Ind., and edited by Dr. Geo. E. Hunt. They are both neatly gotten up, and the first numbers give promise of much good.

We feel that an apology is due Editor B. H. Catching and his corps of able assistants, of the American Dental Weekly, for not having ere this taken notice of that paper. The omission was due to our not receiving the first few numbers, and to oversight in the rush of other matters. We enjoy its weekly visits very much, and wish it an abundance of success.

ILLINOIS STATE DENTAL SOCIETY.

The annual meeting of this organization will be held at Springfield May 10-12, 1898, and an interesting and valuable program is promised. This society is one of the largest and most enterprising of the various state dental societies, and every dentist in the state should feel it his duty to attend, not only to receive the benefits which always come from such a gathering, but also to do his share to help in the good work. On behalf of the officers we extend a cordial invitation to all dentists outside this state to be present and participate in the meeting and discussion.

A SHEEP IN WOLF'S CLOTHING.

We have read with interest the editorial in the March Items of Interest, entitled "The Blind Leaders of the Blind," and we are more than ever convinced that the editor of that journal deserves the title. He has attempted to push the dental profession into a presentation of "A petition to Congress for an act to restrain the granting of patents upon any method of treating human disease." We characterized this performance as a proceeding which was in
itself sheer nonsense and bade fair to make the dental profession an object of ridicule. The editorial in the last Items is ample confirmation of our former statement.

We repeat that there are no patents granted upon methods of treating human disease. The science of the prolongation of the vital forces is not the subject matter of patent monopoly, and no man or court has ever known of any physician or surgeon being prosecuted for infringement of a patent by reason of anything done by him in the treating of human disease.

The last editorial in the Items shows plainly that up to this time the editor did not know just what he meant nor really mean what he said. It now appears that he intended that dentists as a class should petition Congress to restrain the granting of any patent upon any mechanism or procedure of any description employed in the practice of their profession.

Of course such a petition as this in view of the facts that should be known to the editor of any journal, and which are certainly known to the great body of the dental profession, is simple folly. The time has not now come, nor will it ever arrive, when any particular body of men will by class legislation be exempt from the patent laws. The farmers of this country are the most harassed by patents, and as they and many other persons believe the whole patent system should be abolished, an organized attempt is made during almost every session of Congress to secure the repeal of the patent laws, or at least to materially modify their enforcement and scope, but no petitioner has ever been so foolish as to suppose that any particular class of citizens, industrial or professional, could be relieved by class legislation. There is another reason why this petition—to prevent the granting of any patents relating to mechanical appliances or procedures employed by a dentist—which the editor of Items of Interest desires to present to Congress, is absurd. All such modes of procedure are carried out by mechanical methods or appliances, and the desired results are assured by mechanical effects, and all such patents relating to mechanical processes have been declared invalid by the Supreme Court of the United States.

The decision to this effect is known as the case of Risdon vs. Medart, 158 U. S. 68, and of such are the long list of patents which are referred to in the aforesaid editorial. This decision was cited by Judge Wheeler in deciding the Low Bridge Patent invalid. We
called attention to this fact when discussing Dr. Ottolengui's report at the New York State Society meeting last May. Judge Wheeler's decision was published in full in the DIGEST for April, 1896, and in several other journals about the same time.

Notwithstanding all this the editor of Items says, "The fight has been conducted solely on one line. The patents have been fought separately and one after the other declared invalid, because priority of invention was shown. In no instance, so far as has been publicly declared, has the claim been made and sustained that the method was not a subject of patent." It would appear as if the editor had gotten himself into a hole, and recognizing that fact, was now trying to pull the hole in after him.

We have always thought it to be the duty of the Dental Protective Association to protect its members from unjust and illegal patents, but we have at no time deemed it within the province of the Association to engage in foolish and hopeless attacks upon the patent laws.

We have a grave charge to present against the editor of Items of Interest, and it is hostile and fatal to his protestations that he is laboring for the good of the profession.

The Protective Association, with its ally, the Dental Protective Supply Company, is engaged in a desperate legal fight to determine the validity and value of the Donaldson barbed broach patent. The S. S. White Dental Manufacturing Company claims to have the right to sell this broach, and the testimony already taken shows that the dental profession have thus far paid that company about $200,000 as royalty under this patent, and will have to pay about $200,000 more before the patent expires. We believe this patent to be entirely worthless and invalid, and that the money already filched from the dentists by the S. S. White Company is simply an act of spoliation without justification.

According to the editor of Items of Interest, this barbed broach patent is granted upon a "method of treating human disease," as the article is used in the extraction of devitalized pulp and for scraping and cleaning the decayed walls of pulp-canal. Of course such a patent, for this reason alone, irrespective of its validity, would be condemned by said editor. He says in his editorial, "Treatment of the pulp should not be patented, yet such patents exist." Consequently, we would suppose that no power on earth could get him
to testify in behalf of the validity of such a patent, and to justify
the taking of $400,000 as royalty from his brother dentists in the
past and future, but the following are the facts:

He deliberately and voluntarily went upon the stand as a witness,
in behalf of the S. S. White Company against the Dental Protective
Supply Company, to sustain this patent, and gave several pages of
typewritten reasons for his action in the matter. We quote a few
lines from the official record of that case, showing his voluntary act
and anxiety to assist the S. S. White Company in its fight to main-
tain this patent and royalty against his brother dentists.

UNITED STATES CIRCUIT COURT—NORTHERN DISTRICT OF ILLINOIS.

vs.
The Dental Protective Supply Company. Defendant.

Rodrigues Ottolengui, a witness on behalf of complainants, having been
duly sworn, deposes and says in answer to interrogatories by complainant’s
counsel, as follows:

Q. 1. Please state your name, age, residence and occupation?
A. My name is Rodrigues Ottolengui, my age is 36, residence New York
City, and my occupation is practicing dentist. * * * I am a member of
the New York State Society, the Second District Dental Society, the National
Dental Association, and the Central Dental Association of New Jersey. Editor
of Items of Interest. * * * A monthly dental magazine.

XQ. 1. At whose instance do you give this deposition?
A. I was asked to-day, at S. S. White & Co.’s dental depot, what my
opinion was of the Donaldson Cleansers, and I expressed my views on the
subject. Then I was asked if I would be willing to repeat that statement to
their attorneys in this suit, and I said I would. That was by Mr. Towner,
the gentleman in charge of the uptown house of the S. S. White Company.

XQ. 2. That was the first time you had been spoken to about the matter?
A. The first time I had ever been spoken to about this suit, except by
Dr. Crouse—Dr. J. N. Crouse—by anybody.

Verily, Consistency Thou Art a Jewel, but thy name is not
Ottolengui.

By the way, this gentleman has some, to say the least, very
peculiar ideas. He says: ‘‘Let us comprehend what we mean by
treating disease. If a man have his arm cut off by a circular saw
that is an accident, but if he have it amputated because of tubercu-
losis that is an example of disease. If a man have a tooth knocked
out in a fistic controversy that also is an accident, but if it be slowly
destroyed by caries that is disease. The recognized treatment of
this tooth disease is by filling. Any method of filling teeth, there-
fore, is a method of treating disease." * * * "To insert a set of artificial teeth is to treat human disease." To follow out his arguments—we cannot dignify them with the name of reasoning—he would allow patents upon instruments which were to be used in cases where the tooth had been lost by accident, but not where it had been destroyed by caries. The supplying of a wooden arm or leg to the remaining stump, insertion of a glass eye, making a shoe to fit a tender corn, etc., would also be methods of treating human disease.

We must vehemently protest against the illogical, unfair and flippant manner in which the editor of Items discusses the fifteen years' battle of our profession with the old Rubber Company. The older members well recollect the insults, outrages and ignominy which were heaped upon the individuals in our profession by this company. Thousands of dentists were sued throughout a long series of years in every state in the union, and great burdens of judgments and costs in the federal court were piled up against them simply for using a vulcanized base for artificial teeth. The early practice of hundreds of the younger members was ruined by injunctions and suits, and dentists were sent to jail by the score throughout the country for attempting to escape the effect of this patent. More than $2,000,000 were taken from dentists, not to mention everything else, and the managing officer of the Rubber Company was murdered by a harassed and goaded dentist in 1879 at San Francisco during the prosecution of a suit against him.

During all these years nothing was heard but the anguished cry of the dentists under their burdens and bondage, and yet the editor, in reference to the matter, says, "It was not the payment of the paltry fee which they (the dentists) resented." It may be that $2,000,000 is a paltry fee in his opinion, but the payment of this sum was a serious and sore matter to our profession during those dark days and it has not been forgotten.

Had the Dental Protective Association been in existence at the time of the Rubber Company's litigation, all this harassment and piratical plunder would have been averted and the $2,000,000, less the outlay of $10 each for membership fees, saved; as there is not a particle of doubt but that if an honest and earnest defense had been made the patent would have been defeated. The same results could have been attained as in the case of the Crown Company,
whereby a saving to our profession has been effected of probably five times $2,000,000.

Before closing we wish to discuss the last two lines in the editor's lengthy effusion, which are, "The deepest ditch in the pathway of dentistry is the process patent, with its quagmire of license fees and royalties at the bottom." We are well aware that royalty patents are very objectionable, because of the obnoxious licenses the dentist is compelled to sign, but the robbery is much greater on worthless patents on various devices. New patents are constantly being taken out on articles which are void of novelty; simple changes are made in patented appliances on which we have been paying royalty for the full time of one patent and new patents granted on these changes; mechanisms which have been long in use are "discovered" for the first time by some individual and a patent obtained thereon; in other cases patents are obtained by fraudulent methods, etc., etc. It is not legitimate patents which inflict hardship upon us, but the illegitimate patent abuse which requires our attention. No legislation short of entirely wiping out the patent laws can prevent the continuance of this wrong, and this will never be done.

Organized effort by the dental profession is therefore absolutely necessary to protect its members. There may be a better plan of correcting these patent abuses than that presented by the Dental Protective Association, but if so it has never been presented in tangible form. We have not "grown so fond of protecting dentists from unjust patents that we cannot bear to see the dentists make a movement to protect themselves," but we do protest against abandoning the Protective Association and adopting in its place such a silly and worthless plan as the one proposed by the editor of Items.

Whenever we write an editorial upon the question of patents we wisely submit it to our patent attorneys—and there are no better in this country—to make sure that our position would stand a legal test. We think it would have been wise had the editor of Items taken the same precaution before he got himself into the awful tangle on the question of patent law in which he now is. Surely the able attorneys of the S. S. White Company, with whom he has of late been so closely associated, and whom he has assisted in the fight against our profession on the Donaldson patent, would have been only too glad to have kept him from making these ridiculous blunders, had they only known that his ideas on the question of patents were sadly muddled.
Book Reviews.

Tin Foil and Its Combinations for Filling Teeth.—By H. L. Ambler, M.D., D.D.S. Published by the S. S. White Company, Philadelphia, Pa., 1897.

Dr. Ambler is an enthusiast as to the use of tin, and he has been to great pains to collate from dental literature the available information upon this subject, which is here gathered for the benefit of his fellow practitioners.

Cataphoresis or Electric Medicametal Diffusion as Applied in Medicine, Surgery and Dentistry.—By W. J. Morton, M.D. One volume, large 8vo, illustrated, half morocco leather, gilt top, $5. Published by the American Technical Book Company, New York, 1898.

Dr. Morton is the recognized authority on this subject. Prior to the publication of this valuable volume, the profession have had only the occasional papers appearing in the scientific press for reference. This book covers the whole subject, and can be taken as a reliable guide-book by the dentist and surgeon. The work is profusely illustrated with fine engravings and diagrams, showing the application of cataphoretic instruments.

Notices.

KANSAS STATE DENTAL ASSOCIATION.

The twenty-seventh annual meeting of the Kansas State Dental Association will be held at Topeka, May 10-12, 1898. Ed. BUMGARDNER, Sec'y.

IOWA STATE DENTAL SOCIETY.

The annual meeting of the Iowa State Dental Society will be held at Des Moines, May 3-6, 1898. W. G. CLARK, Sec'y.

ALABAMA DENTAL ASSOCIATION.

The twenty-ninth annual meeting of this society will be held at Montgomery, Ala., April 12-16, 1898. All members of the dental profession in good standing are most cordially invited to attend. Reduced rates on the certificate plan. W. J. REYNOLDS, Sec'y, Selma.

SOUTHERN MINNESOTA DENTAL SOCIETY.

The thirteenth annual meeting of this society will be held at Mankato, April 12-14, 1898. The meeting will be conducted by Dr. F. B. Kremer, assi-ted
by Drs. C. M. Bailey, I. C. St. John, M. O. Nelson and W. A. Moore, as instructors and clinicians, and will be a three days school of crown and bridge work.

TEXAS DENTAL ASSOCIATION.

The regular annual meeting of the Texas Dental Association will be held at Waco, Tuesday, May 17, 1898. The Texas State Board of Dental Examiners will convene at the same time. A cordial invitation is extended to all dentists in this and other states to be present.

J. G. FIFE, Sec'y, Dallas, Tex.

CENTRAL DENTAL ASSOCIATION OF NORTHERN NEW JERSEY.

At the annual meeting of this society the following officers were elected for the ensuing year: President, F. Edsall Riley; Vice-President, C. S. Hardy; Secretary, H. S. Sutphen; Treasurer, Charles A. Meeker; Executive Committee, F. G. Gregory, F. C. Barlow, C. W. Hoblitzell, W. H. Pruden, W. E. Truex.

H. S. SUTPHEN, Sec'y, Newark.

ILLINOIS STATE DENTAL SOCIETY.

The thirty-fourth annual meeting of the Illinois State Dental Society will be held at Springfield, May 10-13, 1898. Dentists practicing in the state who are not members of the society and dentists of other states are cordially invited to attend. The hotels and railroads will make the usual reduction. A large attendance is desired and a profitable meeting is anticipated.

Dr. E. K. Blair, supervisor of clinics, states that a very interesting program is being prepared in his department, and a list of the same will be given in the April issue of this journal.

A. H. PECK, Sec'y, 92 State st., Chicago.

DENTAL SOCIETY OF THE STATE OF NEW YORK.

The thirtieth annual meeting of this organization will be held at Albany, May 11 and 12, 1898. Papers will be presented by the following members of the profession: M. D. Foster, Baltimore; M. H. Cryer, Philadelphia; J. S. Marshall, Chicago; I. N. Broomell, Philadelphia; S. S. Stowell, Pittsfield, Mass.; E. A. Schillinger, Dalton, Mass.; R. Ottolengui, correspondent; L. C. Le Roy, Committee on Practice.

All members of the profession are cordially invited to attend and participate in the exercises commemorative of the occasion.

H. J. BURKHART, Pres. C. S. BUTLER, Sec'y, Buffalo, N. Y.

VERMONT STATE DENTAL SOCIETY.

At the twenty-second annual meeting of this society held at Rutland March 16-18, 1898, the following officers were elected for the ensuing year: President, J. A. Robinson; First Vice-President, K. L. Cleaves; Second Vice-President, Henry Turrill; Recording Secretary, Thomas Mound; Corresponding Secretary, Grace L. Bosworth; Treasurer, W. H. Munsell; State
Prosecutor, G. W. Hoffman; Executive Committee, C. W. Steele, J. E. Taggart, J. A. Pearsons.

Next meeting to be held at Burlington the third Wednesday in March, 1899.

SEVENTH DISTRICT DENTAL SOCIETY OF NEW YORK STATE.

The thirteenth annual meeting of this society will be held April 26 and 27, in the rooms of the Chamber of Commerce, Rochester. This meeting promises to be of great interest. It is expected that the program will consist of about ten papers, and each will be thoroughly discussed. A lantern exhibit and paper are scheduled for the evening of the first day. Essayists are as follows: Drs. J. Foster Flagg, Chas. Howell, A. Osgood, F. Messerschmit, W. W. Smith, I. C. Edington, F. M. Rood, F. W. Proseus, Mr. Chas. Ward.

W. W. Belcher, Chairman, Rochester, N. Y.

RECENT DENTAL PATENTS.


600,213 Fumigator, Otto Andreae, Central Valley, New York.


600,257. Dental separator, Courtland G. Capwell, Boston, Mass.

600,243. Angle attachment for dental hand-pieces, Henry Case and E. D. Shaw, Gloversville, N. Y.

600,211. Apparatus for washing amalgam, Henrik C. F. Stormer, Christiana, Norway.

28,345. Design, tooth support, Norman Stafford, Canistota, N. Y.

TRADE-MARKS.

31,299. Dental cement, Adolf Abraham, Berlin, Germany.


31,341. Magazine devoted to the interest of the dental profession, Consolidated Dental Manufacturing Company, New York, N. Y.

News Summary.

THE DENTAL AND MEDICAL DEPARTMENTS of the University of Tennessee held their annual commencement Tuesday evening, March 29, at Nashville, Tenn.

WEBSTER MFG. CO — By some accident in printing the type was broken last month in the advertisement of this firm, who handle “Sams' Combination Blow-Pipe Outfit.” The prices should read $14.50 and $10.50.

PATENT BILL INTRODUCED — As we go to press we learn that the bill “Amending the Statutes Relating to Patents, Relieving Medical and Dental Practitioners from Unjust Burdens Imposed by Patentees Holding Patents Covering Methods and Devices for Treating Human Ailments, Diseases and
Disabilities," was introduced in the Senate of the United States, March 10, 1898, by Mr. Platt, of New York, (by request). It was read twice and referred to the Committee on Patents.

The Pacific Stomatological Gazette has been rechristened the Pacific Medico-Dental Gazette. The editor and management remain the same.

LOFOTEN ISLANDS AND THEIR PRINCIPAL PRODUCT, a very interesting and instructive treatise on cod-liver oil and how it is obtained, can be secured free of charge by application to Parke, Davis & Co., Detroit, Mich.

TO DIFFERENTIATE LA GRIPPE IN DECEPTIVE CASES.—A drop of blood is drawn from the finger into a tube, which is closed with a little cotton and laid away for twenty-four hours. At the end of this time the blood has become converted into a culture of the diplo and strepto-bacilli characteristic of la grippe, extremely motile and easily visible with an ordinary microscope 600 to 700 diameters. If negative results are obtained in twenty-four hours, repeat in forty-eight hours.—T. V. Coronado in Revista de Med. y Cir. de la Habana, Dec. 25.

AMERICAN LIQUID MALT PREPARATIONS.—Harrington has examined no less than twenty-one different brands and has found all to be very deficient in diastasic power and most of them markedly alcoholic, containing from under 8 to over 7 per cent of alcohol. In food value they approached to heavy beers, which, in fact, they resembled in most other respects.—Bost. Jour. Med. Sc., through Thevap. Gaz.

DENTIFRICE FOR DARK ENAMEL.—The following is a dentrifrice recommended in L’Odontologie for the use of persons the enamel of whose teeth has become discolored:

B  Chlorate of potash .................................................. 2iss
     Powdered boracic acid ....................................... 2iii
     Carbonate of magnesia (heavy) ......................... do
     Precipitated chalk ........................................ do
     Ess. of peppermint ........................................ 5 drops.

LIEBMAN’S METHOD OF TREATING STUTTERING.—A hundred severe cases cured in the brief space of four weeks are reported by A. Liebmann, of Berlin (Memorabilien, Nov. 13). He has the patient repeat sentences after him, drawing the vowels and pronouncing the consonants sharp but distinctly, maintaining the conversational tone throughout without any rhythm, and avoiding the singing tone altogether. When the patient finds himself thus speaking several sentences fluently at the first sitting the psychic stimulus is immense. The method can be applied to quite small children.

GOOD SENSE.—The Medical and Surgical Reporter recommends that every society, and especially the American Medical Association, appoint an editorial committee which should reject, curtail, or abstract every paper not of suitable length and interest, with the same impartiality as if it were presented for publication.

Better yet, the editors of association journals should be delegated the power and privilege (and exercise it) of cutting from articles all repetitious
material, useless padding, attempts at self-advertising, or proprietary medicine puffing.—Medical Age.

To Prevent Disagreeable After-Effects of Chloroform and Ether Narcosis.—

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M. S.—Give m xxiv. hypodermatically a few minutes preceding the administration of the anesthetic. Do not use this mixture in cases of heart lesion.—Fraenkel.

To Obtain a Mandrel of a Root.—By J. D. Whiteman, D.D.S., Mercer, Pa. Take a thin copper strip and with pliers secure the circumference of root in the usual way. Remove the band thus obtained, being careful not to change its shape. Press it into cuttlefish bone to the depth of its width; remove the bone that is inside the band, place around it a ferrule and pour into it fusible metal or soft solder. When cool remove ferrule and strip and you have an accurate mandrel that will be found a great aid in fitting a band to some roots that are extremely difficult as well as painful to fit directly to root in the mouth. Cuttlefish bone may be obtained at the drug stores.—Ohio Dental Journal.

Obituary.

HENRY E. KNOX.

Henry E. Knox, D.D.S., died in Oakland, Cal., Dec. 12, 1897, aged 66 years. He was born in Blandford, Mass., Nov. 15, 1831, and attended the schools as were usual to New England during his boyhood. Coming to California in 1852 he found employment, but illness caused him to return to New York City in 1854. While employed in a counting-house in that city in 1856, he married Colima Lightbody.

Four years after his marriage, with a wife and two children dependent upon him, he began the study of dentistry with an old schoolmate, Dr. H. B. Noble, in Washington, D. C., and with the aid of government employment during extra hours was enabled to pursue his studies. He attended the first session of the Philadelphia Dental College, of which Dr. J. H. McQuillen was dean, and graduated Feb. 29, 1864.

He was present at the dental meeting in New York City when rubber-dam was first exhibited and demonstrated to the profession by Dr. Barnum, the inventor, and returning to California Nov. 17, 1864, Dr. Knox was the first to demonstrate its use in San Francisco.

He was a charter member of both the San Francisco Dental Association, organized in 1860, and the California State Dental Association, organized in 1870. He was president of the former in 1874, and corresponding secretary of the latter for many years. He was present at every meeting of the state association, except the one held in Santa Cruz in 1896, and a very regular attendant of the San Francisco association until deafness rendered it impossible
for him to hear either papers or discussion. He was a clinical instructor in the University of California College of Dentistry from its beginning, and seldom failed his turn to clinic.

About 1868 his hearing began to be impaired, the cause being inflammation of the middle ear communicated from the throat to the eustachian tube. In 1888 he had a stroke of paralysis which affected his right side, from which he recovered in a few weeks so as to be able to resume practice. In 1893 he had a second stroke, more severe than the first, but within three months he again resumed practice, and continued until Dec. 10, 1897.

We are disposed to give more than ordinary notice to the memory of Dr. Knox, for he made more than an ordinary reputation in his profession. He has been spoken of as a pioneer dentist, and as an active agent in the formation of dental societies he was a pioneer. We feel that we are not misstating matters when we say that Dr. Knox was the prime mover in the formation of both these bodies on the Pacific Coast. This was due not so much to his executive ability, as from his earnest desire to have an association of dentists, and we will show why he wished this.

Our first acquaintance with Dr. Knox was in 1850, and it ripened into a warm friendship, and our discussing the matter with Dr. Knox led him eventually to take the study of dentistry. When he graduated we offered him an office with us in Brooklyn free of charge for a year until he got a start, and after spending three more months in Washington he entered our office.

At that time Dr. Atkinson, with his energy and fraternal purpose, had gotten several men together and formed the Brooklyn Dental Association. It was Dr. Knox's good fortune to be brought in contact with the leading lights of the day, and he was impressed by their enthusiasm and good fellowship. This opportunity, allied with clinics—the new feature of the day—gave Dr. Knox a valuable experience. It was, therefore, not strange that when a year later he went to San Francisco he was enthused with the ambitious spirit then prevailing in the east, and he was fortunate in securing his office in association with Dr. Cole, a practitioner of high standing. He soon communicated his broader views to those around him, which resulted in the formation of the two societies before mentioned.

Dr. Knox did not contribute to our literature, although we think he might have done so with credit. Neither did he aspire to office, and when his friends had forced him into the presidency of his city society, and he was loudly called upon for a speech, he arose and said, "I have been an (K)nox for forty years, and I do not intend to make an ass of myself now," sitting down amid a roar of laughter.

As a dentist he was among the earliest of good operators, making almost a specialty of cohesive gold fillings, numberless specimens of which will stand yet many years to attest his faithfulness. His rapidity in excavating and in packing gold was wonderful, and he enjoyed a large and lucrative practice.

His genial countenance and open heart and hand won him countless friends who will long mourn his loss.

G. ALDEN MILLS.
DIAGNOSTIC ERRORS.


Diagnosis is the process of discovering a disease and its distinction from other diseases by its characteristic signs and symptoms. Not only to know inflammation of the pulp from hyperesthesia of the dentin, but scientifically to explore and explain the reasons for our conclusion. Repeated familiarity with the same disease may enable a dentist, as well as a physician, to make a direct and accurate diagnosis. In other cases where the origin of the trouble is obscure and a disease has subjective symptoms resembling other diseases, the diagnosis has to be more or less differential. Simple gum-boil, in some of its signs and symptoms, resembles alveolar abscess. We observe the symptomatology essential to the one and not to the other, and summarizing them we form our conclusions. The pathognomonic signs, those which specially characterize a disease, are the chief guides in differential diagnosis.

From the point of view of scientific fairness, it is no exaggeration to declare that the wisest dentist is not the one who never makes mistakes, but he who rarely makes the same mistakes the second time. Error and failure are necessary stimuli to fact and truth. The men who say they never err are men who perhaps do not know that they do not tell the truth. There are occasions when we find ourselves overlooking and perhaps interfering upon territory not our own; yet we should be ashamed of our ignorance if we do not possess sufficient knowledge to discriminate between the simple and the complicated, between that which demands our attention and the signs and symptoms which rebuke our meddling. Diagnosis may be as simple, as direct, yet entirely devoid of the least pretense to the scientific. Anyone can distinguish a case of severe odontalgia of an exposed pulp from a case of pericementitis without understand-
ing the scientific procedure by which the conclusion is arrived at. I think that as a science in dentistry the art of diagnosis is overshadowed by the fascinations of its practice. I doubt if as a profession we systematically adopt that precise and methodical examination, direct and differential, of obscure cases which is exacted in medical diagnosis. This is due to our circumscribed methods of education as well as of practice. As a rule, the diseases of the teeth are not alarming enough to prognosticate death or even dangerous illness, and when they involve serious complications they pass out of our observation and care. Since medical men have surrendered the care of the teeth, neither dentists nor physicians know so much about their pathology in a scientific way as they would were all dentists medical men, and all medical men dentists. The latter lack the discipline and development of a medical and surgical curriculum, and what they learn of either is but a disjointed smattering; the former treat the teeth with even more contempt than they treat corns—that is, the teeth in health or after general illness may go to the dentist or the devil, for all they care.

The disabilities under which the dentist labors in diagnosis are apparent. Quite as much so if the educational methods and environment of the oculist had confined him as narrowly to the eyes as those of the dentist have confined him to the teeth. When we know that most of the diseased conditions of the teeth are but signs of disease elsewhere; that they represent the same departures from normal physiological action as diseased conditions in other parts; that the boundaries of our pathology extend to the entire head and neck, the stomach, etc., we should recognize the important fact that, while practically our art has its limitations, dental diagnosis has none. The mouth has no more fixed and unalterable standard of health than the lungs or the liver. There are the same variations and adjustments to varying circumstances in the oral cavity as in the bladder or bowels. A diseased pulp is as simply healthy structure disturbed in its normal functions as the surgeon finds in a sprain or an aneurism. There is no more an isolated and distinct dental pathology than there is an independent ocular or aural pathology. The same natural forces move and the same physiological laws govern the processes of disease in the teeth as in the heart or lungs. How then can we expect the problems of our pathology to be solved except by deputy? The limitations of den-
tal education may make eminently successful practical men; but as we cannot know any fact scientifically by mere intuition, it is difficult to surmise how we can pretend either to accuracy in diagnosis.

Why do we err in diagnosis? Because we do not know. Do not know what? Do not know the scientific basis and detail of diagnosis; do not know what we see, smell, hear, taste, touch. Our very senses are apt to be deceived, and nothing is truer than that we cannot accept as infallible what we call the evidence of our senses. We cannot always believe what we see with the naked eye nor yet with the microscope. Those who are familiar with the exploded inflammatory theory of caries can recall the microscopical errors even of Heitzman and Abbott. I remember the late Dr. I. H. McQuillen referring to this fact in looking at a large microphotograph, one of a diatome, the pleura-sigma angulatum. When held within focal distance of the eye the sigma or spaces appeared hexagonal, but if carried beyond that they assumed a circular form, giving a good illustration of the fact that we cannot always believe what we see. The results of various microscopical adjustment and the revelations made by the use of increased power are familiar to us all. Indeed we are met in our investigations by numberless obstacles in the establishment of fact, and are often tempted to hasty generalization and preconceived conclusions. Illustrations of this are older than the amalgam controversy of 1845, when it was stated, even by chemists, that the sulphuret of silver on the surface was a sulphuret of mercury. Jumping to conclusions based upon imperfect observation of phenomena has been one of the common mental gymnastics of the profession, and our memories as well as our laboratories are lumbered with the "cock-sure" infallibilities of ingenious inventors. Fact does not leap into existence out of mere fancy, as Minerva bounded at once out of the head of Jupiter. The history of errors in the dental creeds, every one of which had its dogmatic defenders, would make an interesting addition to the literature of dentistry. We have had many fads presented to us in our lifetime, and it should make us modest in our assertions to reflect that for every established fact we have the history of a hundred demolished fables. Simon Pure has so often turned out to be a Will-o'-the-Wisp in disguise that experience makes one cautious of accepting as gold all that glitters, and yet truth has often risen out of error. As Bacon says, "Ex errore citius emergit veritas quam
ex confusione.” We need not therefore be deterred by our errors. If we were we should never discover a single fact, for there was never a single fact that was not born of a score of errors.

Now to form a correct diagnosis we must at least know the physiological character of the structure we treat. Yet that is not enough. It is like knowing only half the alphabet, or like knowing by heart the impersonal Latin verbs, while ignorant of the first declension. In that way we are only “fractionally qualified” diagnosticians. To know caries from erosion, gingivitis from the oral effects of mercury, to distinguish pulpitis from pericementitis—that is not all of dental pathology.

The applications of etiology are as necessary in simple odontalgia as in complicated fever, if our diagnosis is to be better than a guess. Proper treatment can only follow knowledge of the true cause of disease. A case of odontalgia is presented. Sound teeth by the ton have been extracted because the operators, chiefly the physicians who meddle in dentistry, did not know how to search for the origin of the pain. There are as many causes of odontalgia as there are methods of treatment. What sort of odontalgia is it? Or is it odontalgia, or reflected neuralgia, or any one of a dozen other causes of toothache? It may be neuralgia. If so, is it trigeminal or trifacial? And further, is it caused by dental irritation, or is it of distant, perhaps of abdominal origin? If odontalgia, is it local, and if so, is it due to simple exposure of hypersensitive dentin or to an exposed pulp, or to morbid conditions of the pulp without exposure, or to pulp stones, or to a dead pulp and alveolar complications? Is it referred odontalgia, and if so, is it peripheral, central or cerebral, systemic or general? Is it the odontalgia of gout, of rheumatism, or pregnancy: the causes of each differ. The patient complains of pain in the lower bicuspid; it is reflected along the mandible to the ear. It may be that the pain originates in a lower molar. We cannot trust the opinion of the patient. This is, no doubt, very elementary to this audience, but I use the simplest illustrations to point out the frequent need for more than merely local dental knowledge.

Why do the physicians who extract teeth so commonly err in their diagnosis? For the same reason that we err. Their knowledge of diagnosis is too commonly merely medical; ours is too commonly merely dental. It is important in all our practice to
inquire how a particular disease developed. When, for instance, we find rapid and extensive caries in the teeth of an otherwise healthy patient, our duty is only half done by operating, or even by hygienic instruction. Exceptional effects have exceptional causes. The permanency of operations may depend as much upon correct knowledge of the cause as upon skillful work. The causes are not always confined to the mouth, and our oral hygiene may be largely useless to prevent recurrence of disease. Directly we know the true cause we can proceed with some scientific accuracy.

I have long been convinced that one of the most valuable specialisms in dentistry would be that of the exclusive consultant, who should devote his entire time to diagnosis and critical examination of all the possible influences which may act injuriously upon the dental structures. Our failures in diagnosis are frequently due to lack of time, especially in constituencies where consultations are "included in the bill of fare." There may be temporary or constitutional disturbances necessary for consideration; such as anemia, chronic diseases of the nervous system, of the liver, the kidneys, pregnancy, or menstruation. We may err by attempting to blame the teeth when, as a cause, they are entirely innocent. We may attribute to carious teeth morbid conditions which have been merely coincident and not consequences. Serofulous caries of the molar bone near the suture with the superior maxilla may be attributed to diseased teeth, when they are in no way connected with the disease. A submaxillary lymph gland, adherent to the bone, in an early stage of suppuration may be mistaken for an outer pointing alveolar abscess. On the other hand, a developing tumor of the maxilla may be mistaken for an abscess; a lymphatic gland in the lower jaw, due entirely to strenuous conditions, may be mistaken for an abscess. Only recently I met a case of a discharge from the submaxillary gland extending to the clavicle, which had been surgically treated off and on for two years, due to the death of a pulp after the rough treatment of crowning a lower third molar. Many such cases no doubt occur to you all. There are so many motes in our own eyes that I refrain from referring specially to the many errors in diagnosis made by physicians in relation to the jaws. When we contemplate the immensity of our own ignorance, which long experience and careful investigation seem to intensify, we need be charitable to the mistakes made by medical men in matters encroaching upon our
specialty. Various affections of the salivary glands of the jaws, the antrum, gums, ear and eye, throat, nose, etc., originate in diseased conditions of the teeth, and are properly treated only by their primary or coincident attention. Simple abscesses are everyday confounded with serious tumors; mumps with alveolar abscess, and vice versa. In dentistry we are infested with a class who escape diagnostic difficulties by the "practical" use of the forceps. They are nothing but quacks and tinkers, and were public opinion as sufficiently enlightened in the value of the teeth as in that of the eyes, they would be treated as criminals.

RETIRING PRESIDENT'S ADDRESS.

By Dr. C. S. Campbell, St. Albans, Vt. Read before Vermont State Dental Society, March 16, 1898.

It would not be my purpose to make a lengthy or scientific address at this time, even if I were able to do so, but I should like to say a few words to you on the value of our conventions. To attain success and approximate toward perfection in any enterprise or undertaking, it is almost indispensable that there should be systematic, concentrated and united effort. It is as true to-day as ever it was and will apply as well to our dental interests as it will to our political relations one to another.

Let us notice briefly the workings of the political convention. Political parties assemble in convention, define their position and declare their intentions as to great principles and interests affecting or likely to affect the weal or woe of their countrymen. Committees are appointed to draft "resolutions," which are accepted by the body appointing the committee, made public through the press, approved and indorsed by subconventions clear down to the primaries, and at last the report of a committee of not more than half a dozen men becomes the accepted issue that is to agitate, excite and convulse a whole nation. The same sentiment expressed in the precise language and by the very men constituting the committee, without the indorsement of a convention or association, would often be powerless even to agitate or excite.

It is the conventional prestige or power, not the individual expression, that gives the sentiment force and efficiency. Paul, the most learned and eloquent of all the Apostles, knew full well the strength of association. Hence the exhortation, "Forget not the assembling
of yourselves together.'" The makers of the early history of our country well understood this fact, as witness the number of conventions which were held by the colonists before the Declaration of Independence was finally promulgated, and our land became what it is to-day, a model of republican government.

John Brown waged war upon the institution of slavery, and so zealous was he in his work and fixed in his convictions that he sealed his devotion to the cause with the sacrifice of his life. Yet the institution survived, and men continued to be bought and sold as articles of merchandise until, in convention assembled, it was "Resolved that to hold chattels in humanity was a stain upon our nationality and a libel upon our independence." The convention willed it, and the fetters fell from four million slaves.

This is an age of association, and it is this associated effect that has fostered scientific investigation, raised the standard of morality and of education, and stimulated our national literature. We have the Medical Association, where our learned doctors assemble and endeavor to solve the problem of how much medicine a man can take and still live. We have the Bar Association, a highly-educated body of men, who have burned the midnight oil in pursuing Blackstone, searching authorities, and preparing briefs, but whose ingenuity and skill is most apparent in bills of fees—always without a brief. Teachers' associations, where the why and wherefore is made entirely plain to the speaker, if not quite so to the audience; and so on, there are associations without number all along down the line, from that representing the highest art, to the Newsboys' and Street Cleaners' associations.

That there is great good accomplished by this associated work is manifest to all. Now, how are we, as a dental association, to get the greatest amount of good from our meetings? Our most earnest and progressive workers are found in our societies, and yet it is a matter of regret that there are still those outside, who, if once interested, would make very active and valuable members. Let us make it a personal matter to see at least that all such receive a cordial invitation to join us.

As our profession grows older and the need of better legislation for its protection becomes apparent, let us see to it that our appeals for such legislation are made in the name of our society, and if necessary signed by each of its members. We shall then find that
it is not a difficult matter to obtain such laws as are needed for the protection of the public and the profession.

I was impressed by some suggestions made by Dr. Beadles, of the Virginia State Dental Society. His idea is not to have *many* clinics but *good* ones by a few operators of known ability and experience. To have only one clinic in progress at one time, and that with the society in session and the officers in their places. For this a raised platform should be provided near the president's seat for an operating chair. With a free use of the blackboard and the patient in the chair the operator would have no difficulty in making clear to all what he intended to do. Being no longer students, such an explanation or illustration is often all that is needed to make all those present able to go home and perform the operation. By this method the operator would have the attention of the entire association and be stimulated to do his best, and each one of the audience have an equal chance of seeing his work. Dr. Beadles thought our best men would then be more willing to accept invitations to give clinics. Many of our members attended the meetings for this alone, and we know how unsatisfactory clinics are under the present method both to the operator and to the observer, and it seems to me the plan is worthy of a trial. Of course, if this plan should be adopted, it would at once be manifest that more time should be allotted to the meetings, and this is a matter upon which some of us have spent considerable thought.

We really have not one whole day for effective work, the first evening and the second morning being almost entirely devoted to the routine business of the convention, and our custom has devoted the other evening to social enjoyment in our annual banquet. I know that many of us feel that we cannot be away from our offices much longer, but do you think we or our practice would lose anything thereby? Are we not most of us narrowing our lives down to the limits of our own office too much? Is it not true that few of us take the vacation we ought to for our own good; that we, in common with business men and men of other professions, are leaving most of our social duties to the women of our households, thus forcing upon them, in addition to the thousand and one petty cares which naturally fall to the home-makers of our land, some burdens which justly belong to us? Too much of the social and reformatory work of the day is left to them, which they are bravely strug-
gling with in their various societies until they have been aptly
styled the "Unquiet Sex" by a recent writer in a popular magazine,
and we and the M.D.'s are kept busy trying to patch up the result-
ant quantity of worn-out nerves, and, according to the same writer
quoted above, the future of our race is seriously menaced. At the
present rate of burning the candle of life at both ends, a beautiful
and serene old age, such as we have witnessed in one to whom I
would like to offer, in closing, this slight tribute of memory, will be
unknown to the next generation. I refer to Mrs. Lewis, D.D.S.,
of Burlington, whose gentle presence among the ladies we miss
to-night, for since our last meeting she has been called home.

Such a calm and peaceful journey on the down-hill side of life is
what we are desiring for our wives and daughters, and that they may
have it, let us bear our share of social and ethical duties, and not
only as an association, but as individual members of our chosen
profession, declare for the best on all of the burning questions of the
day, at the same time that we are earnestly striving to reach the
dentist's ideal; the time when the dental office shall be shorn of its
terrors, when extraction and artificial teeth shall be unknown
because we shall have mastered the theory of decay, and painful and
protracted operations shall be known no more, because such opera-
tions as are necessary shall be painless in fact as well as in theory.

DENTAL ETHICS.
BY DR. E. E. MCGOVERN, VERGENNES, VT. READ BEFORE VERMONT STATE
DENTAL SOCIETY, MARCH 16, 1898.

Several years ago, when I was appointed one of a committee to
revise our by-laws and code of ethics, I had no idea that I should
again be called upon to discuss the subject, and certainly would not
do so now were it not for an urgent request from the chairman of
your executive committee, to whose instruction I owe my earliest
ideas of dental ethics. Were I to enter into a discussion of the par-
ticulars of our everyday practice I should weary you in repeating
what you already know. I shall therefore confine myself to a gen-
eral view of the subject. In arranging a code your committee were
filled with the enthusiasm of a new undertaking, and endeavored to
fix a standard sufficiently high to dignify a profession still young in
years, and with sufficient latitude to please the most liberal. What-
ever our measure of success, your convention accepted our work,
and the code as then adopted has been our standard since.
While I would not take the position of a carping critic, it seems to me pertinent in this twenty-first year of our organization to ask, Have we maintained that standard? Have we exceeded that latitude? A brief review may be in order here. That code seems to me to consider our duty to ourselves, our duty to each other, our duty to our patients. Our duty to ourselves demands that we make the most of our environments. The varying circumstances surrounding each one must make individual and personal rather than general rules necessary. We must all agree that a most important factor in our success and the first duty we owe ourselves is the securing of a good general education. Unfortunately, until within a few years this has not been considered strictly necessary to the making of a good dentist. Even some of our best colleges matriculated after very superficial examinations. It is gratifying to know that this matter has been greatly improved and to-day our best colleges require a fair preliminary examination before matriculation. In some states an examination before a state board of regents is required, which is a step in the right direction. We desire to be classed as professional men, we must therefore fit ourselves to meet the requirements demanded of professional men in other lines. The title "Doctor," as applied to a doctor of medicine, is practically a distinctive mark of scholarly attainment. While it certainly is not my design to lower the position we occupy by courtesy, if not always by education, yet I cannot help asking, How many of us are fully entitled to that much-coveted and jealously-guarded title, Doctor? It may be remarked, and with some justice, that we have in our profession men who are excellent dentists and yet are far from scholarly. This may be true, but to bring our profession up to the highest standard for which we all hope, our ranks must be recruited by young men of education as well as dental attainment.

I do not need to remind you that there is no profession so trying to the nerves as that of dentistry, requiring as it does so much that must be classed as surgical work. Sixty years ago, before the use of anesthetics, surgeons sometimes refused to perform operations that were considered best for the patient, simply because they could not bring themselves to endure the sight of the suffering they must cause. The dentist's work; much of it, causes so much suffering that he must have good nerve to be able to forget it sufficiently to do thorough work; therefore an important duty is the care of our
health. A discussion of the way in which that duty can be fulfilled would exceed the limits of a paper like this. Suffice it to quote from section 3: "The dentist should be temperate in all things, keeping both mind and body in the best possible health, that his patients may have the benefit of that clearness of judgment and skill which is their right." The dentist, if any one, should deserve and claim the title of gentleman; there is scarcely any subject in regard to which the general public shows such deplorable ignorance as in that of dentistry, yet each one must be met with politeness and patience, attention and consideration, all characteristics of a gentleman; if success is desired. So true is this that I unhesitatingly affirm when I hear of a thoroughly successful dentist, he is a true gentleman.

Our duty to each other seems an appropriate theme to consider here, since in that case any lapse from gentlemanly conduct cannot be excused on the ground of dealing with ignorance. It is the most natural thing in life for man to be more or less selfish—this, I am sorry to admit, is as prominently developed in dentists as in men in other walks of life; but while we are naturally selfish, there is no reason why we cannot teach ourselves to be charitable and just. We are all striving to reach the same goal, but let us insist on fair play, as much as when we were boys. The poet who wrote,

"Man wants but little here below,
Nor wants that little long,"
lived before the time of the modern dentist. He wants a great deal, and that as well as professional fame is what he is striving for. Doctors of medicine agree upon a schedule of rates, reasonable for the place in which they live, and he who deviates therefrom without good and sufficient reason forfeits the esteem of his professional brothers. Will not the same rule hold good in our profession as well? Are we, when consulted by the patient of a brother dentist, sufficiently careful not to criticise his treatment? Do we put ourselves in his place and speak of him as we would have him speak of us? If we could sometimes forget our individual selfish aims in that larger esprit de corps, we would do much to elevate the standing of our profession. As we come to consider our duty to our patients we think, surely this should have been considered first, for the others are of necessity secondary to that—the means toward the end.

The duty we owe our patients is self-evident to every practitioner. In the first place, our offices should be made comfortable and
attractive to a degree commensurate with our circumstances and convenience, with as little display of instruments and appliances as possible. Our reception room should be comfortable and home-like, free from disagreeable odors or other disturbing elements, and should be, so far as practicable, separate from the operating room. The operating room, which is the "star chamber" of dentistry, should be supplied with all conveniences in the way of instruments and appliances necessary for the different operations which we are called upon to perform. In this connection I deem it of the utmost importance that we keep our instruments not only thoroughly disinfected, but they should be well assorted, sharp and keen. Much of the dire dread and accompanying pain can be alleviated by using well adapted sharp instruments. It has been remarked, and with some truth, that the best cataphoresis is a steady hand and a sharp instrument. We owe our patients immaculate cleanliness. In person or surroundings nothing should appear to offend the most sensitive; even in the finger tips no suggestion of bacteriological deposit should exist.

I quote from a recent journal as expressing clearly my own views: "Meet you patient as a friend, cordially, familiarly, cheerily. Easy simplicity, social suavity, and professional courtesy must be instinctive, spontaneous, hearty. Our success in receiving our patients is half the battle. We must have the dignity of a man of business, the reserve of a professional and the polish of a gentleman, yet be as kind, gentle and tender-hearted as a child." I am convinced that one who could meet these requirements has most of the characteristics of the ideal dentist; yet we have in our ranks many whose earnest efforts to reach that ideal have met with a large measure of success. What boundless patience with ignorance, what gentleness with suffering, what courtesy to meet rudeness, what firmness and decision with the timid, what forgetfulness of self are required, only we who go the weary round each day can know. We are confronted daily with the grossest ignorance of anything pertaining to dentistry or even to decent cleanliness. It is scarcely reasonable to expect in our patients any great knowledge of the principles of dentistry, and we are or should be always ready and glad to explain to willing listeners, but those who come with preconceived ideas of what should be done, and, right or wrong, accept no denial, tax our patience to the utmost. It is hard
for such people to believe that pride in honest work is a stronger power than the mighty dollar. While I would be the last to say anything disparaging of woman, whose desire to make herself attractive looking has added materially to our bank account, I still look regretfully back upon the times when I have put the smallest, whitest, prettiest teeth where nature had originally put far different dentures, just because, 'When a woman will, she will, you may depend on't; and when she won't, she won't, and there's an end on't.'

Gentlemen, let us make it an important point in our ethical code that, before the duty of pleasing our patients comes the duty of doing good, honest work. Is my ethical code old fogyish, somewhat behind the times, out of date? Show me a better standard and I will adopt it. For I agree with Brer. Remus when he says: 'Dar aint no wuss victim of misplaced confidence dan de man who gets to tinking he knows eberyting.' Perhaps Prof. Thompson put it better when he used to tell his students, 'No one of us is quite infallible, not even the youngest.' Every year brings new ideas and new inventions that are indeed a help to our profession, but let us be sure they are right before we accept them. I will gladly mount the wheel of progress with anyone of you, but we have all seen many a scorcher come to grief, and while our wheel goes swiftly and well over the smooth road, there will be many rough spots and many a hard climb, where we will be glad to mount again the good old steed that served our fathers so well.

THE COUNTRY DENTIST.

By Dr. J. A. Pearson, Barton, Vt. Read Before Vermont State Dental Society, March 16, 1898.

One of the questions which confront the country dentist is how to make his practice pay him. If he has entered the profession with the one idea that he can get a living easier than in some other way, and looks at the business wholly from a commercial standpoint, he is likely to be an unpleasant one to practice beside.

The sphere of the country dentist to a great extent is that of a pioneer or missionary. When work is being done for less than good, conscientious, honest work can reasonably be done for, the quality of it is quite likely to deteriorate with the price. I can see no reason why the country dentist should not and cannot receive a proper remuneration for his services, provided he is up with the
times and the community in which he is located appreciates and understands the advantages derived from dentistry. It must be borne in mind, however, that many of us are practicing in localities so situated we seldom receive a call from another dentist or come in contact with others in the profession, thus losing the stimulus generated by social intercourse and interchange of thought with one another, therefore we must make a greater effort to keep in touch with the times or we will fall short of what we might be. It is discouraging to plod along year after year in a community which, as a whole, are ignorant of the advantages derived from our profession, only so far as to relieve them of an aching tooth by extracting it, when it should be saved. The only question being asked when told they should be saved by filling is, what it will cost, and will we warrant them to last as long as they live? if not, they might as well have them out now as ever. When they bring a child to have the six-year old molars extracted and we tell them they are permanent teeth and should be saved, they emphatically inform us we are mistaken, they are certainly temporary teeth because they had theirs out and have others in their place. They go from our office fully convinced we do not understand our business, or we are trying to get their hard-earned money by filling temporary teeth, not realizing if they were temporary teeth we were conferring on the child one of the greatest of blessings, so they leave us and feel glad they have not let us fool them, and we are left to ponder and wonder.

I do not wish to convey the idea that all of our patients are like the above, for we have some very intelligent ones who fully appreciate our efforts to serve them—and who does not appreciate a good patient; but far too many of our patients are so ignorant of the first principles and benefits derived from dentistry that we are sometimes discouraged in our efforts to do our best for them. Perhaps some of you who have a good practice among people that understand the advantages derived from the proper care of the teeth, will say, "Let them go." We cannot afford to, for we need their business and they would want our work as well as your patients do yours did they understand the benefits derived from it. There should be an effort made to educate the masses in this line and show them the importance of the teeth to perfect health. Were the people as a whole as well informed on this subject as they are on the general questions of the day, there are not one-half dentists.
enough in Vermont to supply the demands for work at good prices. I think our local papers should be induced to publish short articles on the importance of the teeth and their care. It is very slow business for the dentists to educate the people, coming in contact with comparatively few of a community and talking with them a few minutes when they are half credulous, wondering if we are really telling the truth or are after the work.

There is no reason, with the dental journals published, why the country dentist in his usual leisure hours should not be well informed on what is going on in the profession. There are many good reasons why all dentists in Vermont should become members and contributors to the Vermont State Dental Society; their annual dues are needed to carry on the work of the society, so the Executive Committee may get the best talent possible as demonstrators and essayists at our annual meetings. It is the only dental society in Vermont, and is recognized as an important factor by our legislature. For our own benefit we should be identified with a society which is recognized by the leading dental societies of the United States. By attending its meetings we come in contact and become personally acquainted with some of the best men in the profession, men whom we should consider it an honor to know. Often we become intimately acquainted with our neighboring competitors whom we have never met, and know them only through some of their disaffected patients, who portray them to be wretches unworthy of consideration; but when we see them face to face we learn they are men, whole-souled, honest and glad to aid us in any way they can. Had it not been for the state society, we would not have had a Vermont Dental Law, for a long time at least, if at all. Had we not had a state law, the country places would have been overrun with tramp dentists, cutting down prices so it would have made it impossible for anyone to have done honest work and received a living price for it.

All honor to the founders of the society. I remember with gratitude and pleasure the kind remarks and advice of some of them, although I never became personally acquainted with many. It has been my experience with the members of this society, that they have been always as willing to give advice and counsel as we were to receive it. I think they should know their kindness is appreciated.

I believe the country dentists are trying to do honest work, and a great deal of their work will compare favorably with any. Amal-
gam and gutta-percha are a boon to the country dentist, enabling him to do good serviceable work at the prices he is obliged to charge. There is no reason why the country dentist should not be just as thorough as if he was practicing in a city, and sometimes more so, for often he can take all the time he wishes, and perhaps he had better, for if done too quickly the patients may think he is overcharging them. We should not be afraid to acknowledge it when we cannot do a class of work and do it right. We should be frank and honest with our patients, and if they wish for work we do not or cannot do, tell them so, and assist them to get what they want by sending them to some reliable dentist who does that class of work. In doing this we simply act the part of honest men and do not degrade ourselves.

Composition of Gutta-Percha.—Dr. E. F. A. Obach shows that the purified substance probably consists of a hydrocarbon (pure gutta), having the formula \( \text{C}_{10}\text{H}_{16} \); albane, \( \text{C}_{10}\text{H}_{16}\text{O} \); fluavile, \( \text{C}_{40}\text{H}_{64}\text{O}_8 \); and a variable component named guttan. Pure gutta possesses all the good qualities of gutta-percha in a much enhanced degree, becoming soft and plastic on heating, and hard and tenacious on cooling, without being in the least brittle. The resins appear to be simply accessory components, which have a decidedly detrimental effect when they preponderate. Water, wood, fibres, and barks, etc., occur, of course, merely as mechanical impurities of gutta-percha.—Jour. Soc. of Arts, xlvi., 122.

Prehistoric Dentistry.—Skeletons unearthed in whose front teeth gems were set.—No regular burying-place has yet been found at Copan, but a number of isolated tombs have been explored, says the Century. The location of these was strange and unexpected—beneath the pavement of courtyards and under the foundations of houses. They consist of small chambers of very excellent masonry, roofed sometimes by means of the horizontal arch, and sometimes by means of slabs of stone resting on the top of the vertical walls. In these tombs one, sometimes two, interments had been made. The bodies had been laid at full length upon the floor. The cements had long since moldered away, and the skeletons themselves were in a crumbling condition and gave little knowledge of the physical characteristics of the people; but one fact of surpassing interest came to light—namely, the custom of adorning the front teeth with gems inlaid in the enamel, and by filling. Although not all of the sets of teeth found had been treated in this way, there are enough to show that the practice was general, at least among the upper classes; for all the tombs opened, from their associations with prominent houses, seemed to have belonged to people of rank and fortune. The stone used in the inlaying was a bright green jadite. A circular cavity about one-sixteenth of an inch in diameter was drilled in the enamel of each of the two front teeth of the upper row and inlaid with a little disk of jadite, cut to a perfect fit, and secured by means of a bright red cement.
**Digests.**

**EROSIONS AS FOUND IN THE ORIENT—CAUSE AND EFFECT.** By C. L. Snyder, D.D.S., Freeport, Ill. Read at Northern Illinois Dental Society, Oct. 1897. Erosion as known in dentistry is a loss of tooth structure, usually occurring on the labial surfaces of the teeth, and is peculiar, owing to the polished condition of the so-called cavity. It is not my intention to dwell at length upon the etiology or pathology of erosions, but I will endeavor to give you the facts concerning them as found in the orient.

The first sign or symptom of an erosion is a slight groove or depression, usually occurring on the labial surface of the tooth near the margin of the gum, and frequently sensitive when touched by a steel instrument or some metal that has a tendency to produce a galvanic current. The pain produced by the means just mentioned is extreme. I have had patients jump and shriek, showing signs of far greater pain than that produced by touching a live pulp. The saliva and mucus found near the affected parts is usually acid and in advanced cases a decided acid condition is not uncommon. There is also an odor peculiar to these far advanced. I became so familiar with this that I could frequently diagnose them as soon as the patient opened the mouth. I believe the majority of cases in America are found on the central and lateral incisors. In Singapore the first bicuspids seem to be the first sufferers. These are followed closely by the cuspids and second bicuspids, then the incisors, and lastly the molars.

The teeth on one side of the mouth may be affected, while on the opposite side the conditions are perfectly normal, but in the majority of cases erosions occur in pairs; that is, when the bicuspids on one side is affected we look for the same condition on the opposite side of the mouth. In cases where the teeth are irregular, caused by a crowded condition of the arch, the teeth that have been crowded inward and do not come in contact with the lips are seldom affected. A year or so after I became settled in Singapore I began to make a study of these cases. I found that out of one hundred patients that came to me for dental services fifty-seven were suffering more or less with erosions. Scarcely ever did I find the perfectly healthy gums; the tendency was for them to recede and the unnatural
exposed part of the tooth then became sensitive. The attacks seem to be about the same upon male and female. A great difference exists in nationalities; the English, who are the worst sufferers, are followed closely by the French. The Armenians seem to be affected equal to the English, but as they are comparatively few in number in Singapore, I cannot lay down any definite percentage. The high class of Malays and Chinese comes next, while the cooly class seems to be little troubled. One peculiarity of this complaint is that most Europeans never experienced any trouble before leaving their native land. The well-to-do, that is those who live high, seem to be the worst sufferers, especially the consumers of wine and other beverages. I do not mean drunkards, as drunkenness is seldom if ever seen in the orient, especially among the better class.

I now began questioning my patients concerning their physical condition. I directed my inquiry more particularly as to whether they or their parents ever suffered with gout, and found that about 70 per cent were suffering with gout or were the offspring of gouty parents. I grew very enthusiastic over this investigation; I became satisfied that erosion was a manifestation of gout. After a time I found conditions that did not harmonize with my theory of erosion and gout and I began to make further investigations, not only among people suffering with erosion, but more particularly with people who were free from it. Much to my surprise I found that many who had perfect teeth and whose gums presented a decidedly healthy condition were among the worst sufferers of gout, and that the Armenians and Malays, especially the former, who suffer severely with erosion, are scarcely ever known to be troubled with gout.

Summing up these investigations I came to the conclusion that erosions were peculiar to three conditions: high living, especially consumers of wines; a gouty diathesis, and climate. There is no doubt but what the climate of that tropical island has more or less effect on the system in general, and this in a short time manifests itself upon the teeth. It is my candid opinion that erosion is caused by an acid condition of some kind, peculiar to a physical condition of the system similar to that found in gouty subjects, and that this condition is due principally to the diet, is hereditary and is much hastened by a hot, moist climate.

There seems to be but two ways suitable for the treatment of erosion. In the early stage I have had excellent results by using
nitrate of silver. Usually two treatments are sufficient. I will mention a little device that to me was indispensable. First secure a small silver wire about eighteen gauge, adjust it in a broach-holder or some suitable handle, then by heating slightly over an alcohol lamp you can pick a small crystal of the nitrate of silver which will form a bead on the end of the wire; or better still, the nitrate of silver may be melted in a small platinum spoon easily made for that purpose, then by touching the melted mass with the wire, a sufficient quantity will adhere and may be carried to the tooth with safety. This of course blackens the cavity and is not a suitable treatment for the anterior teeth. In very sensitive cavities I find that this nitrate of silver treatment applied several days before filling saves the patient a great amount of pain. In advanced stages there is nothing to do but fill or crown. I have had cases where the entire labial and one proximal surface had wasted away and another case where the cutting edge, together with the labial surface, was affected so badly that crowning was necessary.

The secret of success in filling eroded surfaces is to cut away sufficient tooth structure so as to reach every possible affected part; also to cut well up underneath the gum, so as to give no chance for a recurrence. The rubber-dam must always be used, and gold is the best filling material. Always allow at least a tooth on either side to pass through the rubber and see that the holes in the rubber-dam are punched far apart. Ligatures should be put around the adjoining teeth, but never around the tooth to be filled, as it will only be in the way and prevent the clamp being pushed up to its place. I always slit the gum just over the tooth to be filled; this allows the clamp to be pushed well upon the root, without causing much injury to the gum. These little flaps will heal in a few days and come well down over the upper margin of the filling. It is always best to polish the filling after the clamp and rubber have been removed. A small piece of moist sponge held on the corundum wheel will keep the parts free from blood. I always use a small steel instrument with a notched point and with the use of this I manage to keep the gum well out of the way. The polishing may be completed by the use of pumice or any desirable material.—Dental Review, Feb. 1898.

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OBSTINATE HEMORRHAGE. By W. G. B. A case of unusually obstinate hemorrhage following the rough extraction of a
superior molar came under my notice. The outer and inner plates of the alveolus were severely smashed, one gash, made by the forceps, extending a quarter of an inch into the hard palate. Various preparations had been used in the abattoir where the patient had the operation performed. Tannic acid was on hand, so that was tried, and failing perchlorid of iron was used on top of it. This of course was an incompatible mixture, forming tannate of iron, and rendered both inert. An hour after the operation the dentist telephoned me and the patient arrived. After cleansing the socket with hot water and lysol, I packed lycoperdon giganteum into the wound and socket, and retained it, covering the entire extent by a compress of spunk under a steel band fitted to grip the outer alveolus and the wounded palate. The effect was instantaneous. When I was a student of Dr. Charles Brewster he was using lycoperdon (puff-ball) for hemorrhage, which was much more common than now. Sir B. Ward Richardson thought the change due to the more general use of fruit, and the improvement in the ordinary diet which produced better blood. Sir Benjamin devoted much attention to the fungus in a work he wrote on the medical treatment of the disease of the teeth. Dr. Brewster was never without a good supply of puff-ball, and in common with him I never failed with it, and never depended upon anything else, so far as alveolar hemorrhage was concerned. Several cases of spontaneous bleeding from the gums were arrested by packing it into the interdental spaces. I have had several cases of vicarious bleeding from the gums, which the lycoperdon arrested. It is found in the fields, especially on sandy soil, in the fall of the year. Dr. Brewster found the greatest virtue to lie in the genus lycoperdon bovista, which is smaller and scarcer than the genus giganteum. The doctor conceived the idea of medicating it with camphor and carbolic acid to remove certain objections. The theory of the effects of the fungus is explained by the excess of phosphate of soda, the styptic properties of which were once in repute.—Dominion Dental Journal, March, 1898.

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HINTS BY A LAZY MAN. (1) You can cut vulcanite with a file better when both are dry than wet. If you think you need a new file, dip your plate in dry plaster of paris, rub it off with a wheel-brush, and often you will find that the fault is not in the file. (2) After you have polished your plate, sprinkle a little dry
plaster on it and give it a run over the soft wheel-brush. (3) Tack a square piece of bed-tick or apron cloth under the part of the bench where you work. It will always be there. Pull it over your knees when you sit there to work. Keeps your pantaloons clean and often keeps you from saying naughty words, as it catches teeth you might drop on the floor. (4) When your rubber overshoes wear out, keep the soles. Very handy if fastened on a block convenient to use. The heels make good bench blocks. (5) Keep your old kid gloves and wear them when sandpapering or polishing artificial sets. Rub vaseline into your finger-nails and over your fingers before putting on the gloves. (6) When your dental engine kicks or makes a noise at the joints, oil it a little. If that does not stop the row do not swear at the manufacturer until you have got down on your marrowbones and tightened up screws that may be loose. If that succeeds shake hands with yourself; if it does not, smash something. It will ease your mind. (7) Cover your dental engine with a cover the shape of an old candle extinguisher. (8) Old journals. Look back over them from time to time, and you’ll discover that you either never read them before, or that you’ve forgotten many valuable hints they contain. (9) Most women do not mind so much being hurt, as they mind having a nice dress spoiled. Use a rubber apron for the dear creatures when taking impressions; you’d make a much better one, too. (10) Saw large spools in two. Handy to lay instruments on, for bench blocks. Drive nail through a spool on your work-bench. Fasten spools anywhere convenient in or near your operating stand so that they will hold your floss silk and gilling twine. (11) Another very nearly serious explosion of pyrozone tube is reported. When you are plainly directed to keep it in a cool place; to cool it in icy water and wrap the tube in a towel before opening it, you should obey instructions. A man who lights his pipe on a can of gunpowder deserves to be blown up. (12) If you have a silver-plated fountain spittoon, do not let your patients eject into it loose particles of amalgam. They may adhere to the edges of the basin, and irreparably corrode the plating. One of the handiest things about a chair is the small hand spitoons. I use a china bowl if I use iodin in the mouth. (13) Keep an assortment of small rubber rings on upright pieces of wood or steel, the size of a match. I often use them for ligaturing rubber dam. Slip on and off easily; do not hurt gum like silk. Handy too in keeping in cotton, etc.,
over temporary preparations in large and shallow approximal cavities. Can cement them over cavity. (14) Common cut tacks. Drive them in any form you like into plaster models to make air-chambers. Use them for some lower sets. Do not leave them on your laboratory stool. (15) Fasten two pieces of thin wood, double the size of a match, placing a small rubber ring between them before you fasten them. Then slip over each piece small rubber ring, to meet each other. Make handy tweezers for cotton pellets dipped in iodin, or for any purpose which would injure steel. I think I must have stolen this idea. (16) Corks, champagne corks especially. Better than buff cones or wheels. Cut them into any shape to get into any hole or corner. Thin slices make best non-conductor for exposed pulps. Stick laboratory files into them for handles. A big piece square makes fine laboratory block. Cut a lot of them into shape for mouth gags, and tie string to them. Cork soles best soles for the dentist's feet.—Must stop; very lazy again.—Dominion Dental Journal, March, 1898.

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SECONDARY OR STORAGE BATTERIES FOR CATAPHORESIS. By Charles A. Hawley, D.D.S., Columbus, O. Read at Ohio State Dental Society, Dec., 1897. What is a storage battery, how does it act, and what is its special fitness for cataphoresis? are the questions we wish to consider in this paper, and it is the belief that the better we understand the construction or action of an appliance of any kind the more intelligent and successful will be our use of it, that prompts the presentation of the subject for discussion here.

The history of the development of the storage battery goes back over a period of nearly forty years. Many attempts to store electricity by means of its action on various substances had previously been made, but Plante, a Frenchman, discovered the secret, the adaptability of lead for the purpose. He immersed two lead plates in dilute sulfuric acid, and connected one to the positive, the other to a negative pole of a primary battery. A slight chemical change was produced between the plates and the electrolyte, and when they were connected by a wire an electric current was produced. They were then connected in a reverse order and charged and discharged, increasing the current each time, and as the chemical change become greater the discharge of current also increased. This process was continued for several months, with the final result of
producing a "cell, which when charged had a thick coating of lead dioxid on the positive plate and of spongy lead on the negative, but when discharged had a coating of lead sulfate on both." During the discharge a very powerful current was produced, enough to melt iron rods. Though in the present improved storage batteries the style of cell and the process of forming are much changed, the principle is the same—i.e., the electricity is stored or accumulated in the form of an unstable chemical compound. The peculiar and valuable property of this compound is that its chemical energy can at any time be reconverted into electrical energy by connecting the two plates.

The current produced in the complete discharge is practically equal to that used in producing the chemical change in storing. In winding a clock we store the energy of motion by the tension of a steel spring; in the storage cell we might compare the action of the chemical compound to the tension of the clock spring, and electricity with the energy of motion, or the muscular power. This action is entirely different from that of a primary battery. In the primary battery chemical disintegration of one of the plates by action of fluid produces the current, but this process can never be reversed.

A number of changes have been made in the form of storage batteries, leading up to the greatly improved and nearly perfect ones in use now. When the exact nature of the chemical compound on the plates was found it was but a step to coat lead plates with lead oxid and, sulfuric acid, which by a few days' charging could be changed to lead dioxid on the positive and spongy lead on the negative plate, thus saving the months of time in forming. Plates have also been made in the form of grids, with the active material, in the condition of paste, placed in the wholes. The trouble with this form of plate has been found to be in the bending or buckling during discharge, which is caused by the great expansion of the paste. The paste is also apt to scale off the plates or fall out of the grids and, accumulating at the bottom, short-circuit the cell. Batteries are now on the market which claim to overcome completely these objections.

The especial fitness of storage batteries for cataphoresis lies in their constant and steady voltage during discharge, which is due to several causes: First, the internal resistance of the cell is very low, owing to the small space necessary between the plates. With perhaps a few exceptions, the internal resistance of primary batteries is
very high and interferes largely with their efficiency. Second, there is no such thing as polarization of a storage cell. Polarization unfits most primary cells for closed circuit work, or for holding a steady current for any length of time. The attempt to overcome it has led more than anything else to the great number and variety of cells on the market, and the number in itself is an evidence of failure. In comparison with the Edison direct current, the storage battery presents several advantages which we will mention briefly: First, freedom from the influence of induction, currents along the line, or other causes which produce variation of voltage. Second, absence of danger during storms, accidents at power station, or ground connection by fountain spitoon. Third, it obviates reducing with a controller the unnecessary high voltage of the Edison current.

The character and rate of discharge of a storage differs considerably from that of a primary battery, in that a very much larger volume of current can be obtained by decreasing the resistance in the external circuit. The capacity of a storage battery is measured in ampere hours, or the number of hours the battery will, when fully charged, discharge one ampere current before becoming exhausted. But the discharge can be completely controlled by varying the resistance in the external circuit. For example, a ten ampere battery will discharge one ampere for ten hours, or, reducing the external resistance, ten amperes for one hour, or, reducing still further, twenty amperes for one-half hour, forty amperes one-fourth hour, etc. If used with very great external resistance, as in cataphoresis, it would discharge a current of say five milliamperes for two thousand hours. At this rate, if used one hour a day every day in the year, a ten ampere battery would last between five and six years before becoming exhausted. No such extent of current can be obtained from a primary battery of equal voltage. We might here again compare the storage battery in its discharge to the action of a clock-spring, which, when wound, can be released at once by a sudden spring or by a steady motion for a long time. The batteries can be charged from almost any source of current, provided the voltage is at least ten per cent higher than that of the battery, as otherwise the action would be reversed. The use of a battery for five or six years, as alluded to above, without charging, would probably not be practical, as manufacturers claim that to keep them in best condition current should be added much oftener.
In practical results in cataphoresis I have found that the storage battery carries out all that would be expected of it from theoretical consideration. After using the dry-cell battery and Edison direct current with various shunt controllers, I have had much better success with the storage battery with a series controller. The application is smooth and painless, and the pain limit can be very closely followed in increasing the current without signs of fluctuation. In other words, my experience seems to indicate that in cataphoresis the source of the current is as important a factor as the form of controller.

Discussion. Dr. Wm. H. Hirsh, Piqua, was opposed to the use of the storage battery for many reasons. The storage cell made up of lead plate immersed in sulfuric acid is not capable of originating any current in itself, but gives off current which it receives from some outside source. If it is left idle for any considerable time it will become sulfated and its strength will be lost. It must be used almost constantly to give the best results, and the best cells only give out ninety per cent of the current which has been put into them. Most cells will not give higher than from fifty to sixty per cent. The constancy in voltage is no better than the sal ammoniac cells, and bichromate cells, or dry cells, are just as regular. The only case in which the storage battery is to be preferred is when you are using a shunt instrument of low voltage. His experience had taught him that storage cells were very dirty and objectionable on this account. When compared with the 110-volt current, the storage cell is superior, but there is no occasion to use the 110-volt current, nor should a battery of high capacity be used when only two to five milliamperes are needed.—Ohio Dental Jour., Feb. 1898.

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METHOD OF OPERATING FOR SMALL EPITHELIO-MATA OF THE LIP. By Charles N. Dowd, M.D., New York. Cancers which come on the lip are situated in a most favorable position for cure. They are seen soon after their inception. The tissues can easily be removed about them, and the lymphatics through which they spread are so situated that enlargement can readily be noticed and their removal quickly accomplished. Yet in spite of these favorable conditions the mortality from these growths is large. The report of 305 cases from Bruns' clinic gives the following details: 28 cases were inoperable or declined operation for
other reasons. Of the 277 patients who had been operated upon, 99, or 35.7 per cent, died of recurrence; 16, or 5.7 per cent, died from the operation; 71, or 25.6 per cent, died from other diseases without recurrence; 89, or 32.1 per cent, were living and healthy; 2, or 0.7 per cent, were living with recurrences. 227 of the cases were operated upon three years or more before the report, and 106, or 46.2 per cent, had lived three or more years without recurrence.

This certainly indicates the gravity of the disease, but as the earlier cases of the series date back many years they do not fairly show the present status of the subject, since patients now seek surgical aid at an earlier date than formerly and operation is much more successful.

The advanced stage which the growths had reached at the time of operation is indicated by the fact that out of 290 patients in whom the location of the growth is recorded, 66 had all, or nearly all, the lower lip involved.

The disease is not uncommon. Wörner, from the statistics of several European clinics, found that 32.4 per cent of all the epitheliomata which came to operation were upon the lip. They constituted 54.5 per cent of all those upon the face and scalp. At the New York Cancer Hospital during the last five years patients with cancer of the lip have been admitted at the rate of about one a month.

Each year patients are seen there who have been previously operated upon but who have recurrences in the tissues beneath the lower jaw. In the hope of helping to prevent such recurrences I venture to call the attention of the society to certain elements in the treatment of these growths when they first appear. The patients usually consult a physician before the growth has reached a large size. Frequently it is not larger than a split bean when it comes under medical care. The persistent ulceration is the most important element in the diagnosis, although a hard base is usually present and at least a part of the margin is usually excavated. The ordinary method of treatment is by excision of a wedge-shaped piece of the lower lip and sewing the edges of the wound together—an operation which is easily done, which gives a good cosmetic effect, and which in the main is successful. It is very generally done by physicians who do not undertake the severer kinds of operations. The later history of such patients is not usually followed. They will not report to their surgeon or physician, as they consider their ailment a
slight one and they are usually lost sight of. Still a sufficient number of them are afterward seen with recurrences to indicate that the operation is not all that could be wished.

Gussenbauer has made an exhaustive study of lymphatic infection in cancer of the lip and has found that it almost always exists. Among 32 ordinary cases which came to him for operation, from six months to two years after the beginning of the growth he found lymphatic cancerous disease present in 29 and in the remaining 3 there were such changes as indicated a beginning infection. He found the lymph nodes which lie in front of the facial artery close to the upper border of the submaxillary salivary gland to be the ones most frequently infected. He advocated their removal.

Wörner also advocated the exploration of the submaxillary tissues in operations for cancer of the lip, whether enlarged lymph nodes could be felt or not, and stated that he had often found them present when they could not be felt before exploration was made. Among 123 patients in whom the clinical appearance was noted the submaxillary glands alone were enlarged in 34; the submental glands alone were enlarged in 30; both submaxillary and submental glands were enlarged in 27; no enlargement was detected in 32.

Winiwarter states that the ordinary course of lymphatic involvement is, first, the submaxillary group, then the submental group, then those on both sides of the neck down to the clavicle.

It is to this submaxillary group that I wish particularly to call your attention. These glands bear a relationship to beginning epithelioma of the lower lip very similar to that of the axillary group to cancer of the breast. Enlargement is usually first noticed in one or more lymph nodes which lie contiguous to the anterior border of the submaxillary salivary gland, and which can ordinarily be palpated if one finger is put in the floor of the mouth under the lower margin of the body of the jaw, just in front of the facial artery, and counter-pressure made with the fingers of the other hand on the outside. A very small amount of swelling can thus be discovered. During the past year it has been my fortune to operate upon four cases of small epithelioma of the lower lip, which had been examined by men who were careful in diagnosis, but who had stated that there were no lymphatic enlargements. Yet when examination was made in the manner indicated enlarged lymph nodes were detected in each case.
The fact that these glands are enlarged does not necessarily mean that they are cancerous. Instances are recorded in which palpable lymph nodes have been left after removal of a portion of the lip and in which the swelling has subsided. In those of my case, specimens from which were examined microscopically, no cancer cells were found; the lymph nodes from the fourth case were lost before reaching the pathologist. Still one must feel that enlarged lymph nodes near a cancer are a great menace and should be removed. Gussenbauer's researches and the recurrences which are seen from time to time strengthen this belief to the extent that a failure to remove them seems very culpable.

The method which seems best adapted for these cases is to make an incision under the body of the jaw about an inch in length, reaching forward from the position of the facial artery; this is carried through the skin, superficial fascia, platysma, and deep fascia, down to the submaxillary salivary gland, to the anterior border of which the lymph node or nodes are attached. The posterior border of the mylo-hyoid muscle may be pulled forward to facilitate their finding and removal. Through the incision the adjoining tissues can be examined for the purpose of detecting other enlarged lymph nodes, particularly along the facial artery and in the floor of the mouth. If such are detected they should be removed, and of course the incision should be made as large as necessary. Incisions which are not more than an inch in length on each side do not make a scar which can be considered a deformity; if situated just below the border of the jaw they are hardly seen. This procedure should not lengthen the time of healing from the operation, as the submaxillary regions should heal as quickly as the lip does.

The chief objection is the fact that an anesthetic has to be given—a very slight objection when compared with the benefits of the operation, so slight that it need not be considered.

There may be some exceptional instances when these incisions need not be made, as there are some persons with thin necks in whom enlarged lymph nodes can be detected by proper palpation, if they exist. But so thorough and careful a bimanual examination should be made in each case that slight enlargements can be detected, and if they exist, or if there is any doubt about it, the exploration should be made. On this basis there will be very few patients with even small epithelioma of the lower lip in whom the
submaxillary spaces will not be explored. The recurrent cases and the records of operations indicate that this is not often enough done, although the subject has been fairly before the profession for a number of years.

The removal of the growth itself from the lip should be accomplished by taking away a good-sized wedge of tissue. The cut should be one-fourth to one-half an inch from the visible edge of the epithelioma. A large portion of the lip can be removed without making an unsightly deformity.

If more than two-thirds of the lip is taken away it is usually wise to make a small incision outward from the angle of the mouth, cutting the mucous membrane one-half or one-third of an inch higher than the skin, sewing this over to the skin margin so as to form a good vermilion border, which will be a part of the newly-constructed lip, and then sliding the flap toward the median line. A compensatory V-shaped piece may be taken from the tissue above the incision if necessary.—Medical Record, March 26, 1898.

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TOTAL EXTRIPATION OF STOMACH. That the stomach may be completely removed without seriously changing the metabolism and nutrition of animals has been demonstrated a number of times. How long an animal will live in good health without a stomach is still a matter of doubt, as the time which has elapsed since the institution of this line of experimentation has been too short to form a final opinion. The celebrated “Czerny dog,” whose stomach was removed by Czerny in 1878, lived five years and was then killed for anatomical investigation. The post-mortem showed, however, that a small part of the cardiac extremity of the stomach had not been excised, and a small sac, with gastric functions, had been formed from this remnant of the stomach. Excepting the case which forms the subject of these lines, the gastrectomies performed on the human subject have never been complete; a small part of the cardiac extremity always remained attached to the oesophagus. It was considered by gastrectomists impracticable to remove the entire cardiac extremity of stomach, as it seemed very difficult to pull down the oesophagus sufficiently for total extirpation of the organ.

The first and so far only total gastrectomy was performed about three months ago by Dr. Carl Schlatter of Zurich. In Dr. Schlatter’s patient it was possible to sufficiently pull down the stomach to
sever the cardiac extremity in oesophageal tissue. Two conditions may have contributed to this, in a carcinomatous stomach, unusual condition. In the first place the organ was readily movable, and secondly, the weight of the carcinomatous stomach may have dragged down the oesophagus more than usual. According to Dr. Schlatter, the prosector at the University of Zurich has determined in his investigations in the dissecting room that the lower subdia-phragmatic portion of the oesophagus can always be elongated by traction. According to these investigations it would appear that where a carcinomatous stomach is freely movable, as in Dr. Schlatter's patient, a total extirpation of the organ is usually feasible. In reporting the case Dr. Schlatter stated that he made considerable traction in pulling the stomach downward before severing the oesophagus. His patient was in relatively good condition three months after the operation. Microscopic examination of the specimen showed the neoplasm to consist of a small-celled alveolar gland-ular carcinoma. As the case is the only known total ablation of stomach that has ever been performed upon a human subject, considerable interest is attached to it from a physiological standpoint, and scientific investigation with reference to physiological functions have been conducted at the chemical, physiological and pathological laboratories of the University of Zurich. The conclusions based upon these investigations have been briefly summarized by Dr. E. C. Wendt in a discussion of the case in the Medical Record of December 25, 1897, as follows: (1) The human stomach is not a vital organ. (2) The digestive capacity of the human stomach has been considerably overrated. (3) The fluids and solids constituting an ordinary mixed diet are capable of complete digestion and assimilation without the aid of the human stomach. (4) A gain in the weight of the body may take place in spite of the total absence of gastric activity. (5) Typical vomiting may occur without a stomach. (6) The general health of a person need not immediately deteriorate on account of removal of the stomach. (7) The most important office of the human stomach is to act as a reservoir for the reception, preliminary preparation and propulsion of food and fluids. It also fulfills a useful purpose in regulating the temperature of swallowed solids and liquids. (8) The chemical functions of the human stomach may be completely and satisfactorily performed by the other divisions of the alimentary canal. (9) Gas-
tric juice is hostile to the development of microorganisms. (10) The free acid of normal gastric secretions has no power to arrest putrefactive changes in intestinal tract. Its antiseptic and bactericidal potency has been overestimated.—St. Louis Medical Review.

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TWO CASES FROM PRACTICE. By Dr. Mark Hayter, Dalles, Ore. Read before Oregon State Dental Association Oct. 14, 1897. First Case. Mr. B., aged 20 years, while cutting wood in March, 1896, was struck in the mouth by a stick and the superior central incisors were broken. The fracture was complete, all that held the parts together being the pulps, and gums on the palatal surfaces. The detached portions included about one-half the labial surface of the right central and a little less than one-half the left, and extended to the alveolar process on the palatal surface.

Treatment. The loose crowns and pulps were removed, canals temporarily filled, cotton packed so as to prevent the gums from closing over broken surfaces, and remedies applied to remove soreness from surrounding parts. After all soreness had subsided posts were fitted to the pulp-canals and detached crown, and as the parts fitted together exactly, short grooves were cut from the canals for the surplus cement. The crowns were then cemented to place, and in due time the gums became reattached. The lines of fracture could not be noticed, except on close examination. Some eight months or more after the operation the left crown gave way. I have not had an opportunity to examine the case since, and do not know whether the crown was broken or the cement failed to hold. The other crown is still in place, doing good service.

Second Case. Mr. K., aged 40 years, came to my office on the 24th of last August with the left lower central incisor badly ulcerated and so loose that it could have been removed with the thumb and finger. Upon extracting the tooth the root was found to be more than half absorbed. I had intended to try replanting, but the absorption made it impracticable. It was then decided to insert an extension bridge, using the crown of the tooth removed for a dummy. All but a small portion of the root was sawed off, the remainder rounded, and a gold cap swaged to fit, allowing the edge to slightly overlap the enamel. A post was fitted to the pulp-canal and cap, then removed, soldered and reset, chloro-percha being used, and finished with suitable disks. Cap crowns were made for the remain-
ing central and this dummy, extending about one-third of their length. The crowns were soldered together and dummy cemented to place. After the soreness had left where the tooth had been removed, the piece was cemented to place, with the dummy resting firmly upon the gum. This made a nice-looking and so far very satisfactory piece of work. The point I wish to bring out is this: Is it good practice to use the natural crowns in cases of the nature of those just reported?—Pacific Med.-Dent. Gazette, March, 1898.

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APPLICATION OF HEAT IN DENTISTRY FOR THE DESTRUCTION OF PATHOGENIC GERMS. By Dr. J. H. Woolley, Chicago. Read before Chicago Odontographic Society, Feb. 21, 1898. A tooth that is infected with a putrescent pulp needs the most powerful antiseptic agents we can find for the destruction of pathogenic germs, one which at the same time is nondestructive to the tooth structure and tissues in the apical space. In the study of this subject we wish to discover the best methods of applying antiseptics. When the pulp of a tooth dies and reaches the putrescent state, the canals and intertubular spaces are filled with fluid exudates that are thrown off from that pulp, and the whole tooth thereby becomes infected. Our aim should be to free the tooth of these poisonous exudates previous to medication. In doing so we can treat by direct medication the tooth structure, canals and intertubular spaces, where microorganisms find their habitat. Otherwise treated, it is as unscientific as it would be for a surgeon to dress a wound without previously sponging the diseased part to remove all foreign substances. In the latter case, as in the former, the direct action of the medicine would be attained, and necessarily a more rapid restoration to health of the parts afflicted. To attain the best results, then, we will have to rely upon heat to aid us in the treatment of this class of teeth referred to. Heat can be used in the following manner: After applying the dam, and removing all vestige of the putrescent pulp, we can follow with the root-canal drier. Upon its introduction into the pulp-canal a hissing sound will be heard, proving the presence of moisture. This process must be repeated until the hissing ceases. The tooth is then thoroughly desiccated and ready for direct medication. Proceeding further, we introduce our antiseptic dressing into the pulp-canal, and by capillary attraction the medicine is carried into the intertubular spaces.
The tooth then receives the benefit of direct medication, thereby saving time otherwise used in continuous treatments.

Another important point gained is, that heat not only desiccates the pulp-canal but is an active agent and aid to antiseptic medicine by way of lessening the virulence of pathogenic germs. Let me digress a few moments: Heat has always been a purifier, and its application as a germ destroyer has played so important a part in many directions that the attention of scientists has been called to this agent. It has been said that the action of cold, although it does not destroy, yet arrests the development of microorganisms. In the preservation of food cold will preserve it for a long time in a good state. Heat, on the contrary, destroys microorganisms. So much value has been placed upon this agent as a germ destroyer that among those to give it a due consideration were the members representing the council of public hygiene of France. They studied the question of the antiseptic action of heat, a report of which was given by Grancher and Gariel, and they reported unqualifiedly in favor of steam heat under pressure as a powerful agent to destroy pathogenic germs. Steam under pressure is the most efficacious between $112^\circ$ C. and $115^\circ$ C., because it destroys germs most resistant after fifteen minutes. Hot air and overheated steam are considered of less value. Even raised to $130^\circ$ certain germs are not affected though the heat be prolonged to thirty minutes. In summing up the experiments made by the commission, they found the most efficient disinfectant was moist heat raised to the temperature of $110^\circ$ to $115^\circ$; but it is not applicable to all circumstances.

In connection with the above subject let us briefly consider some bacteriological experiments with heat. Dr. Cook's experiments upon seventeen teeth report unqualifiedly in favor of direct medication. To use Dr. Cook's own words: "The first consisted of taking two freshly extracted teeth, preparing them as for filling—one I dehydrated with a root-drier—and placing in each tooth three drops of Dr. Black's i-2-3. I then made cultures of anthrax bacilli, plating them out in the usual way. The desiccated was placed in Plate No. 1; the one that had not been dried was placed in Plate No. 2. On Plate No. 1 no colonies appeared, except at the edge of plate, and they soon died out. On Plate No. 2 I was able to make only a few cultures. On Plate No. 3 there was a luxuriant development. Another experiment I made in the same
way, only using formaldehyde as a disinfectant. I found in the tooth that had been desiccated and placed in plate No. 1 there was no development, while on Plate No. 2 there were scattered a few colonies, but I could not transplant. I carried these experiments on, numbering about seventeen in all, using the various antiseptics that can be used in the mouth."

Dr. Cook further says: "There is no question in my mind that desiccation facilitates very materially the disinfection of the teeth. In fact I am inclined to believe that a tooth can be thoroughly disinfected with the root-canal drier without antiseptics at all, but as yet I have not experimented sufficiently to say definitely in regard to it. I found when a tooth had been dried or disinfected as well as possible with the heated broach, if a culture of the various mouth bacteria were put in it, that as soon as the culture media in which they were had been used up they became very much attenuated."

There is no other way than by such experiments cited to prove that heat plays an important part in the destruction of microorganisms, and also the desiccation of pulp-canals previous to being filled.

There are many, I am well aware, who still use cotton and other absorbents to desiccate pulp-canals. There are also some who dehydrate these canals by what they term 'substitution'—that is, trying to displace the moisture by winding cotton around a broach, saturating the cotton thus wound with antiseptic oils, and passing this broach up and down into the canal, hoping to remove the moisture by displacement. This I think is misleading, uncertain and an unreliable method of desiccation. A word as regards that ancient method of filling pulp-canals with shreds of cotton. It is claimed by those who practice in this manner they meet with success. To my mind this method is unscientific; for to be absolutely certain of the best results these canals must be sealed up solidly, filled to their entire length, and the apical foramen closed as well, preventing the egress of any microorganisms that might otherwise find their habitat there.—Dental Review, March 1898.

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NEW PLASTIC OPERATION FOR THE RELIEF OF DEFORMITY DUE TO DOUBLE HARELIP. By Robert Abbe, M. D., New York. A lad of twenty-one years recently presented himself for a conspicuous deformity of the lips, the sequel of an operation for double harelip in infancy, consisting in an extreme flat-
ness and scantiness of the upper lip, with an enormous pouting and redundance of the lower one. He also had a complete cleft of the hard and soft palates, upon which two attempts had been made in former years to close. He desired this to be closed first, which I did, and operation was afterward done upon the lips.

Their inequality was admirably corrected by transplanting the middle portion of the lower lip into the upper, as illustrated in Figs. 1, 2 and 3. A median vertical incision was made in the upper lip, and the central scar portion excised so as to obtain edges of an excellent quality of skin. The gap thus created was about three-fourths of an inch in width. A flap taken from the central portion of the lower lip, a little wider than the upper gap, was then made, in such a way as to make a hinge upon one side containing the lower branch of the coronary artery on the left, which flap was turned upward so that its lower edge on the chin was placed beneath the columna nasi. The vermillion border was exactly stitched on one side, as shown (Fig. 2), and numerous very fine stitches were applied so as to secure apposition around three-fourths of the flap. The lower part of the wound upon the chin was also brought in apposition up to the red portion.

Upon the right side of the mouth the upper half and the lower half of the red lip were left free until the inverted flap should have grown in its new position. Retention sutures were made to transfix the upper lip from side to side, and also one was passed from below the left angle of the mouth, crossing obliquely to the right upper lip, below the wing of the nose, thus preventing unconscious dragging upon the flaps. These are not shown in the sketch.

On the twelfth day, the flap having grown perfectly in its new position, its base was very carefully cut from the lower lip so as to
leave an ample portion of the red middle lip, which was turned upward and exactly fitted to the freshened edge of the free half of the lip, as shown in Fig. 3. The lower lip was then refreshed and sutured.

The nutrition of this transplanted flap by its new capillary nourishment was so perfect that in color and texture it seemed to have been always a part of the upper lip. The lines of suture rapidly faded and were quite insignificant. The two lips were afterward in about their normal proportion, and gave patient perfect satisfaction.

During the twelve days between the operations nourishment was well sustained by fluid taken through a tube inserted through the nostril.—Medical Record, April 2, 1898.

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CONNECTION BETWEEN DISEASES OF THE EYE AND DISEASES OF THE TEETH. By Charles Stedman Bull, A.M., M.D., New York. Read before New York Institute of Stomatology, Jan. 4, 1898. The relation which is supposed to exist between affections of the teeth and diseases of the eye has been familiar to us all for many years, and the belief in its existence is almost as old as the science of medicine itself. The difficulty has always been to explain exactly what this connection is, and how the diseased process is propagated from the mouth to the eye, or, in the reverse direction, from the eyes to the mouth.

Attempts have been made to classify the lesions of the eye which are supposed to be of dental origin by dividing them into two classes, viz., those lesions which are of reflex origin and those which are of an inflammatory nature. All such attempts, however, have been generally too vague and too positive, too schematic; for a reflex lesion may later become an inflammatory lesion, and must thus come to be regarded as the irritative phase of an inflammatory phenomenon. In these latter days of what may be called the "microbic craze" we are, perhaps, too prone to consider the so-called reflex lesions as more likely to be of microbial origin, thus restricting the reflex ocular phenomena within still narrower limits. Attempts have been made in the past by the advocates of the reflex theory to regard all lesions of the anterior segment of the eyeball, in cases of dental disease, as due to some disturbance of the trifacial nerve; while lesions of the posterior part of the eyeball are considered to be of an inflammatory, infectious nature, propagated directly from the
diseased teeth or upper jaw to the orbit, and thence to the eyeball. This is a fanciful classification which is not justified by our clinical or pathological knowledge.

It is probable that lachrymation, due to irritation of the terminal filaments of the trifacial nerve, is of reflex origin, as may be also amblyopia with peripheral narrowing of the visual field. In the latter case, however, it is possible that the irritation may be propagated by inflammation along the optic canal, where the optic nerve may be compressed or inflamed by the septic elements of inflammation, infected, and thus give rise to defects of vision and a narrowing of the visual field. It is very possible that a dental lesion causing a sensitive impression in the trifacial may reach the great sympathetic nerve, or the ciliospinal centre, or even the bulbar enlargement of the cord, and give the impulse to a greater or less number of neurons, according to the degree of impressionability of the subject or for other reasons. Any or all of these reasons would suffice for the retention of the sensitive impressions in several nuclei and the production of varying motor or vasomotor phenomena.

Congestive phenomena of reflex origin, by means of irritation of the filaments of the trifacial, are said to cause dilatation of the vessels of the eyeball, and even to set up keratitis and iritis. This, however, is by no means certain, and is more than doubtful. It would seem more rational to believe, for example, in a case of empyema of the maxillary antrum due to dental caries, followed by iritis, that an infectious osteoperiostitis had ensued, with metastasis of the pus through the medium of the blood-vessels and lymphatics, to the tissue of the iris and choroid. This method of propagation has not yet been proved to occur, but it is highly probable. It is not yet positively known that infectious microbes coming from a suppurating focus must always set up the same suppurative inflammation in a new tissue when carried there by the vessels and lymphatics. Cases of iritis occurring in the course of abscess of the maxillary antrum with dental caries are probably of pure microbial origin. Mere conditions of irritation and congestion of the eye may be the starting point of a microbial infection.

We know that infection of dental origin may extend to the sinuses of the face, not only the antrum but the frontal sinus, ethmoid sinus, or sphenoid antrum, by the natural opening into each of these sinuses. Infectious inflammation of the maxillary antrum,
consecutive to an alveolar dental periostitis, frequently extends to the orbit, and these cases of cellulitis of the orbit are due in most instances to periostitis of the floor of the orbit extending from the antrum. The pus may extend to the orbit by stripping the perios- teum from below upward, or more frequently through the medium of the communicating veins. The veins of the maxillary sinus and of the periosteum of the upper jaw open generally into the oph- thalmo-facial vein, which, coming from the pituitary membrane, passes through the sphenopalatine foramen, anastomoses with the intraorbital veins, and empties into the facial vein below the level of the malar bone. Inflammation of this vein from microbric origin might of itself cause a thrombophlebitis of the cavernous sinus. The inflammatory process might also follow the course of the lymphatics. Thus alveolar dental periostitis may cause thrombophlebitis of the cavernous sinus and secondary orbital phlebitis, not only when starting in the superior maxilla but also when confined to the inferior maxilla.

An interesting fact has been brought out by Reynier and Parnaud. They have proved that in certain cases of orbital cellulitis from alveolar dental periostitis and abscess of the antrum the pus does not reach the orbit by stripping up the periosteum, for there is no perios teum. The pus spreads through the bone itself. Pus starting in an alveolus may perforate it; but on the other hand, it may not destroy the alveolar wall, but pass through the canaliculi or foramina at the apex of the alveolus, and thence into the infraorbital notch, or through one of several orifices situated in front of the lachrymal sac, in the ascending ramus of the superior maxilla. These orifices often communicate directly with the nasal fossæ or antrum, so that the pus coming from a carious alveolus may reach the orbit either by passing through the sinus or by avoiding it.

In children the maxillary sinus is much smaller than in the adult and does not bear the same relations to the orbit. It is effaced in part by the development of the alveoli of the first and second dentition. The relation of these alveoli vary with the age of the subject; but in some cases the alveolus of second dentition may extend as far as the orbital arch. In the case of the cuspid tooth, the alveoli of the first and second dentition, more or less exactly superimposed, the one on the other, often communicate with each other by an orifice, which gives passage to both nerves and vessels,
and later, by the absorption of the wall of separation, the one resulting alveolus ascends as far as the orbit. In both children and adults the infectious focus may remain localized, or it may spread by various channels more or less rapidly and gain progressively the sinuses of the face and base of the skull through the veins of the optic foramen or vault of the orbit. It would seem wiser to give up any attempt to classify the ophthalmic lesions met with in connection with morbid processes in the teeth and to consider the subject under two heads. First, lesions of the eye met with in the course of dentition, both primary or early and secondary. The connection existing between certain affections of the eye and early dentition is very close and is recognized by all practicing physicians. Some of the ocular manifestations met with in the course of early eruption of the first teeth are sympathetic in nature and probably reflex in origin, such as photophobia and lachrymation. Others are of a distinctly inflammatory nature, though also reflex in origin, such as the various forms of ulceration of the cornea and conjunctiva. Catarrhal conjunctivitis, phlyctenular conjunctivitis and keratitis, ulcers of the cornea, lagophthalmos from spasm of the levator of the upper lid, marginal blepharitis, mydriasis, and a peculiar form of cataract are affections of the eyes not infrequently met with during early dentition. Many authors have cited such instances. A case reported by Sous is interesting. A child was attacked by diffuse keratitis of the right eye and a cure followed lancing of the gums. In the following year the left eye became inflamed in the same way, and the process involved not only the cornea but the sclera also. A tooth was removed to allow a deviated tooth to take its normal position, and in three days the cornea had resumed its normal transparency and all signs of inflammation vanished. All these so-called superficial inflammations of the eye are generally considered to be reflex, and are relieved and generally cured by incisions in the swollen gums. I have under my care at present a child, aged ten months, in excellent physical condition, with good digestion, who for nearly three months has had a series of phlyctenular ulcerations on the margin of the cornea in both eyes, appearing in groups, and accompanied by great photophobia and considerable general conjunctivitis, and very pronounced swelling and engorgement of the gums. Local treatment has proved of little use, but on every occasion after lanc-
ing of the gums there has been an immediate improvement in the photophobia and the ulcers began to heal. The teeth have pushed themselves forward very rapidly, and with each new attack of swelling of the gums a fresh crop of small ulcers have appeared on the margin of the cornea.

One of the most interesting ocular lesions met with in connection with difficult early dentition is the zonular cataract. Horner was one of the first to call attention to this, in 1864, and he supposed it to be due to the influence of infantile rickets. Arlt first noticed the coincidence of infantile convulsions and zonular cataract, and thought that in the convulsions met with during dentition some solution of due physiological contact took place between the denser central portion and the more fluid peripherical portion of the lens, and that this mechanical lesion manifested itself as a stationary zonular or lamellar opacity. Horner noticed that these patients showed cranial deformities and malformation of the first teeth, which he attributed to rickets. Out of sixty-five cases of zonular cataract, forty-eight had infantile convulsions, and in thirty-six cases there were dental and cranial deformities. The teeth are thick and coarse, the incisors are cubical, and the enamel terminates abruptly on the neck of the tooth in a swollen ridge. The horizontal furrows in the enamel become visible to the naked eye, and near the cutting edge a horizontal row of round holes marks the position of one of these excavated grooves. The body of the tooth terminates in a convex border at the cutting edge. Sometimes the enamel is wanting in the grooves and the discolored dentin shows through. Story, in 1886, reported nine cases. He does not believe that rickets is always the cause. The dental defect is due to an arrest of development. The period of the growth of the enamel is of limited duration, somewhere between the sixth and the ninth month. He thinks that there is a close similarity between the lens and the dental enamel in origin and development, and that it is, therefore, natural that they should be affected by the same pathological agents. Both are formed by an involution of the epithelium from the surface of the embryo, and in both the growth proceeds from the deeper layer of this epithelium, when separated from the rest of the epiblast by the interposition of a mesoblastic layer. There is this difference, however: the enamel organ has only a brief functional existence and then disappears, but growth of lens proceeds during many years.
Hutchinson stated, in 1875, that these imperfect teeth were, as a rule, met with only in connection with the zonular cataract of early childhood. The latter was always symmetrical and quite stationary, and was not associated with any particular diathesis. The defective development of the teeth was seen in the incisors, cuspids and first molars, the latter being the test-teeth. The bicuspid usually escape. In contradistinction to Story and Horner, he believes that the permanent teeth are alone affected. The incisors and cuspids are pitted, dirty, and rough, with spinous edges. The non-development of the enamel and the erosion of the exposed dentin are the essential features. With these teeth and the zonular cataract there is usually a history of infantile convulsions. Some have held that these dental defects usually result from inflammation of the gums in infancy, and that mercury is the chief cause, the mercury having been administered during the period when the enamel was undergoing calcification. Hutchinson believes that the connection between zonular cataract and convulsions is universal. Weiss (1876) holds the same views. The general testimony seems to be in favor of the view that when zonular cataract is found with a history of convulsions, the permanent teeth will certainly be malformed. The distinct characteristic of a genuine "convulsion tooth," unaffected by congenital syphilis, is the shortness of its enamel, dentin projecting beyond enamel edge and being more or less honeycombed.

Second. Lesions of the eye occurring in the course of diseased processes in the permanent teeth. The reflex theory has many strong advocates, one of the most recent being Knies (1895), and from the time of Mackenzie, in 1833, down to the present day most writers on ophthalmic diseases have given more or less adhesion to the doctrine. It is only when we reach the period of bacteriological investigations that the reflex theory of origin begins materially to lose ground. Leber reports (1877) numerous observations of the occurrence of visual disturbance through irritation of the extraocular branches of the trigeminal in diseases of the teeth, such as simple dental caries with severe continuous toothache and sensitiveness of the tooth to pressure, or suppuration in the alveoli with prolongation of the inflammation to the antrum. The teeth involved are generally in the upper jaw, and usually the molars. The eye symptoms are photophobia, retinal hyperesthesia, photopsia, loss of accommodation, and, more rarely, amblyopia and amaurosis. All these symp-
toms simulate sympathetic troubles. The ophthalmoscopic evidence may be negative, though occasionally there are signs of retinitis and optic neuritis. * * * Desmarres (1858) believed that there was a real pathological connection between diseases of the eye and diseases of the teeth, and that the connection might be either direct by continuity of tissue or reflex through the nervous system. The lesions on the side of the eye might be either organic or functional. * * * Nuel (1887) is even more positive in his statements. Generally the superior dental nerves are involved. If amblyopia is really present one or more molars in the upper jaw will be found sensitive. If the superior dental nerves are involved there will always be conjunctival and ciliary injection, with ciliary neuralgia, lachrymation, photophobia, and sometimes blepharospasm and spasm of accommodation. Nuel considers these symptoms all reflex; reflex vasomotor dilatation in the conjunctival and ciliary vessels, reflex contraction of the muscles of the face, and reflex innervation of the lachrymal gland. If amblyopia exist, there is usually also narrowing of the visual field, and the vision becomes worse with each fresh attack of dental neuralgia. * * *. Galezowski (1872) is an advocate of the reflex theory, but believes that the reflex influence is exerted not in the brain but in the ganglion or node of Gasse, and works in both ways, from the teeth to the eyes and vice versa.

Without quoting the names or opinions of the long list of authors who have expressed their views on the subject, it seems to be definitely settled that a relation exists between certain lesions of the eye and certain diseased conditions of the teeth. Knies formulates the modern views as follows: (1) Conjunctivitis of the phlyctenular variety is known to be intimately connected with teething, even with the second dentition. (2) It is undoubtedly true that keratitis, iritis, glaucoma, muscular paralysis, asthenopia, amblyopia without visible lesion, supraorbital neuralgia, and oxophthalmos with and without orbital cellulitis, are caused directly or indirectly by carious teeth. (3) When paralysis of accommodation appears during an attack of toothache it probably results simply from the lack of vigorous innervation on account of the distressing pain. (4) Muscular insufficiency or paralysis, with diplopia, may also be explained as paresis due to enfeebled innervation. (5) Spasm of accommodation and nictitation are both reflex symptoms frequently observed with toothache, as is also neuralgia of one or more of the branches of the trifacial nerve.
(6) Amblyopia and amaurosis are by no means infrequent complications of carious teeth. Any positive ophthalmoscopic evidence should lead us to assume a common cause for the dental pain and the visual disturbance. (7) A spasm of the levator muscle of the upper lid leading to the appearance known as lagophthalmos has not infrequently been described in connection with pain in carious teeth. (8) Orbital cellulitis with development of abscess in the lower lid has been noted in caries of the teeth of the upper jaw with the development of abscesses round the diseased teeth. (9) Exophthalmos, or protrusion of the eye, may be caused by serious infiltration of the orbital tissue directly connected with disease of the alveoli. (10) Conversely, pain in the teeth of the upper jaw is by no means an infrequent symptom in iritis and cyclitis with severe neuralgic pain in the branches of the trifacial nerve; and toothache has been unmistakably recognized as one of the prodromal signs of glaucoma.

For the sake of convenience we may perhaps divide the lesions of the eye met with in connection with lesions of the teeth into three groups, as follows: (1) Those dependent on vasomotor disturbances, which would include all cases of disturbance of nutrition, all inflammatory cases, and the reflex cases, such as amblyopia and amaurosis without ophthalmoscopic evidence. (2) Those dependent on disturbances of sensibility, such as ciliary neuralgia and the various forms of asthenopia. (3) Those characterized by disturbances of motility, including all cases of spasm and paralysis of the muscles of the eye, including the iris and ciliary muscle.

The eye complications of dental disease are of varied nature. Beginning with the most superficial structures of the eye, the first subject that will engage our attention is the eyelids. Herpetic eruption of the lids in the course of the terminal branches of the fifth nerve is often met with in connection with carious teeth, and resists all treatment until the teeth are extracted or properly filled. Hutchinson has reported an interesting case of constant spasmodic contraction of the levator of the lid in a lady who had four decayed molar teeth in both jaws on the corresponding side. These were removed and all ciliary neuralgia at once ceased, but the spasm remained. The left upper first molar contained an amalgam stopping, which on being removed revealed an exposure of the pulp. This tooth was also removed and improvement in the muscular spasm began at once and the spasm shortly stopped altogether.
This may be regarded as purely reflex. On the other hand, Redard has reported a case of paralysis of the levator of the lid which resisted all treatment. A careful examination of the mouth showed extensive caries of the upper third molar, and on this being removed the paralysis began to improve, and in a few days the lid had completely regained its power. Ely has reported a case of paresis of the orbicularis muscle associated with spasms of the ciliary muscle in a patient with an abscess at the root of the third upper molar on the right side. This tooth was extracted and the ocular symptoms immediately disappeared.

When we come to consider the lesions of cornea and sclera, the number of cases reported in connection with diseased teeth is almost numberless. Ulcers of the cornea, superficial and interstitial keratitis, and scleritis are repeatedly mentioned. Marginal phlyctenular keratitis is a very common accompaniment of early and second dentition as well as of carious teeth in the adult. Ely reports a typical case in a man aged 35, who had severe neuralgia of the right side of the face, with ulcer of the conjunctiva and scleritis of the right eye. There was in the right upper cuspid tooth an ulcerated spot just below the gum and the pulp was exposed. The pulp was destroyed, the ulcerated spot treated, and the neuralgia ceased at once, and in a few days the eye became perfectly well. Hern has also reported a number of cases of scleritis of undoubted dental origin. Iritis has also been observed in connection with interstitial keratitis in cases of carious teeth, and the teeth being properly cared for the iritis promptly got well.

The loss of accommodation due to paralysis of the ciliary muscle has received special attention from several authors.

Schmidt-Rimpler (1877) gives the result of his experience in ninety-two cases and draws the following conclusions: (1) In consequence of the pathological irritation of the dental branches of the triracial nerve there may result more or less marked limitation of the range of accommodation. (2) These limitations of accommodation may be either unilateral or bilateral. When unilateral they always appear in the eye on the affected side. (3) These limitations of accommodation occur most frequently in the young, while at an advanced age they occur rarely or never. (4) They are due to an intraocular increase of tension, proceeding from a reflex irritation of the vasomotor nerves.
In seventy-three of the ninety-two cases reported the accommodation was diminished far below the normal standard. In most of the cases the accommodation was regained after the removal of the trouble in the teeth either by the cure of the carious process or by the extraction of the diseased teeth. The degree of limitation of the accommodation varied greatly. Schmidt-Rimpler believes that the irritation of the branches of the trigeminus due to carious teeth causes in a reflex manner an irritation of the vasomotor nerves of the eye and that irritation of these vasomotor nerves produces an increase of the intraocular tension, which diminishes the accommodation. * * * Ely (1882) reports in detail the case of a man aged 31, who had not only paralysis of accommodation in the right eye, but also paralysis of the right internal rectus muscle. The root of the first upper molar tooth on the right side was denuded, rough and sensitive. The pulp of the tooth was dead, the alveolar process was absorbed, and there was extensive suppuration in the adjacent parts. The condition of the tooth was rectified and the symptoms all disappeared. * * * Dunn (1891) reports a case of paralysis of accommodation, with impaired vision and severe ciliary neuralgia in a patient, who was found to have an abscess at the root of the second molar tooth in the lower jaw on the left side. The tooth was extracted and the alveolar cavity antiseptically treated, and in a few days all the ocular symptoms entirely disappeared.

When we come to consider the subject of amblyopia and amaurosis, whether reflex or not, in connection with the existence of carious teeth or lesions in the jaw, the list of authors becomes very large. Hocken, in 1842, published a treatise on amaurosis, in which a number of cases are reported as due to carious teeth. Most of the cases reported have been associated with dental neuralgia of the molars of the upper jaw, and the lesion has been caries, sometimes complicated by abscesses of greater or less extent at the roots of the teeth. It should be understood that all cases of amblyopia or amaurosis considered under this head have been those in which no ophthalmoscopic evidence of disease has ever been noticed from the beginning to the end of the trouble. There is usually lachrymation, photophobia, conjunctival or ciliary injection, and occasionally spasm of accommodation, but the fundus remains healthy. The defect of vision may be unilateral or bilateral, and when the latter exists the vision is always worse on the side corresponding to the diseased
teeth. If the defect in vision is marked, the field of vision is usually concentrically narrowed, and both vision and limitation of the field of vision become worse with each exacerbation of the neuralgia. The photophobia in these cases is due to the existing retinal hyperesthesia. * * * Park (1893) has reported a case of a patient who complained of headache, loss of vision in the right eye, and some photopsic manifestations. A few days later vision in the right eye was reduced to perception of light. The ophthalmoscopic examination was negative. There was concentric narrowing of the field of vision. An examination of the mouth revealed five decayed teeth in the right upper jaw, and an artificial plate was found resting and pressing on the decayed roots. The roots were all extracted, and vision began to improve at once and in two months was completely restored. * * * In the Courier Medical for 1890 will be found the report of a case of a lady, aged thirty, who complained of failing vision in the left eye, accompanied by severe toothache in the second left upper molar tooth. In one week from the onset of the attack the left eye became entirely blind, without any ophthalmoscopic evidence of disease. The diseased tooth was extracted, and pus immediately flowed from the alveolar cavity. Examination revealed a small piece of wooden toothpick, which was removed from the cavity, and in a few days there was complete restoration of vision. * * * I have recently had under my care a lady who presented herself complaining of lachrymation, photophobia, and loss of accommodation in the right eye. In two days vision in this eye began to fail and the field of vision became concentrically narrowed. Repeated ophthalmoscopic examinations revealed nothing abnormal. In about a week from the onset severe neuralgia of the right side of the face set in. She was sent to her dentist, who discovered that the second molar in the right upper jaw, which had been filled, was very sensitive to pressure. The filling was removed and the pulp found inflamed. At this time the vision had been reduced to perception of light. The pulp was destroyed and the cavity was again filled. The neuralgia, lachrymation, and photophobia ceased at once, and in less than a week vision was completely restored, and the field of vision regained its normal extent.

Proceeding next in the course adopted, from without inward, from the superficial affections of the eye to the deeper and more serious lesions, in connection with diseased processes in the teeth, we
come to consider inflammation of the optic nerve, or optic neuritis, including the immediately surrounding zone of the retina. Of this disease we have a number of undoubted cases on record. In 1893, Hermann reported a case of inflammation of the optic nerve of the variety known as papillitis, occurring in a patient in whom no cause for the lesion could be found until the teeth were examined, when a carious tooth was found accompanied by toothache. Unfortunately, the extraction of the tooth and the cure of the suppurative process had no beneficial effect upon the inflammatory process in the optic nerve. * * * Despagnet (1893) reports a very clear and interesting case occurring in a woman, aged twenty-four, in whom there was optic neuritis with dilatation of the iris. An examination of the mouth showed caries of the last molar of the upper jaw on the corresponding side, with extensive periostitis of the alveolar process and a sequestrum of the alveolar arch. There was suppurative inflammation in the antrum directly connected with the diseased alveolus, and the suppurative process was found to have extended to the orbit as far back as the foramen opticum and here had involved the optic nerve. * * * Hirsch (1893) reports a case of optic neuritis ending in atrophy of the nerve and blindness, in which the disease evidently started in the left second upper molar. There was an extensive abscess involving the gum, cheek, and lower lid, which had perforated externally. A probe could be passed from the external opening in the cheek along the floor and inner wall of the orbit. The infection had extended from the tooth-cavity and set up alveolar periostitis, which had involved the antrum and floor of the orbit, and set up orbital cellulitis, inflammation, and eventually atrophy of the optic nerve. * * * Feuer (1895) reports two cases of optic neuritis ending in a complete cure and restoration of vision after extraction of the carious teeth. In the first case there were three decayed teeth with osteoperiostitis of the alveolar arch and antrum, with exophthalmos and optic neuritis. In the second case the third molar in the right upper jaw was diseased, with periostitis of the alveolar arch and of the floor and inner wall of the orbit. The loss of sight was complete in the right eye, and coincided with the occurrence of inflammation and pain in the orbital floor. The vision was completely restored in three months. Cases of this sort might be multiplied almost indefinitely, but enough have been presented to show the connection which actually exists between diseased teeth and the inflammation of the optic nerve.
Choroiditis, or inflammation of the choroid coat of the eye, has been mentioned by a number of authors as occasionally due to reflex irritation from a decayed tooth, and several cases have been reported, one of the most notable by Sous (1896). The patient was a girl, aged twenty, who complained of failing vision in the right eye. An examination showed both keratitis punctata and choroiditis. The first right upper molar was carious and had been recently filled, but was still painful. Pressure on this tooth caused an acute pain in the eye. The filling was removed and vision began at once to improve, the keratitis rapidly disappeared, and within a week the choroiditis was gone. The tooth was then refilled, and on the next day there was a return of all the symptoms. The filling was again removed, and the symptoms again rapidly disappeared. Here the irritation of a dental nerve acted in a reflex manner upon the sensory ophthalmic nerves and set up a secretory choroiditis.

Anomalies of the ocular muscles in connection with dental lesions have been repeatedly reported and I have seen several such cases. Terrier (1876) has reported a very obstinate case of spasmodic contraction of the motor muscles of an eye and of the orbicularis muscle of the eyelids, which was entirely relieved by extraction of the carious teeth. * * * Hutchinson (1895) reports a case of lagophthalmos due to dental irritation. The patient, a lady, suffered from marked spasm of the left upper eyelid. The left second and third molars in both jaws were badly decayed, and there was intense left facial neuralgia in all the branches of the fifth nerve. All four teeth were extracted, and the neuralgia ceased at once, but the spasm of the lids continued. The left first upper molar had an amalgam stopping; this was removed and the pulp found exposed. This tooth was removed, and an improvement in the muscular spasm of the lids began at once and in six months it was entirely cured. * * * Ely (1882) reports a case of a woman, aged forty, who had marked paralysis of the right third nerve or oculomotorius. Several decayed teeth were found in the right upper jaw, and the gums were badly swollen. The teeth were extracted, the alveolar cavities and gums were treated antisepically, and the symptoms of muscular paralysis all disappeared.

The subject of periostitis of the bones of the orbit, as a consequence of periostitis of the alveolar arch due to decayed teeth, is so intimately connected with orbital cellulitis that the two will be con-
sidered together. These constitute some of the most serious cases, not only as regards danger to the integrity of the eye, but also to the life of the patient, whichever fall under the observation of the oculist. Many writers have reported cases. Schwendt published an inaugural dissertation on orbital cellulitis in 1882, in which he collected the reports of forty-four cases, of which seven were directly due to carious teeth. The cellulitis was generally preceded by abscess of the antrum, periostitis of the floor of the orbit, and sometimes by suppuration in the ethmoid, with discharge of pus from the nose. * * * Vossius in 1884 reported a case of orbital cellulitis with thrombophlebitis of the orbital veins and optic neuritis, with complete restoration of vision after extraction of a carious molar. This case was probably due to a rapid infectious inflammation of the veins and lymphatics with thrombosis, through the alveolar veins into the antrum and thence by a branch which perforates the floor of the orbit and empties into the infraorbital vein. * * * Snell in 1890 reported the case of a young girl aged 14, who had two decayed teeth in the upper jaw, which were extracted and periostitis found in the alveolar arch. Acute orbital cellulitis followed, and the orbital tissue was freely incised, giving exit to a large quantity of pus, but death followed in a few days from meningitis. * * * Fage (1893) reports the case of a man aged 29, who applied for treatment. There was protrusion of the left eye with marked chemosis, cædematous lids, dilated iris, and the cheek swollen and painful. There was fever and a fetid odor to the breath. The gums of the left upper and lower jaws were swollen and there were several carious teeth. The first left upper molar was wanting, having been removed a few days before on account of severe toothache. The symptoms became rapidly worse and the orbital tissue was freely incised, but no pus appeared. An incision in the lower lid gave exit to fetid pus. A probe passed freely through the alveolar cavity of the first molar into the antrum, and pus flowed from the latter. This treatment, with antiseptic irrigation, brought a rapid recovery. * * * Galezowski reports a somewhat similar case, occurring in a young woman aged 20. He comments on the frequency of alveolar abscess due to carious teeth, he having seen nine cases in two years among 17,000 cases of eye-disease.

There seems to be no doubt that in addition to the rather benign reflex disturbances in the eye accompanying more or less serious dis-
ease in the teeth and jaws, we also not infrequently meet with grave ocular lesions due to an infectious process, and here our anatomical knowledge enables us to follow the channel of propagation accurately. I think it may be stated that the primary evil starts in the periosteum around a carious alveolus, develops at first slowly, and if recognized and properly treated it may be cured without an abscess. If, however, the alveolar dental periostitis extends to the antrum, the next step will be an abscess of the antrum, periostitis of its walls, including the root of the antrum or floor of the orbit, which, in its turn, sets up orbital cellulitis, ending in suppuration, with possible destruction of the eyeball from panophthalmitis, or inflammation of the optic nerve and atrophy from strangulation of the nerve by pressure.

The various steps in the destructive process here outlined are well illustrated in the report of a single case published by Juler in 1895. A boy complained of pain in one of the upper molar teeth, and this toothache was followed by pain in the jaw, then by pain in the orbit, exophthalmos, orbital cellulitis and suppurative panophthalmitis and total destruction of the eye. The tooth was extracted and was found extensively diseased, with caries of the alveolar wall, periostitis, abscess at the root of the tooth communicating with an abscess of the antrum. The eye was enucleated and the floor of the orbit was found extensively diseased, with a large hole communicating with the cavity of the antrum.

In this somewhat rapid sketch of a subject of almost equal interest to both dentist and oculist there does not seem to be any reasonable doubt of the close connection which exists between certain diseased processes in the eyes and certain abnormal physiological and pathological conditions of the teeth. The modern ophthalmologist certainly recognizes the existence of this connection, though he perhaps has not insisted upon it sufficiently in the published literature.—International Dental Journal, March, 1898.

* * *


The disk-holder or mandrel may oftimes be used more advantageously if the head or screw that holds the disk be dressed down a little. Many times a very small disk is called for in finishing small gold fillings at the "gum line" or on the labial surfaces of the central incisors. A large mandrel head mars the surface of the filling
if it touches it, and it often does when small disks are used. In polishing gold fillings in molars and bicuspids when leather, chamois, moose hide or soft rubber is used to carry the polishing powder, the large mandrel head makes it hard to polish in the fissures. By putting the mandrel in your hand-piece and turning it against a file or stone, it takes but a few minutes to reduce the size of the head to one-fourth the original size. I only use a large headed mandrel when using large disks. "The disk is a very painful thing, and I use mostly strips and work them back and forth slowly." Do you? Oh!—I don’t; I use disks almost exclusively, always when it is possible. To obviate the pain, which is caused by nothing else but the heat, I have my assistant throw a continuous blast of cold air on the tooth. The air alone, of course, would hurt as much as the ordinary manner of disking does, but properly applied at the same time, neither it nor the disking gives any pain whatever. To get cold air you can use a continuous flow Richmond spray, a blow-pipe bellows, or a compressed air apparatus such as is used by the nose and throat specialists. Some of the modern buildings in large cities furnish compressed air, which makes it very convenient for dental work.

In putting on the final polish I use a rouge-coated paper disk. This polishes a filling smoother and better than anything that has yet been brought to my notice.—*Ind. Dent. Jour., March, 1898.*

COAGULATION THEORY. By H. T. Smith, D.D.S., Cincinnati. Read before Ohio State Dental Society, Dec. 1897. Not long since I came across the following statement in the editorial pages of the *International Dental Journal.* It is headed "The Coagulation Theory" and reads: "The discussion on this subject, which has taken a wide range and claimed the interest of many minds for years, seems to be drawing to a conclusion, if the very thorough experiments of Dr. E. L. York are to be accepted. These clearly prove that a coagulant such as carbolic acid does diffuse through dentin, notwithstanding assertions made to the contrary; and does not form an impenetrable coagulum at the orificial ends of the dentinal tubuli. These investigations substantiate those previously made, and, conjoined by those made by Dr. Bethel with silver nitrate, form a series of facts that clearly settle the question."

I thought it might be interesting to look up the points at issue and to forecast if possible the conclusion spoken of and at the same
time call attention to some points in the therapeutics of root-canal treatment as they occur. The question originally at issue in the coagulation theory was whether or not a medicament which has coagulating properties, if used in the treatment of root-canals, so seals the mouths of the dentinal tubes as to prevent the further ingress of itself or of another medicament afterward used for anti-septic treatment? In other words, are carbolic acid and zinc chloride self-limiting in their action, and if so, are they contraindicated in the treatment of root-canals? It involves also this question, which is quite as important: Is the product matter from a putrefactive pulp capable of entering the body of the dentin, and if so, is it also capable of infecting the pericemental tissues, causing what we recognize as lame teeth?

Looking into the first question, the diffusibility of coagulants, Dr. Harlan's experiments were probably the first made and were about as follows: The pulps of freshly-extracted teeth were removed, the ends of the roots sealed, and the teeth planted in plaster of paris. Cotton moistened with carbolic acid in the one case and with wood creosote and zinc chloride in the others was carefully packed in the root-canals. At the end of forty days tests were made in the plaster of paris for the presence of the coagulant, and none was found. When the essential oils, cloves, cassia, and eucalyptus were used, it was found after four hours that the oils had plainly penetrated the dentin. By adding carmin to the oils the degree of penetration was distinctly followed. When solutions of silver nitrate were used it was found not to penetrate the tubules to any extent, and it was classed as self-limiting with the other coagulants. The silver nitrate furnishes its own stain, and the degree of penetration was easily defined in sections of the roots. In another set of experiments Dr. Harlan immersed the teeth in starch solution up to their anatomical necks, after treating the canals with coagulating disinfectants and iodin. The characteristic blue color did not appear in the starch solution, hence he concluded that the coagulants were a bar to their own diffusibility. We cannot but believe that these experiments were carefully made and the results accurately reported.

The other side of the question is best represented by the recent experiments of Dr. E. L. York upon the diffusibility of coagulants in dentin to which the editorial quoted refers as those that settle
the question. Using a number of teeth with both normal and putrescent pulps, Dr. York prepared them about as Dr. Harlan did. He injected into the canal of one a 95 per cent carbolic acid, which had previously been colored with a small quantity of fuchsia. The tooth was sealed and wrapped in moist gauze and was kept at a temperature of 98° F. to simulate the conditions in the mouth. In about eighteen hours the carbolic acid had passed through the dentin, as shown in sections of the root. This experiment was repeated a number of times, so that no doubt as to the result was left in the experimenter's mind. In other experiments the teeth were suspended in water and the test for carbolic acid made with bromin water, when it was found that the carbolic acid had penetrated the roots in about eighteen hours. Next, in order to demonstrate that carbolic acid does not form an impenetrable coagulum at the orificial end of the dentinal tubuli with their albuminous contents, one of the teeth that had contained carbolic acid in its root-canal for seventy hours was used. The canal was dried and the saturated solution of sodium chlorid was sealed in it. The tooth was suspended in water, and after three hours the water was tested for the presence of the sodium chlorid, using a drop of silver nitrate. The result showed a quantity of silver chlorid thrown down, proving that the coagulum formed was not a barrier to the passage through the dentin of other medicaments used in root-canal treatment. He found also that carbolic acid placed on the white of a boiled egg shows marked diffusibility, from which he infers that carbolic acid is not self-limiting in its action, but penetrates its own coagulum.

Now here are two sets of similar experiments with exactly opposite results. Which are we to believe? Some one says that it is a question of veracity, but it seems to me that the always possible differences in the dryness and age of the teeth used, and the variations in the quantities and percentages of the solutions used, should be given full consideration in the results. Dr. Truman says the question is settled in favor of the diffusibility of coagulants. Hence it is still good practice to use carbolic acid in root-canals. There is, however, one point that the experiments do clearly show, and in this they have perhaps chief value. It is said that the essential oils are very much more diffusible than the coagulants, and for this reason they have a distinct advantage of the latter in certain instances of root-canal treatment; and perhaps the mistake is made when the
question is not allowed to rest with this comparison, but is pushed to the ostracism of one or the other class of medicaments.

A few observations I have put down as they occurred in looking up this question. The first is the statement of Dr. Bethel about the use of silver nitrate. If applied without the use of cataphoresis it is practically self-limiting, and even with the aid of cataphoresis there is little or no danger of forcing the silver nitrate through the whole extent of the dentinal tubules and causing injury to the periodontal membrane.

Another observation is the statement that capillary attraction does not come to our aid, as had been supposed, in the rather difficult operation of forcing chloro-percha and medicaments into closed tubes such as are most root-canals. Experiments show that capillary attraction takes place only in minute tubes that are open at both ends; therefore the solubility of chloro-percha in oil of cassia and other of the essential oils is certainly to be taken advantage of by treating the canal, just previous to filling, with one of these oils.

Another observation is the radical statement I found, that the successful treatment of pulpless teeth depends first upon the exclusive use of diffusible disinfectants, and second upon the repeated and continued application of the disinfectant dressing for a considerable length of time. This statement excludes the use of carabolic acid, mercuric chlorid and other antiseptics, and opposes the accepted custom of immediate root-filling, which is certainly good practice in many cases. And, finally, in regard to the future of root-canal treatment, I have only to say that whether or not the advances will be in line of mummifying pastes or chemico-metallic methods, or will remain a process improved along the present lines of practice—that of dragging out each particle of nerve tissue to the end of the root and the end of the hour—it is difficult to say, but it is sincerely to be hoped that the improvements will be effected in the methods as as well as in medicaments.—Ohio Dental Journal, March, 1898.

ITEMS FROM FOREIGN JOURNALS.—Setting Gold Crowns. When putting an all-gold crown over a tooth with live pulp, it is well to open the crown of the tooth with a thin consistency of gutta-percha. This film will not only protect the tooth from thermal changes but will shield the tooth structure from the irritating effects of the acid in the cement.
Arsenic in Dental Operations. Professor D'Argent, of Paris, gives some valuable suggestions regarding the use of arsenic in the devitalization of pulps. He has conducted a very careful investigation concerning the various effects of this powerful poison, and has come to the conclusion that the so-called nerve paste, as now in general use, is injurious to the tooth structure and its surrounding parts. However, when the arsenic is used in combination with drugs which limit its destructive action it then becomes an excellent agent for destroying the pulp. His devitalizing paste consists of

Arsenious acid ........................................... 5
Eserin ......................................................... 2
Cocain ......................................................... 2
Chloroform q. s. to a paste.

Pastes which contain morphin, creosote or phenol cause great pain to the patient and often leave irritating results, but the paste above recommended gives rapid results and does not subject the patient to any suffering. The eserin (physostigimatic) or alkaloid of the calabar bean acts as a vaso-constrictor, and the cocain aids in bringing about a painless devitalization.

To Brighten Aluminum. To restore aluminum to its original color, wash it in water containing a liberal amount of borax and to this mixture add a small quantity of ammonia.

To Keep Gutta-Percha Fresh. In order to preserve gutta-percha and keep it in a condition ready for filling purposes, it should be immersed in a bottle containing saline water. See that the bottle is well corked and the gutta-percha can be kept for some years.

Impression Material. The following metal will melt when thrown into boiling water. It has a consistency equal to silver and can be used with satisfactory results in crown and bridgework, since it can be poured into impressions taken from modeling compound: Bismuth, five parts; lead, three parts, and zinc, two parts.

Local Anesthetic. The following formula has been used for upwards of three years and has given excellent results, not a single case being reported as showing ill effects:

Cocain ......................................................... 10.0
Glycerin ....................................................... 20.0
Nitroglycerin ................................................. 5.0
Morph. Sulph ............................................... 0.5
Atrop. Sulph. ................................................. 0.5
Aqua dest. q. s. ad 60 grs.
It contains morphin in sufficient quantities to assure safety, this agent acting as a constrictor to the blood vessels. The glycerin assists in retaining the cocain at the point of injection. Nitroglycerin acts favorably on the heart. The atropin sulph. averts the aftereffects.

Ethyl-Chlorid for Anesthesia. A sensitive tooth bathed in ethyl-chlorid will admit drilling or grinding without causing any unpleasantness or pain to the patient. In crown and bridgework this medication will prove very efficacious.

Pain After Extraction. Frequently after extractions a very severe pain remains and innumerable remedies have been recommended as promising immediate relief, but either of the following formulae will give relief in the most stubborn cases:

Chloroform
Alcohol ........................................... 30.0
Aconite tinct. ......................................
Morphin ........................................... 0.4
Alcohol ........................................... 30.0
Chloroform ........................................... 60.0
Sulph-ether ....................................... 22.0
Camphor .......................................... 15.0
Opium tinct ....................................... 4.0
Oil cloves ......................................... 2.0
Menthol ........................................... 4.0
Chloralhydrate ................................... 6.0
Camphor ........................................... 2.0
Alcohol ........................................... 30.0

Before using any of the above, it is best to flood the socket with warm water, then bathe wound and socket with the medicine.

Translated by Dr. B. J. Cigrand from Zahnaerltiches Wochenblatt and Zahntechnische Reform.

CODE OF ETHICS.—Do we need a new and revised code of ethics to meet these constantly multiplying exigencies? Probably so. The times are now different from those of the birth of the old code. However, I am inclined to accept the version of that great and good old man, Dr. D. W. Yandell, who used to say to his classes of medical students, when speaking of the code, "Why, gentlemen, what need have we for a code of ethics? A gentleman never needs a code of ethics to govern his actions, and a rascal will never live up to the code."—The Am. Therapist.
NEW JERSEY LETTER.

To the Editor of The Digest, Newark, April 21, 1898.

Mr. Editor:—This month a number of the members of the Central Dental Association attended the commencement and alumni banquet of the Baltimore College of Dental Surgery. This is an annual affair with some of them. They go down for a few days of rest, and to renew old friendships. On this occasion they had a royal good time, being dined and wines on terrapin and champagne, and enjoyed themselves thoroughly. The Maryland boys know how to entertain, and give themselves up entirely to the game.

The genial member from Elizabeth, a renowned wag, who went down, lost his hat during the festivities and was compelled to return home with a choice spring importation from the city of lovely and beautiful women.

This state is now working under the new law. We have heard that several applications for license from practitioners in other states have been received. They are evidently taking advantage of the clause permitting this, upon certificate from their own state board. Not the least important measure in the law will be the necessity for all so-called “parlors” and “associations” to display in front of their offices a list of all persons doing any work inside, and also the compulsion of a yearly registration.

A few have criticised section 7, as providing too high a penalty—$500, or imprisonment for five years—for any false statement, in a material regard, in connection with an application for examination for license to practice. When the facts are known, however, this appears in a different light. For instance, it has been proven in a number of cases that candidates for license before the board have presented a plate swaged and a rim soldered thereon. They would then proceed to solder the teeth to the same. When completed, the difference between the work done before the examiners, and that brought to them as having been done by the same student at his home, was so manifest that the only conclusion which could be drawn was, that the student had had the work done for him. It was to guard against such things that the clause was inserted.
We have heard that all the New Jersey members of the Protective Association intend to send in their assessments. This most worthy cause should receive the unanimous support of the profession, and the burden should not be allowed to fall upon the few who are willing to place themselves in the breach.

The meeting of the Central Dental Association on the 18th instant was the occasion for a very interesting paper from the pen of Dr. C. Edmund Kells, of New Orleans. His essay on “Combination Fillings of Gold and Amalgam” was full of pith, and gave more information for its length than is usually obtained. It was practical and common sense from start to finish.

Strong efforts are being made by the chairman of the executive committee to secure Professor Trippler, the inventor of liquid air, for a paper for the May meeting.

Dr. Iredell, chairman of the electrical exhibit of the state society, has the hearty cooperation and assistance of Geo. H. Guy, Esq., editor of the Electrical Engineer, of New York city. The exhibit will be large and interesting, and will contain all the appliances used in dentistry. Fraternally yours,

HORNET.

PHILADELPHIA LETTER.

Dear Digest: PHILADELPHIA, April 20, 1898.

The last issue of some of the journals has not only brought the usual amount of interesting and valuable matter, but has furnished us with considerable genuine amusement. The latter applies especially to the letter in the DIGEST from Dr. J. Foster Flagg of "submarine" fame, and to the effusive remarks by the editor of Items of Interest. We all know Dr. Flagg and take anything he has to say for what it is worth—never seriously.

The Doctor does not seem to recognize the fact that it is not so much a constituent entering into an alloy which makes it valuable as it is the happy combination, and this can be determined only by long and tedious experiments. This is clearly demonstrated in "Fellowship" alloy.

The editor of Items, however, is now occupying a position to demand some attention to what he may say. A great many in the profession, no doubt, know of this gentleman's ability to write "blood-and-thunder stories," and of their success upon the market. He now demonstrates his versatility by appearing as a humorist.
In an editorial (page 304) he attacks the Digest for publishing anonymous contributions, which calls to mind the fact that when he published some apparently unjust book reviews, and was written to concerning the same, notably by Dr. Essig, he gave the stereotyped reply, that the work was reviewed by another, failing to say who the anonymous writer was and declining to shoulder the responsibility himself. Now that he has thought best to criticise the fact that you have anonymous correspondents, and as he poses as an authority, we trust he may favor us with the information as to who is responsible for anonymous contributions, whether they be in the bibliographical department or elsewhere, the editor of the journal who allows them to go into print, the publishers or the printers.

A friend called our attention to this same editorial contribution, where he says, in referring to the subject of book reviews: "It is easier to criticise than to do better. This is especially true as applied to critics of literature. Book reviewers who assail the products of all successful writers, wielding a sword for a pen and using blood instead of ink, are not infrequently literary hacks, penny-a-liners," etc. This is quite true and sounds well; it is marred only by the fact, which is best expressed in the words of our friend in commenting upon the above, "consistency, thy name is—well, not Items of Interest." If the editor of Items does not conduct his journal along more clearly defined lines, and cease changing his sentiments to suit the occasion, he will shake the confidence of the most optimistic.

We have all been watching intently the controversies which have been waging recently in the editorial pages of the Cosmos and the International. We are especially interested in this city, as both the editors are Philadelphians. They are both able men, and while the editor of the International has as many gray hairs as we have, we would give the editor of the Cosmos a hint, by stating that the other gentleman is not to be classed as an old man. He is prematurely gray and perfectly able to keep up his end of the string. There is no danger of his being pushed "into the mire," as suggested by the American Dental Weekly. Dr. Truman to-day, no doubt, stands at the head of the class of dental editors, and Philadelphia is proud to call him her own. There is no better evidence of the esteem in which this gentleman is held than by the respectful and thoughtful attention given to everything he may say. At the last meeting of
the Academy of Stomatology he presented an essay upon the treatment of pyorrhea alveolaris, which was appreciated by everyone.

Our societies have had an unusually successful season, which is now drawing to a close.

Cordially yours,

THE SPECTATOR.

NEW YORK LETTER.

To the Editor of the Digest, New York, April 22, 1898.

MR. EDITOR:—We note in the April number of the American Dental Weekly Dr. Johnson's criticism on the indiscriminate crowning of teeth. It is timely.

We wish to call attention to another misdirected practice. Is it skillful to destroy a perfectly sound superior bicuspid by putting a jacket over it for the carrying of artificial material? This jacket causes the greater part of the cusp to yield to the action of fermentation generated within, and the pulp becomes exposed, so that it becomes necessary to remove the remaining portion of the tooth and place a crown on the root.

In the same journal we see that Dr. M. L. Rhein advocates the destruction of all pulps that an artificial gold crown may cover. Is this wise practice? He may not be rightly quoted, and we trust this is the case.

We learn that Dr. Geo. Evans has won his suit against Dr. Rynear versus the Consolidated Dental Co. The claim of Dr. Evans was upon the "seamless" gold crown. The case was appealed to the United States Supreme Court, and it has cost Dr. Evans $6,000.

The war paint is getting more scarlet in these days, and indications are that there will be some lively encounters ere long. We met a long-established dentist of this city recently, and he had a long face because of the prospective war, fearing that there will be no business for dentists. We reminded him that it was not so during our civil war, for money was in free circulation after the first three months, and dentistry never had such an uplift financially as during the war. Simultaneous with it was the associative boom under Dr. Atkinson's fraternal spirit and marvelous energy.

The other day we met Dr. Stowell, of Pittsfield, Mass., president of the Massachusetts Dental Association, and he seems the man for the place. The program for the June meeting in Boston looks as if there would be a chance for some one to advance. Boston is a big
hub, and there are not a few spokes there and round about. Has Dr. Shepard said his last word? He has won a right to rest, if he desires it. Younger men have tried to disturb him, but he is not easily ruffled.

Who will be president of the next World's Dental Congress? Well, that must wait until after Utah. We have seen pictures of the Utah fair buildings. What energy Westerners have. Can Chicago ever be beaten? There is one thing that Chicago has developed—not a fighting parson, but a fighting editor. Good! Stand by him until he is fairly beaten. A clear conscience wins the first battle, and that predicts a moral victory. He has won the "crown" and destroyed all the "bridges." His fight is against illegal claims, and no one can find any fault with such a warfare. It does not follow that a claim is legal simply because one honestly thinks it is. Many have found their supposedly just claims without foundation. This is disappointing, but it must be met in a manly way, like all other of life's disappointments.

In all conflicts men will seek a way out of difficulties. Some think the stomatologists are going to do it, as seen in the April number of the Cosmos, but we have some words that will always remain. Some people think prohibition will stop excessive drinking of whisky. Others believe that signing a paper and agreeing not to do anything wrong will accomplish all that is desired. What about the little thing inside that makes you do wrong?

In the same number of the Cosmos it is asked: Does any one believe that pyorrhea can be cured? What foolishness, after all that has been said upon this subject. Why not do all we can intelligently, and be glad that we can accomplish so much for the comfort of our patients and the longer use of their natural teeth. There are two enemies to a proper advance in intelligent practice: one that boasts so foolishly in societies and print, and the other that is so diffident and hesitating.

Those who watch the journals will see the same exhibition in dealing with the subject of pyorrhea in a late meeting in New York. There was some very loose talk. After all, men will be true to their education or lack of it. Knowledge will regulate our feelings as regards practice far more than new names.

The clipping in the April 12 American Weekly, regarding the use of cuttlefish bone as a mold for making gold cusps, reads strangely
like that credited to Dr. Hillier, of New York, in our February letter to the Digest.

The First District have reelected their last year's officers for the coming year.

The Odontological Dwinelle Clinic this month proved interesting. "Tin and Gold" came in for additional attention, not, however, with ivory points. How is that? Our genial friend, Dr. Shumway, may tell. We remarked at the clinic that some of the practitioners are getting shaky hands, and others thought that a good many are so afflicted. It belongs usually to old and infirm practitioners, but we believe that tobacco, coffee and other things in excess contribute to the shakiness.

Dr. Van Woert gave a practical exhibition of crown setting, adding body to the form of a plate tooth, giving more of the natural tooth form, and making a speedy operation. He used electricity for baking the body which was added.

We met Dr. Terry, of Milan, Italy, at this clinic. He is resting for a year, and his son, a late graduate of Ann Arbor, is in charge of the home office.

Dr. Kirk gave, as always, a well-written article, entitled "A Resume of the Tooth-Bleaching Process." This was for the edification of the evening meeting, and an earnest attendance awaited him.

Dr. C. S. Hurlbut, of Springfield, Mass., called on us this month with his wife on his way home after a two months' stay in Florida. His brother Jared and wife, who have many friends here, have been away from home during the winter, as he is obliged to get away from the severe weather of New England. They are now at St. Augustine, Fla.

The next move is at Albany, for the state meeting, and more for an eastern branch of the National Association. This is wise. We think we see a strong probability of mistake in the form of organization—that is, if it is thought to add a larger membership from those who have not before affiliated with the associate bodies of dentists. An idea is prevalent that there is a decided tendency to make dental societies exclusive, and this move is in the age.

Cordially, New York.

Pasteurized butter is the latest antiseptic novelty. It consists of butter made from pasteurized cream and is thought to have a better flavor and to keep better than the ordinary butter.
We would call special attention to the article in this month's issue by Dr. W. Geo. Beers on this subject. The idea is rapidly becoming prevalent that the discerning faculty is not sufficiently trained while dentists are in college. Certainly nothing helps so much towards success in our profession as the power to correctly diagnose dental diseases. To know just where the trouble lies is quite as important as the ability to properly administer the needed remedy. We shall take up this subject more fully in the near future, and we invite other members of the profession to give their views on the question.

ATTEND YOUR STATE MEETING.

At this season of the year, when the various state societies are holding their regular annual meetings, we would urge upon the individual members of the profession the importance of attending. The state societies are probably the greatest broadening factors in the life of the dentist. At these meetings he meets his fellow practitioners, and besides the good which comes from escaping the routine of office work for a few days, he receives many new ideas, gets help on vexing problems, and derives much benefit from his trip. Furthermore, societies need the support of every dentist in the state, and we feel that he owes it as a duty, not only to the society, but to himself and his profession, to attend and do his share toward helping on with the work.

THE PROFESSION'S LOSS.

The farewell dinner, April 27, to Dr. Geo. H. Cushing brought together so many of his warm personal friends that the dining-room of the Leland Hotel, Chicago, was more than filled. It was the occasion of Dr. Cushing's retirement from practice, and he is leaving the city to take up his abode in California, where his family have
been obliged to live for some years past on account of ill health. The event was not one which we can call pleasurable, as all were made sad by the thought that our old friend was about to leave us. This feeling was lessened only by realizing that it showed in what universal esteem Dr. Cushing is held, and demonstrated that his work and unceasing effort have been appreciated. Few men in the dental profession have ever accomplished so much for the good of their fellows in promulgating society work, and for this he was, especially fitted, having great organizing ability and honesty of purpose. He has been one of the leaders in all advanced movements of starting and carrying on the work of our societies, both local and national. Furthermore, he was always present, and, as said by one speaker at the banquet, "he was ever present at the first session and stayed until adjournment." He takes with him to the Pacific coast the best wishes and Godspeed of the whole dental profession, not only here in Illinois but throughout the United States; and after such a life of usefulness he deserves to spend his declining years in rest and comfort.

NOT A FINANCIAL SUCCESS.

The above has reference to the dental profession. Our observation and knowledge of individual practitioners is that as a rule they fail to make the business part of their practice a success—that is, they do not accumulate enough money to live comfortably and pay their debts promptly. This is true of many who earn enough to have a bank account, but for some reason or other it slips away, and a sufficient sum is never gotten together so that all bills can be met. In consequence, certain obligations are always pressing, and the result is a discomfort of mind, which in time impairs the health and destroys those qualities most essential to a good practitioner, namely, uninterrupted thought and good judgment. No one who possesses the fine sensibilities that should go with a professional man can do his best and give his most valuable services if at frequent intervals he is annoyed by collectors pressing for obligations which are promised and overdue, and has the awful depression upon him which comes from being in debt. It is a great hindrance to the good standing of the dental profession that they are so poor, and we speak advisedly when we say that it is the exception when a dentist has his bills paid and can show even a small amount of ready money.
As a rule dentists begin contracting debts while students; this indebtedness is increased when equipping for practice, and it would be interesting to know what per cent ever get free from these early shackles. It is no exaggeration to say that a great majority of practitioners live from week to week and year to year without ever accumulating even a moderate fortune, and they consequently do not enjoy that usefulness in life which financial freedom gives.

The reason which is most often given to account for this state of affairs is, that there are too many dentists in proportion to the needs of the community. This is probably true, but the fact that this lack of financial success existed twenty-five years ago, when there were not so many practitioners in proportion, makes it necessary to look for other causes besides that of overcrowding.

As a rule the dental profession are not businesslike in their methods of dealing with patients. When new patients come, unless they are well recommended, a deposit should be required, and this can generally be suggested without giving offense. Bills should be sent out the first of each month, for accounts are much more easily collected soon after the work is done than several months afterward. All accounts and records should be carefully kept, and we fear that in too many cases this is not done.

It is a well-known fact that a dentist's expenses are of necessity out of all proportion to his income. He must have reasonably commodious apartments, and is expected to show a fair degree of prosperity, although this is often carried to a far greater extent than is wise or profitable. All that is essential are those articles necessary to do the work in the best manner and shortest time. Beyond this any extravagance in the way of elaborate office arrangements is superfluous, and often demonstrates a lack of genuine earnestness, as it is indulged in for show and relied upon to take the place of the best professional service.

A very wasteful practice is that of purchasing every new knick-knack that is offered, as in many cases it is no better than what is being used and is often entirely useless. This weakness on the part of the average practitioner is well understood by the experienced canvasser, and he strives to carry something new, as it is sure to catch the dentist's fancy.

A still greater need for reform is in the present methods of procuring the necessary supplies. The profession generally require
that the materials which they use shall be brought to them, and the traveling salesmen are urged to come around early and often. Without going into the details of this question, which later we shall discuss fully, we will say: If the dentist would order what he needs through the mail, and have ready money enough that he can pay for the same, thus getting a cash discount, his supplies could be furnished at a much lower cost, and the amount which he could save in this one regard would, if deposited, soon give him a bank account.

Having gone through the purgatory which the lack of sufficient money to meet current expenses brings, we can emphatically urge this one proposition. Make the expenses come within the income, and arrange your business so that, no matter if attained by small amounts, a deposit of ready money is always on hand. This rule persisted in would advance the standing and increase the usefulness and happiness of the dental profession one hundred per cent.

Notices.

OHIO COLLEGE OF DENTAL SURGERY.
The fifty second annual commencement of the Ohio College of Dental Surgery was held at the Odeon, Cincinnati, Ohio, Tuesday, April 5, 1898.

INDIANA DENTAL COLLEGE.
The eighteenth annual commencement of the Indiana Dental College was held Tuesday evening, April 12, 1898, at the English Opera House, Indianapolis, Ind.

WASHINGTON STATE DENTAL SOCIETY.
The Washington State Dental Society will convene at Tacoma, May 16-18, 1898. The State Dental Examining Board will be in session at the same time.

C. L. ERWIN, Secretary, Seattle.

BLUE GRASS DENTAL SOCIETY.
The annual meeting of the Blue Grass Dental Society will be held at Paris, Ky., May 3, 1898, and adjacent members of the profession are cordially invited to be present.

DENTAL COMMISSIONERS OF CONNECTICUT.
The Dental Commissioners of Connecticut will meet in the supreme court rooms at the Capitol in Hartford, Monday, May 16, 1898, at 10 o'clock a. m., to examine candidates for license and attend to all matters proper to come before them. Persons desiring to practice in this state must apply to the recorder for the proper blanks, which they will fill out and return to him before the day of examination.

Geo. L. Parmele,
Dental Commissioner and Recorder, Hartford.
NOTICES.

DENTAL DEPARTMENT OF MARION-SIMS COLLEGE OF MEDICINE.

The commencement exercises of the dental department of Marion-Sims College of Medicine were held Saturday evening, April 9, 1898, at the Fourteenth Street Theater, St. Louis, Mo.

ILLINOIS STATE DENTAL SOCIETY.

Anyone having a new appliance or instrument, please send same immediately with full description to Dr. J. E. Keefe, East 34 Washington street, Chicago, Chairman Dental Art and Invention Committee, Illinois State Dental Society.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Illinois State Board of Dental Examiners will be held in the Capitol at Springfield, May 9, 1898. All persons wishing to take the examination should advise the secretary to that effect.

J. H. Smyser, Sec'y, 70 State street, Chicago.

COLORADO STATE DENTAL ASSOCIATION.

The twelfth annual meeting of the Colorado State Dental Association will be held in Denver, June 7-10, 1898, in conjunction with the Stomatological section of the American Medical Association. Those attending may avail themselves of reduced railroad rates. An excellent program is assured, and a cordial invitation is extended to all members of the profession.

ARTHUR C. WATSON, Chairman Ex.-Com.

CHICAGO DENTAL SOCIETY.

At the annual meeting held Tuesday evening, April 5, 1898, the following were elected officers for the ensuing year: President, J. E. Hinkins; First Vice-President, D. C. Bacon; Second Vice-President, E. A. Royce; Recording Secretary, Elgin MaWhinney; Corresponding Secretary, C. S. Bigelow; Treasurer, E. D. Swain; Member Board of Directors, J. G. Reid; Board of Censors, A. W. Harlan, W. V-B. Ames, C. N. Johnson.

C. S. BIGELOW, Cor. Sec'y.

MASSACHUSETTS DENTAL SOCIETY.

The annual meeting of the Massachusetts Dental Society will convene at Mechanics Hall, Boston, June 1 and 2, 1898. This convention is expected to be one of the most successful in the history of the society. Extensive exhibits of material by the various supply houses and complete operations in the mouth and in the model by leading dentists and dental laboratories will be a prominent feature. Information to prospective exhibitors may be had by applying to

F. S. BELYEA,
Brookline, Mass., Chairman Committee on Hall and Exhibits.

LATEST DENTAL PATENTS.

600,604. Device for swaging gold plate for crown or bridgework, Wm. H. Baird, Burlington, Ia.
NATIONAL DENTAL ASSOCIATION.

We would call attention to that section of the by-laws of the National Dental Association which relates to the appointment and qualifications of delegates, which is as follows:

"Article iii, section 3. All delegate members shall be practitioners of dentistry. They shall be received only from permanently organized state dental societies. They shall be elected by ballot at some regular meeting of their society, and shall be members who have done meritorious work for the profession; but no person shall be received as a delegate who is in arrears for dues to this association."

Also "Article IV., section 1. Each state society may send one for every ten of its active members as delegates to this association for one year, upon complying with the requirements of this constitution; but no society shall be entitled to representation that does not adopt or substantially recognize the code of ethics of this association."

The fact that the American Dental Association received delegates from both local and state societies makes it necessary to call attention to the fact that delegates to the National Dental Association will be accepted only from the state societies, and that such delegates must be elected by ballot at a regular meeting of the society. By request of the president.

EMMA EAMES CHASE,
Corresponding Secretary National Dental Association.

PROGRAM OF ILLINOIS STATE DENTAL SOCIETY.

1. Annual Address by the President, Dr. J. A. W. Davis, Galesburg.
2. Report of the Committee on Dental Science and Literature, by Dr. A. W. Harlan, Chicago.
3. Report of the Committee on Dental Art and Invention, by Dr. J. E. Keefe, Chicago.
NOTICES.

7. Oral Surgery, by Dr. T. W. Brophy, Chicago. Discussion opened by Dr. R. N. Lawrence, Lincoln.

8. Why Coagulants Diffuse Through Dentin, with experiments, by Dr. E. Lawley York, Chicago. Discussion opened by Dr. J. E. Hinkins.


10. Where Shall I Locate, or the Beauties of a Country Practice, by Dr. J. W. Corman, Mount Carroll. Discussion opened by Dr. C. N. Johnson, Chicago.

11. Essential Oils, Results of Recent Experiments, by Dr. A. H. Peck, Chicago. Discussion opened by Dr. G. V. Black, Chicago.

12. The Ceramic Art in Dentistry, with some Original Methods and Experiments, by Dr. J. E. Nyman, Chicago. Discussion opened by Dr. C. B. Rohland, Alton.

13. Amalgam, by Dr. C. P. Pruyn, Chicago. Discussion opened by Drs. T. W. Pritchett, White Hall; J. G. Reed, Rockford; W. A. Johnson, Peoria.


LIST OF CLINICS.


4. Dr. J. W. Wassall, Chicago. Bridge Attachment to Teeth with Living Pulps.


9. Dr. George D. Sitherwood, Bloomington, Ill. A Practical Case in Orthodontia, Using the Angle Method.

10. Dr. R. N. Lawrence, Lincoln, Ill. Making and Tempering Instruments.

11. Dr. C. B. Sawyer, Jacksonville, Ill. Making Gold Crown and Demonstrating a Method of Soldering Occlusion.

12. Dr. C. S. Case, Chicago. Something in Orthodontia.


14. Dr. C. B. Powell, Jacksonville, Ill. Gold Filling in Bicuspid, Demonstrating the Use of Perry Separator and Formation of Contact Point.


16. Dr. A. J. McDonald, Kansas City, Mo. Engine Exhibit.
17. Dr. J. H. Kennerly, St. Louis, Mo. Removal of Pulp—Cataphoresis.
18. Dr. J. N. Crouse, Chicago. Use of Oxychlorid of Zinc Instead of Clamps in the Application of the Rubber-Dam.
19. Dr. G. A. Bowman, St. Louis, Mo. Potpourri—Table Clinic.
22. Dr. R. C. Brophy, Chicago. Cast Aluminum.
24. Dr. C. N. Johnson, Chicago. The Preparation of Cavities in Natural Tooth Forms.
25. Dr. T. L. Gilmer, Chicago. Will Give Surgical Clinic if suitable case can be procured.
27. Dr. G. A. Thomas, Chicago. Porcelain Crown and Bridge.
29. Dr. E. J. Perry, Chicago. Pyorrhea.
30. Dr. T. W. Brophy, Chicago. Will Give Surgical Clinic if suitable case can be procured.
31. Dr. F. H. Stafford, Chicago. New Method of Reproducing Gutta-Percha Carved Cusps in Fusible Metal, the same to be used in Dies for Solid Gold Reproduction.
32. Dr. Josephine D. Pfeifer, Chicago. Frosting Aluminum Plates
33. Dr. R. Good, Chicago. Pyorrhea.
34. Dr. L. W. Skidmore, Moline, Ill. Will Demonstrate a Method of Preserving What Natural Teeth a Patient May Have, When the Last are Extracted, to Serve as a Guide in Setting Up the Artificial Ones.
35. Dr. J. G. Harper, St. Louis, Mo. To be announced.
36. Dr. G. V. Black, Chicago. Results of Amalgam Experiments.

News Summary.

Dr. Edgar Palmer is now located in Los Angeles, Cal., after thirty years' practice in Wisconsin.

Alabama Dental Association.—The transactions of the Alabama Dental Association at its twenty-eighth annual convention, held in Birmingham, April 13-16, 1897, have been received.

Faith-cure doctors, according to a Baltimore judge, are not legally entitled to remuneration for their services. He takes the ground that the faith-cure physician renders no apparent service to the sick.

To Prevent Broaches Turning.—I have long been troubled by having my canal cleansers turn and pull out readily from the handle, but to-day I easily fixed a couple so they do not. One way is to coat the shank with soft
solder, but the better and more convenient method is simply to roughen shank by the easiest means. I accomplished it by simply striking with the edge of a file.—Dr. R. Matthews, Wichita, Kas.

Lepers.—The total number of lepers in the world is estimated at 2,000,000, of whom 5,000 are in Hawaii and the United States, 20,000 in Japan, 20,000 in Europe, 40,000 in Turkey, 130,000 in India, 300,000 in South America, and 500,000 in China.

Teeth and the Soil.—Examinations of recruits in Bavaria and Sweden conducted on a large scale have confirmed the assumption that the richer the soil in lime and magnesia, the harder the drinking water, the more perfect the development of the teeth.—Munch. Med. Woch., No. 3, 1898.

Divine Healer on Top.—The Kansas State Board of Health recently applied to the attorney-general for a decision concerning the enforcing of the medical-practice law in that state. The legal luminary cogitated for a while, and then delivered the opinion that the magnetic healers and the hypnotists and all the other quacks except divine healers can be prosecuted, but adds that the divine healers claim their power to come from Jehovah, and that, as he understand it, the rights and privileges of Jehovah can in no way be regulated or restricted by the statutes of Kansas.

"Don't worry" clubs are springing up all over the land. In opposition to them the Atchison Globe has the following sensible remarks to make: "Don't join a Don't Worry club. Don't try not to worry. While contentment is a pleasing virtue, the people you know who are contented would be better off if they worried more. Absolute contentment and indifference to the possible troubles of to-morrow will land anyone in the poorhouse. The cow doesn't worry, neither does the clam; but people are built to worry, and it was intended that they should. On the other hand, if you worry much it will land you in the insane asylum. It is the insane asylum on the one hand and the poorhouse on the other; the point is to worry just enough to keep out of both of them."

American Dentists in Italy.—The Italian government has apparently had enough of tourists, for it is doing its best to keep them away by its crusade against non-Italian physicians and dentists. Recently, according to the Rome correspondent of The Lancet, a circular has been addressed by the minister of the interior to the prefects throughout the kingdom. It is neither more nor less than a mandate charging these functionaries to invite all non-Italian dentists to furnish proof that in addition to their home qualifications they possess one from a recognized qualifying body in Italy, failing which these gentlemen are to be held as practicing illegally, are therefore to be called upon to desist from practice, and in the event of their being contumacious to be denounced to the judiciary authority.—Medical Record.

How the Brahmin Cleans His Teeth.—When the Brahmin cleans his teeth he must use a small twig cut from one of a number of certain trees, and before he cuts it he must make his act known to the gods of the woods. He must not indulge in this cleanly habit every day. He must abstain on
the 6th, the 8th, the 9th, the 14th, the 15th and the last day of the moon, on
the days of new and full moon, on the Tuesday of every week, on the day of
the constellation under which he was born, on the day of the week and on
the day of the month which correspond with those of his birth, at an eclipse,
at the conjunction of the planets, at the equinoxes and other unlucky
epochs, and also on the anniversary of the death of his father or mother.
Anyone who cleans his teeth with his bit of stick on any of the above men-
tioned days will have hell as his portion.—Hindo Manners.

Chilblains.—Those who suffer from this unpleasant affection during the
winter months will be interested in the following: Prof. A. E. Wright finds
that the blood of persons liable to chilblains takes about three times longer
to coagulate than the normal time (three to four minutes). This condition
obtains in children whose blood is deficient in calcium (owing to bone for-
amation), in those liable to nose-bleeding and urticaria, in those of lymphatic
habit of body, in persons subject to malarial cachexia, and in those of hem-
ophilic constitution. He gives a record of eight cases in which the slow
coagulability of the blood was marked, and all were rapidly cured by the
administration of from 6 to 30 gr. of calcium chlorid three times a day.
The cure took from three to ten days only, a most remarkable thing, for sev-
eral of the cases were very bad.—Brit. Jour. Dent. Sc.

Ozone.—It may not be generally known that a very simple and effectual
way of bringing ozone into the house consists in first suspending moist linen
sheets in a keen, dry wind, and afterward hanging them up in the house.
The air in the room will thus become considerably charged with ozone and
its presence will be easily detected by its peculiar smell, while a moistened
starch-iodid paper will instantly turn blue. Why ozone is accumulated in
wet cloths in this way is not quite understood, but it may be due to the rapid
passage of the oxygen in air over a large wet surface. It is not improbable
that this interesting phenomenon plays an important part in the real hygienic
cleansing of our linen articles of clothing. In big laundries, when the not quite
dry linen is brought in after having been exposed to a cold, dry air for a
short time, the smell of ozone is almost more than is agreeable.—The Lancet.

Causes of Poverty.—In Europe paupers are defined to be those who re-
ceive aid from government or charitable funds. The proportion of paupers
to the whole population is highest in England, 28 per 1,000. In Scotland it is
24, in Ireland 23, in Holland 20, in Italy 10, in Austria 9, in France 8 and in
Germany 7. There is no similar division made officially in the United States,
and taking the country through, the proportion here is less probably than 2
per 1,000. When it comes, however, to the causes of poverty, the American
statisticians are, so to speak, right in line with what some persons would call
their conjectures, but what they describe as their conclusions. Thus, of 100
cases of poverty, 11 per cent are chargeable to drink in excess, 21.3 per cent
to what the statisticians call "misconduct," a rather vague designation for
unwise or reprehensible acts; 28.5 per cent to lack of work or inadequate pay
for work done, or insufficient, half-time employment, and most of the re-
mainder to "misfortune."—New York Sun.
Original Contributions.

WESTERN DENTAL JOURNAL ON AMALGAM TESTS.

BY G. V. BLACK, D.D.S., CHICAGO.

The editor of the Western Dental Journal has another editorial on amalgam tests in his March issue, in which he again demonstrates that he does not know enough of the subject to write of it intelligently. In my first article on the subject in 1895 (Cosmos for August, p. 637), I noticed these tests to which the gentleman refers and the micrometers which were used. I studied these tests at the time they were made and preserved the reports of them, having them now in my library, and know what they were. Some of the instruments are still preserved, if I am not mistaken, in the hands of Dr. E. A. Bogue, of New York, and I have caused a new cut to be made from the original, given in the report of the work of Drs. Hitchcock and Bogue to the New York Odontological Society in 1874.

The simple fact is that the effort of these gentlemen was a failure. They found shrinkage and expansion, it is true, and in a manner measured it, but did not learn the controlling factors of either shrinkage or expansion in amalgams. They did not learn that annealing an alloy, or aging it, had an effect upon shrinkage and expansion, or that any change in the qualities of an amalgam occurred after the ingot was cast or cut.

I have no wish to find fault with the work of these gentlemen. They were the pioneers in the effort to make accurate studies of the shrinkage and expansion of amalgams for dental purposes, and their work was of much more importance than the profession seem to have supposed. Yet as we now view this question, their measurements seem very crude and inaccurate. Their micrometers, while otherwise much alike, had different scales, so that it is troublesome to make an intelligent comparison of their results. Thus, while Dr. Hitchcock’s micrometer was made with graduations of 1,000 to the inch, Dr. Bogue’s had 3,600 graduations to the inch. The filling in
each case was one inch long. The scale of my micrometer is 10,000 to the inch. In the following I have reduced their measurements to my scale for comparison. In the measurement of the shrinkage of the amalgam made from the alloy—40 silver, 60 tin—Dr. Hitchcock found a shrinkage of 15 points, twelve of which occurred within the first half hour; Dr. Bogue in measuring the shrinkage of the same formula found a shrinkage of 3.6 points, two and four-tenths of which occurred within six minutes.

These gentlemen knew nothing of the influence of age of cut on shrinkage and did not state whether the alloy was fresh cut or not. In my own measurements of the same formula I find that if used fresh cut it will shrink from 3 to 4 points and then expand 7 or 8. If it is fully annealed it will first shrink 7 or 8 points and then expand 2 or 3 points. Neither of the gentlemen mentioned discovered this dual movement, though the scale markings of Dr. Bogue's instrument were fine enough to show it clearly if the working of the instrument had been sufficiently sensitive.

Again, in measuring the expansion of a precipitated palladium amalgam, Dr. Bogue used both his own and Dr. Hitchcock's instruments and obtained a reading in his own of an expansion of 7.2 points, and in Dr. Hitchcock's an expansion of 4.5 points. These discrepancies are much too wide to be harmonized.

As the micrometers these gentlemen used were arranged, the filling was packed into a trough or slot that formed a part of the machine, and the filling could not be removed and replaced, but had to remain in place until the end of the experiment. This rendered the work tedious in the extreme. The result was that but few measurements were made. Even if these had been accurate they were insufficient to serve to make out the conditions of the expansion and contraction of the amalgams.

Our English cousins across the water did no better; neither did Dr. Flagg, who made most of his experimental work later with all the advantages to be derived from the work of his predecessors.

Now before the editor of the Western Dental Journal makes any more assertions, it is incumbent on him to show that the controlling factors in shrinkage and expansion of amalgams, which have recently been published, had been made out before, and to give them from such published records.

Dr. Fletcher's so-called experiments, in regard to using an excess
DESCRIPTION OF DR. BOGUE'S INSTRUMENT FOR MEASURING THE CONTRACTION AND EXPANSION OF DENTAL AMALGAMS.

A is a steel plate with a groove running from near D, at the right, to the end of the plate at the left and being about one inch and three-quarters long. II, a slot exactly one inch from the right-hand end of the groove for the gate K to rest in while a filling F is being inserted. GG, a bar of polished steel sliding easily in the groove, one end of which rests against the filling F and the other against the circular part of the pointer H. Beneath this steel plate is another B, on which the pointer H is suspended at C, on two points like a compass needle, that it may move freely. J is a light spring pressing the upper end of the pointer against the bar G, so that it will follow up the filling F in case of contraction. E and D are slides to hold the filling and bar down in their places, so that no upward movement may be mistaken for a contraction. This apparatus is screwed to a mahogany board, and a paper scale arranged by means of microscope glasses, so that one degree of the scale at M equals one thirty-six hundredth of an inch at F.
of mercury and squeezing out versus dry mixes, consisted in distilling off the mercury in the two cases and showing that in those particular mixes there was more mercury retained in the wet mix, which in the cases in hand was probably correct. Another experiment, upon which he relied to show that the characters of the alloy were changed by squeezing out mercury, was made by distilling away the mercury squeezed out, in which he found that some metal had been carried out from the mix dissolved in the mercury. He did not make an analysis of this residue of metal to ascertain whether the mercury had dissolved the alloy as a whole, or whether some one metal had been dissolved in greater proportion than that in which it existed in the alloy. Now unless this latter proves to be the fact, the constituents of the alloy will not be changed by squeezing out mercury. No one has yet made this experiment in any way that is decisive, and until it is done no one can know about it.

I put this question to Dr. Fletcher in an article in the April, 1896, issue of the Dental Practitioner, and he answers in the next issue, saying, "My own experiments in this direction were not recorded," and then proceeds to tell how to do them, and demonstrates clearly that the experiments showed only that some metal was dissolved in the mercury, a fact admitted by all.

All I have said about the matter was that I did not know, but from close study of the qualities of the amalgam made by squeezing out, and not squeezing out, the difference in shrinkage was not especially apparent. This is true when in the last mercury squeezed out there is enough of the metal dissolved in it to cause it to stiffen.

On the other hand Dr. Fletcher claims that from the experiments above recited, and from his observation of fillings made in glass tubes, the squeezing out of mercury does change the qualities of the alloy. When the character of the experiments is considered this cannot be regarded as anything more than an opinion; and as his instrumental observation has been with instruments far less accurate than my own, I prefer to be guided by mine until more accurate data are found.

The misrepresentation of such a subject as this is a wrong to the dental profession and to the people whom they serve, for the reason that it is calculated to prevent men from making use of the best means at their command for alleviation of diseases of the teeth they are called upon to treat. I have no fault to find with intelligent
conservatism in regard to new ideas that may be promulgated in regard to filling materials, or other matters pertaining to dentistry. It is right that men who write study such matters closely and then give the views derived from such study. But a reasonably full and careful study of them is a moral obligation to the profession for whom they write, before undertaking to champion any special view in regard to such matters.

CASE OF REPRODUCTION OF TISSUE.


Patient, Mr. X, aged 55; Montreal, March 18, 1896. History of case referred to me by Dr. W. Geo. Beers and Dr. Craik, of Montreal. Twenty years ago patient contracted syphilis, for which he was apparently successfully treated. After this he was in robust health until seven years ago, when suddenly the left side of his face became badly swollen, and soon after a discharge of pus flowed from the nose and throat; his breath was extremely offensive and nauseating; throat sore with annoying cough which led to bronchitis, becoming chronic. From time to time, after a lapse of several months, the swelling in the face would recur, the discharge from the nose and offensive breath being constant; general discomfort and loss of vitality followed until January of 1896, when his condition became debilitated, although under the constant supervision of his physician, and he was referred to Dr. W. Geo. Beers to have some troublesome teeth extracted. The superior left incisors and cuspid were removed, being attached only to the gum. About this time his cough became exceedingly troublesome, his bronchial symptoms exaggerated, and general health bad. Dr. Beers detected dead bone in the jaw of considerable magnitude, to which he called the attention of Dr. Craik, Mr. X’s family physician, and advised a consultation with me. Dr. Beers douched the wound daily for six weeks, during which time the patient’s general health somewhat improved.

Examination took place March 18, 1896. I found cough harsh, expectoration profuse, appetite very poor, patient extremely debilitated, showing signs of long suffering and the effect of pus upon the system; exaggerated signs of pyæmia not present, yet sufficiently to show long suffering from blood poisoning. The left side of face was slightly swollen, which patient stated it had been for several
years; there was a large opening in the floor of the nares, extending back to the soft palate, through which pus exuded and the rough necrosed bone could be readily detected. The area involved was from the base of the molar to the second bicuspid to the median line, and as far back as the soft palate, involving the entire bony structure. The odor from the breath was sickening, caused by the extensive discharge of pus from the gums and nose, the pus being black and thin in character, the first superior bicuspid black, dead and abscessed, the second bicuspid and third molar vital and in good condition, the first and second molars missing and with gums healed, the mucous membrane hypertrophied, congested and of purple hue; the color around third molar normal. The probe passed in the wound where the teeth had been extracted, passed back into the throat and on either side of the sequestrum; all the bone on this side of the jaw anterior to the second bicuspid was destroyed, although the walls of the antrum were not penetrated. The left nares was nearly closed, due to a deflection of the septum, with a large nasal spur, and pressure on the periosteum in the region of the inferior turbinate, with a well defined line of demarkation formed around the sequestrum.

Operation. The patient was given ether by Dr. J. G. McCarthy and I was assisted by Dr. Beers, Mr. X's physician being present. The dead bicuspid was extracted, a denuder passed between the dead and living bone to thoroughly free the periosteum; then with a heavy pair of forceps the sequestrum was firmly grasped, gradually loosened and removed; this was followed by a fierce gush of blood, fully one pint in all, the vessels having disgorged themselves in about a minute, when the entire surface of the wound was curetted, granulations and debris removed, the hemorrhage being checked by hot water, the wound was sterilized with hydrogen peroxid and firmly packed with iodoform gauze. Time of operation ten minutes; time between first inhalation of ether until patient was conscious, twenty minutes. Dr. Craik expressed himself as being highly gratified with the operation and thanked me for allowing him to see it, and said it was the cleanest operation he had ever seen on the jaw, and the only one without cutting through face. Patient made rapid recovery, no fever or untoward symptoms following operation.

The case was redressed on second day, and on Dr. Beers' strong recommendation I used for the first time "Pheno-Banum," a prepa-
ration composed of carabolic acid, balsams of peru, tolu and benzoin, which was supplied by Dr. Henry Evers, and found it to be of much value in retaining the dressing in place. The case was seen by me for three days in succession and redressed with the same preparation, the effect of which was very marked, as healthy granulation had set up under its influence on the third day, there being no pain or inflammation when I left the case in charge of Dr. Beers, who continued the same treatment; the wound rapidly healed, new tissue filling in except in a very small space between gum and nares, through which the probe could be passed, the bone having been very nicely reproduced.

On May 29, 1896, Mr. X came to my office in New York for correction of nasal stenosis; I took away a large spur from the left side of the septum, and removed most of the left inferior turbinate, also curetted and treated the opening in floor of nares, which healed kindly and completely closed. The patient was under treatment until June 9, when he returned to his home in good condition and applied to Dr. Beers for an artificial denture to restore the contour of the face and missing teeth. I have since learned that Mr. X is completely restored to health. This is another example of reproduction under certain treatment.

**GINGIVITIS AND ITS RELATION TO CROWN WORK.**

By S. B. Palmer, M.D.S., Syracuse, N.Y. Read Before Vermont State Dental Society, March 16, 1898.

Some months ago Dr. H. J. Goslee read a paper under the above heading before the Chicago Dental Society. I have selected this subject because the article sets forth the most concise observations, conditions and facts relating to gingivitis that have come to my notice. I quote another statement rather than give conditions and effects from my own knowledge. The principles involved in gingivitis are in the line of study (oral electricity) which I have pursued for thirty years. With few exceptions authority seems to class the outcome as a theory, without a scientific foundation. This, however, does not annoy; in fact, sufficient of the so-called theory has been incorporated in practice to give assurance that the profession has not been degraded by departure from established belief.

Earnestly I kindly invite scientific discussion upon the cause of gingivitis, which is the combination to unlock the so-called "electro-
chemical” theory. Either from lack of understanding the principles involved, or prejudice against the theory, the subject has not been scientifically discussed upon the plane where the phenomena appears. One might as well expect to raise stock on mineral food as to attempt to discover the true cause of gingivitis upon the physical plane or by physical experiments. Each dimension is under control of natural laws, adapted to the condition of the matter so controlled. With each evolution of matter the laws are adapted to and control the organized matter. The same force is an agent for all changes and evolution of matter from atoms to intellect. That force, with its interconvertible phases, is electricity, heat, light, magnetism and chemical affinity. By combination of these agents in creation matter united land, water, atmosphere, and the globe was the outcome.

From a plane above came “the breath of life.” Vegetable and animal life appeared on land and in water, and through evolution the highest creation—man. In the human species are found a concentration of all the laws and principles which are required for propagation and support of man. The difficulty in understanding the writer’s belief is the failure to trace the laws so well known and taught in physics, and to some extent upon the vegetable plane in organic chemistry up and into the animal plane.

I boldly make the statement that the above-mentioned forces are one and the same from minerals to mind. I will not go into metaphysics nor go beyond the point under discussion, but place myself on record by giving my convictions that some one in the not distant future will shock the school of physiology as severely as the new departure did dentistry twenty-one years ago.

An observer of nature and natural laws will recollect that the energies and forces mentioned have recorded the works of the Creator upon each plane according to the preparation and possibilities of matter to receive them. The mineral dimensions show beauty and form in crystals and flowers in frost work upon the window pane. The vegetable plane evidences life and instinct in plants and trees. Roots penetrate the soil for stability and moisture, reach out laterally toward a near-by stream, and in thicket strive to tower above their neighbor for sunlight. The animal kingdom embraces the highest creation, man, in whom is embodied all the required laws, principles and instincts found upon the planes below, with reason, will and intellect added.
The important point I wish to be remembered is this: In all the evolutions of matter up to man the laws and forces have also evolved, and act upon organic matter in the vegetable and animal kingdom upon the same principle that physical forces do on the mineral plane. That is, electricity, so to speak, is also organized or endowed with life, or becomes, as sometimes denominated, "animal current." Animal magnetism is not a new term, nor does it need evidences of its existence. Animal heat is also a fixed fact and is one of the best proofs of organization to meet the conditions. Animal heat ranges between freezing 32° and 100¾° above, when the organized dynamo burns out and vital energy ceases.

Before making an application of these organized forces please bear in mind that electricity and heat are close friends, helping each other in most of the work done by these forces. The effect of this union upon gum tissue is this: Gold in the mouth will not injure gum tissue by the temperature conducted by hot drinks or food, as all know who wear or have worn gold plates; but where gold is insulated from the membrane, except at a given point or points, there is added to heat a current of electricity which, with the heat, is discharged into the gums, etc.

Mention will be made of this fact farther on. Now let us introduce quotations from the article already mentioned. "It is certainly a lamentable fact to note the surprisingly small percentage of roots carrying crowns that are devoid of any evidence of periosteal inflammation, or that are surrounded by tissue presenting a normal or healthy appearance as compared with the very great percentage that invariably manifest more or less marked degrees of gingivitis."

On the face of the great amount of literature that has been given us upon this subject, and in view of the rapid strides of progress and advancement achieved in this line, it seems indeed a deplorable condition when one can conscientiously and candidly assert that only from 15 to 25 per cent would be a fair estimate of these roots which, after carrying crowns for a time, present no indications of this condition, and yet we are convinced by close observation that on an average such is the case. The question naturally arises then as to its probable cause.

Since a very great percentage of the crowns now in use are made of gold, or having gold bands, would it be just to attribute it to the assertion sometimes made that the tissues of the mouth take un-
kindly to that metal, when we will, perhaps, turn right around and advocate a gold plate to the next patients presenting themselves; when we know as an absolute certainty, vouchsafed to by proof and experience, that there is no substance, either metallic or mineral, that when brought into contact with the tissues of the mouth presents so many favorable points as gold. Yet for all that, in crown work we can but acknowledge the frequent presence of an unfavorable condition, but does it not seem very plausible that the fault lies not in the metal, but in its unnatural relation to the root and tissue by virtue of poor adaptation? Please bear this in mind; it will be answered farther on.

"It is an acknowledged fact that the tissues take very kindly to porcelain, and that a much greater proportion of crowns made of that material are worn with comfort and without the presence of inflammation and subsequent secession than are those made of gold; but it looks probable, and in fact seems evident to me, that that difference is due in the main to the fact that a porcelain crown, when adapted and in position, presents always this favorable condition: a perfectly smooth, vitrified, highly-polished surface, with a rounding edge. And as this is the most desirable and natural condition, why then would not the tissues take kindly to it and remain normal and healthy? When, unless there is irritation from an improperly prepared root, a poorly-fitted band, or impingment upon the membranes caused by driving the band on too far, there is absolutely nothing to prevent. We are impelled to maintain, without hesitancy, that this can be accomplished and the same results secured in the use of a gold crown if we will but take the time, pains and precaution to properly prepare our roots," etc. The remainder of the article describes how it may be done.

In all my reading I have not had such an opportunity to explain the cause of crown work disturbances as the above affords. The difference between gold plates and gold crowns, between porcelain and gold border crowns, the incompatibility of gold as a filling material for specific conditions of teeth, may all be answered under one head: The effect of gold crown upon gum tissue.

Early prejudices against the electro-chemical theory seem to have excluded it from our dental chemistry and, with few exceptions, from being taught in dental colleges. As many readers may not know the source from which the basal principles of my knowledge
has been obtained, I will repeat in substance what has several times been given in previous papers. In boyhood days fondness for the study of electro-chemistry by private study offered considerable information. In 1848 I commenced the study of dentistry, at the same time the wearing of a silver plate. Rubber was not then introduced. With that I commenced the study of oral electricity. During fifty years a number of plates of various materials have been worn, each giving experience that could not have been gained by any other means. This information is of no account except as it may benefit some young practitioner by knowing points regarding metals worn in the mouth which are not recorded. I will briefly mention the peculiarities of each in turn. In early times silver was used for temporary work, also when gold could not be afforded.

Silver in the mouth is a positive element, corresponding to the zinc element in a galvanic cell, consequently any food containing carbon, as toast, broiled meats, roasted peanuts, coffee, etc., produced an unpleasant metallic taste; sulphur in eggs, breathing smoke from gunpowder, or even passing a sulphur spring, in breathing through the mouth the taste would detect sulphur. Still another feature, gold clasps were often used on silver plates; destruction of the teeth soon followed. The clasps, being negative, became the positive plate from which the current went out to decompose the impacted food, and thus furnish acid to dissolve the enamel. A gold plate with an alleged silver clasp would be an improvement, or a silver plate with an alloy of silver and copper clasps would have been a great improvement. The silver plate was discarded for gold, which was a relief from the taste of a metal. With gold the current was reversed, the plate was negative, and not acted upon by food like carbon, sulphur, etc.

It was a galvanometer, however, to detect base metals or metallic compounds. Silver, iron, tin, lead, or liquids such as we often use in canned fruits, made it known. Thus the study became exceedingly interesting. Rubber came and was put to the test, and the result may surprise those who have not made the change. It is true patients could not describe, if they could realize, what an expert could detect. Rubber was an insulator, and here let me caution any young dentist against arguing that rubber plates do not injure taste. It may be true that the plate does not cover membranes of taste like the tongue, but the roof of the mouth has its office to perform on this
line. Insulation was most objectionable, and that means more than can be imagined.

Thermal changes during eating are of importance and natural. The portion covered by the rubber plate might as well be paralyzed as to be so covered. The smooth surface of a plate of any material is unnatural, but when no changes, electrical or caloric, are felt, taste is impaired, besides the abnormal condition of the surface covered, which I have not been able to correct by black rubber.

Please understand that I am not advocating disuse of rubber. If I were working at prosthetic dentistry I should use rubber according to circumstances. It does no material injury, but is annoying, as above stated, and I am giving the facts relative to each material.

Swaged aluminum plate, teeth mounted with rubber, was the next on trial, and at once overcame all objections. To say nothing of its light weight the metal seldom produces electro-chemical action by anything taken into the mouth. It occupies a neutral position, as compared with gold or silver. The latter is a positive element, and gives a metallic taste, as before stated, by carbon, sulphur, etc., while gold is a negative factor, and consequently it becomes a receiver of the electricity which is generated during mastication, and mingling of the positive and negative elements of food. Electricity is thus generated, as it would be in mixing elements in the laboratory. Without a metal in the mouth the electricity is what might be called organic, not polarized. It is the agent which adds delicacy to taste, also that which prompts natural selection of food to be eaten in pairs, as sweet and sour in lemonade, acid and alkali; soda-water, charged waters, roasted or broiled meats, roasted coffee, peanuts, etc., are negatives to saliva, and cause a natural current of animal electricity. This prepared food is taken into the stomach and the mysterious process of digestion completed, materialization of the elements, the waste product is cast off, the electric vital energy is stored up in the muscles. Excuse this digression from the oral cavity. The truth of this will some day revolutionize physiology and establish digestion upon an electrical basis.

Now we are ready to advance another declaration—That metal in the mouth converts organized electricity into physical electricity. The effect is this: when such an unnatural current is discharged at a given point, tissue or dentin is injured. Aluminum is almost free from potential thermal changes and electricity passes readily
through the plate without injury; so with gold when it rests upon membrane. This will be taken up again.

The next trial plate was of cast aluminum for experimental purposes. In order to cast aluminum I slightly alloyed, and my first experience in wearing the plate was interesting and amusing. The plate was a full upper, except the second molar on each side. To increase the bite and to prevent the molars from elongating, a cap of the metal covered the coronal surface. The case articulated with a bridge on each side below. The plate was inserted in the afternoon; nothing remarkable was noticed except the metallic taste thought to be due to finish, etc. In the evening I went upon the street, and to my surprise all the street lights in sight flashed and were unsteady. As all were affected alike I concluded the cause was at the central station. It was not many minutes before I could produce the flickering at will by closing my teeth. On opening the jaws enough to give space the lights were steady. By involuntary action the electric shock affected the optic nerve and produced the effect. The gold became charged and on contact discharged and gave a shock. Burring out the metal and filling in with vulcanite corrected the trouble; but the cast metal was discarded for a rolled and swaged plate, which to me or for me is the most comfortable plate I have worn, and in fact it has very few objections.

To be fair with the cast metal I will say for a single plate, where there would be no gold opposite, the alloy would probably not be objectionable. In my own case, with a large surface of crowns below, and the tongue connecting the two metals, a metallic taste was ever present.

Now let us return to the subject of gingivitis. The cause of gold-crown disturbances has been well defined in the effects of gold upon tissue. We will recapitulate. Gold in the mouth becomes charged with electricity when the metal rests upon gum tissue, like a plate; no harm is done when only small portions rests upon the gums or under the gums. That portion receives the amount of heat and electricity that is received upon the whole surface. I know from experience that hot water alone produces severe pain on the sensitive dentin below the gum line. That coffee increases the current from the effects of the carbon in the coffee acting upon the saliva. I find that bridges are worse than single crowns, having more gold
surface to gather the electricity. Bear in mind that in physics intense heat can be produced by electricity. In animal life the range is between freezing and the organic life a degree above. Cataphoresis teaches that intense currents destroy gum tissue; feeble currents, for a long period, produce like effects on organized bodies. It is a natural law that gold terminating in a band under the gum causes an abnormal condition, as seen in connection with crown work. Perfection in fitting cannot set this law aside. As a remedy for sensitiveness of dentin silver nitrate is the most effectual I have used. Sheeting the band, so as not to extend beneath the gum, is usually a remedy for inflammation.

TREATMENT OF CARIOUS APPROXIMAL SURFACES IN BICUSPIDS AND MOLARS.

SYMPOSIUM PRESENTED BY DR. F. S. BELYEA, BROOKLINE, MASS., BEFORE THE NORTHEASTERN DENTAL ASSOCIATION, OCT. 20-21, 1897.

Dr. Belyea had sent the following questions to the dentists whose replies follow: (a) How would you treat carious approximal surfaces on bicuspids and molars? (b) How shape the cavities? Would you conserve or sacrifice tooth-substance, and to what extent? (c) What materials would you use in filling? (d) Would you use a matrix; if so, what kind? If not, state your objection.

Dr. Chas. L. Johnson, Pittsfield. (a) If the carious surfaces were very sensitive, or the dentin soft, I would adjust the rubber-dam, dry to a reasonable degree with hot air, remove the decay and fill with a mixture of oxyphosphate two-thirds, and hydronaphthol one-third, for six months or so. If the tooth was reasonably hard and not too sensitive, I would insert a permanent filling without further treatment. (b) I would make the cavity occlusal as well as mesial or distal; would cut the vertical walls back to such a position that the juncture of the filling and enamel edges would be kept clean by the natural motion of the tongue and cheeks; would cut the cervical wall down to such a position that the juncture of filling and enamel would be overlapped by the gum. (c) I believe the most permanent and best filling to be made by using tin and gold for a cervical border; if the cavity is very deep, would put in a capping of oxyphosphate two-thirds, and hydronaphthol one-third, completing the filling with gold foil, contoured to as near the natu-
ral shape of the tooth as possible. \(d\) I believe in the use of a matrix, and like the double screw matrix designed by Dr. W. A. Woodward.

Dr. William Barker. \(a\) The age and sex of the patient, as well as the character of the teeth—\(i. e.,\) whether soft, deficient in mineral constituents, hard and dense, or friable and brittle—would all be factors to be considered in determining the treatment of the cavities under consideration. Speaking generally and briefly, in such cavities in the mouths of patients under twenty-two or twenty-three years, unless teeth of the first class with a good inheritance behind them, or in small cavities, alloys containing some copper, gutta-perchas and zinc phosphates would be employed. Very little gold should be employed in these cases, the expectation being entertained that at the age above indicated the teeth would have become sufficiently organized to wisely admit gold to replace the other. \(b\) A hard question to answer intelligently on paper without the use of diagrams. Where zinc phosphates are employed or gutta-perchas (under which a good antiseptic and adhesive varnish should be used) tooth-structures should be sacrificed very sparingly. When metallic fillings are demanded, cavities should be so shaped as to mechanically retain the filling without the use of ‘potleg’ retaining points, dovetailing in briefest term. Margins should be cut back to form strong ground, and contour be as fully restored as possible. \(c\) As stated in answer to \(a\), any material best calculated to preserve the tooth. No one material meets all requirements, and so far as I know there is no class of filling-materials which, intelligently employed, may not be useful in preserving teeth. \(d\) Where I had ample room I would not employ the matrix; the percentage of such cases is not large. I prefer a band matrix as a rule. I make them myself: a simple strip of metal, copper, silver-plated on one side, cut to proper width and long enough to embrace the tooth inside of the two holes, one at each end. Through these holes a small bolt or screw is passed, and with a nut on one end the band may be made to embrace the tooth as tightly as desirable.

Dr. Geo. C. Ainsworth. You know my methods so well that I deem it unnecessary to go into detail. The article of Dr. C. N. Johnson on cavity formation is well written and worthy of careful attention. I might differ with him slightly in discussions, but not much. As for filling, soft gold or tin and gold at the cervical wall,
then the major part of the filling soft-working cylinders, annealed, to be inserted by hand-pressure and finished with cohesive gold and the mallet. I have used lately, in place of the latter, Dr. DeTrey’s solila gold, completing the whole filling with hand-pressure, with much satisfaction, but I do not have, as yet, perfect confidence. If this latter stands as well as it looks it will be a great addition to both operator’s and patient’s comfort, doing away almost entirely with the malletting so trying in many cases.

Dr. J. W. Rider, Danbury, Conn. (a) I should separate thoroughly for filling. (b) I am conservative in my treatment of tooth-substance, removing, of course, all defective enamel, but do not believe in sacrificing, providing always that firm and well-supported margins can be gotten. A mere opinion is, as a rule, unsatisfactory. My reason is that with the original point of decay removed and replaced with a well-contoured filling, i. e., a filling compatible with normal shape and condition of the tooth, the danger of a future attack is not sufficient in at least ninety per cent of cases to warrant sacrificing unnecessarily any sound tooth-substance; certainly not in the promiscuous robbery advised by some at the present time, mistaking I think the advice given by Dr. G. V. Black. (c) Should be that material that in the judgment of the operator would prove the best conservator. I should use gold wherever the conditions warrant it, next to gold, amalgam, etc. (d) The matrix, in my opinion, is universally a “delusion and a snare.” In the hands of the incompetent and careless operator it is certainly a vile and treacherous contrivance, while to the competent it is practically useless.

Dr. J. G. W. Werner, Boston. (a) Always restore carious approximal surfaces in molars and bicuspidis to full, or, in many cases better yet, to a little more than full contour. (b) Flat base, cervical wall beveled, lingual and buccal walls beveled with little or no undercut or grooves, an anchorage step, and in all but the best teeth rather sacrifice than conserve tooth-substance. (c) Would use gold—soft gold at the neck and all but the last or occluding portion, where I would use gold and platinum and in some cases gold and tin at the cervix. (d) Would use a steel matrix.

Dr. R. Ottolengui, New York. The subject of your symposium is one upon which a book might be written; and as I cannot take the time to write a book, and as your society would probably not be
gratified at receiving so lengthy a communication, I shall say only that in the treatment of cavities in the approximal surfaces of bicuspid and molars I would follow the same rules that I do in similar cavities of any of the other teeth. I get the teeth into a healthy condition and fill them with gold, restoring the contour, and so shape the fillings that no food may be lodged between and there retained. For these fillings I use cohesive gold, at least the latter half of the cavity being filled with heavy foil introduced by the electric mallet or engine mallet.

Dr. G. A. Bowers, Nashua, N. H. I shall include only the upper bicuspid in my reply. A similar treatment, however, answers for the lower bicusps and all molars. The upper bicusps are the most vulnerable teeth of the permanent denture. I fancy seventy-five per cent of the operative procedures are performed on these teeth. Owing to faulty manipulative skill or a lack of conscientious treatment early in life on the part of the dentist, they are either sacrificed or covered with a crown, and generally a gold crown. Frequent examinations, conservative treatment, and conscientious work must be the rule from their eruption. If they are early prone to decay they should be filled with cement or gutta-percha. Watch them closely, renewing the fillings if necessary until the patient is about twenty. At this age if they are of good structure they can be permanently filled, and in doing this an opportunity is afforded the dentist of exhibiting his most artistic skill. When a bicuspid is artistically filled, bringing out the beautiful lines and contour, it is a sure criterion of a good dentist. (b) In the cavity preparation use the chisel freely, never hesitating at sacrificing tooth-structure to accomplish your desired result. Extend the cavity cervically, and beveling so that the gum will come down over the finished filling. The seat of the cavity should be practically flat, with the buccal and palatal grooves extending and rounding into it. A wedge-shaped retention is supplemented in the sulci. Finally, see that your margins are well defined and sharp. A good chisel will do this. Do not use strips or disks, for you will invariably get a rounded edge, and therefore a slivering of the gold at that point. (c) I should always use gold if I could get my pay for it. (d) I think it is perfectly safe and a good practice to use a matrix. I almost always, however, fill the cervix, first burnishing and finishing it. Then apply the matrix and complete the filling. I use
Woodward's matrices more than any other, numbers 6, 7, and 8. For special cases where these are not suitable I cut them out of matrix metal and contour them. They can be kept in position with a clamp or orange wood.

Dr. C. N. Johnson, Chicago. (a) and (b) are given in some detail in a recent paper read by me before the Kansas State Dental Society and published in the May issue of the Western Dental Journal. They got some of the cuts upside down, and to rectify this the DENTAL DIGEST is reprinting it in the July issue. I should esteem it a favor if you would examine this article and have the subject discussed before your society. The illustrations emphasize concisely the ideas advanced in the paper. (c) My preference is for gold wherever it can be used. Other materials are simply used as expedients and with a full sense of their limitations. If they last well it is exceptional and due to the exceptional causes. (d) I would ordinarily use a matrix on distal cavities. Use a thin matrix sufficiently yielding to be readily sprung away from the cavity margins so as to admit of carrying the gold between the enamel margin and the matrix.

Dr. Henry A. Baker, Boston. (a) In the deciduous teeth I would make a broad V with a corundum wheel, grinding back one-third upon molar crowns with the point of contact near the gum. If any cavity should exist after this treatment, I would fill with amalgam or gutta-percha, using a flat surface flush with the V; this makes them self-cleansing. Permanent teeth I would treat quite differently; I would restore them with contour fillings. (b) First I would get good separation, then shape the cavities with a rounded periphery nearly or quite to the gum. Approximo-lingually and approximo-buccally I would sacrifice tooth-substance to the extent that the above surfaces could not come in contact to within one sixteenth of an inch after filling. In second quality teeth or young subjects I would fill three-fourths full with tin, then using No. 30 rolled gold, finishing the surface with platinum or rolled gold well malletted and burnished, being careful to have the platinum and gold in layers one upon the other like leaves of a book, thus preventing pitting. The fillings should be well rounded, approximating each other like two curved surfaces with point of contact as we find it in nature, with a good space at the gum to make them self-cleansing. (c) For first quality of teeth would use non-cohesive
gold in place of tin, and then proceed as above. (d) Would use a steel matrix held in place by Perry separator and wooden wedges. For teeth standing alone would use a steel loop matrix.

Dr. William H. Carpenter, Providence. (a) The shaping of cavities much depends upon the amount of material at hand, as we all well know. I do not believe in sacrificing tooth-structure to prevent margins from touching, for this can be prevented by obtaining a little extra space and then bulging the filling sufficiently to hold the margins away from each other. I believe that no flat surfaces should exist, but in all cases the surfaces should represent segments of two circles. The cavity should contain no grooves or pits if it is possible to prevent them, and it is in most cases. The matrix should be kept in place until the last piece of gold has been introduced. (b and c) Presuming that the teeth in question are suitable for restoration by filling, I should use for that restoration gold contour work with the aid of matrix, and that in every instance. I fully believe that a good operator can get the best results (those most resembling nature and hence nearest to perfection) with soft gold cylinders at the cervical wall and two-thirds the way up toward the grinding surface, continuing toward the top with semi-cohesive and finishing with cohesive gold, or, where the surface receives too much attrition, with gold and platinum (rolled), No. 60. In cases of very poor tooth-structure I sometimes use at the cervical wall a few pieces of gold and tin, No. 3, folded together and lightly rolled into cylinders. (d) In all cases the matrix must be used. It simplifies matters, and produces, I think, the only perfect filling. The matrix may be of any kind the operator prefers, provided it is of steel. I use cold rolled steel very thin, and shape and fit one to suit each case, holding it with either gutta-percha, cement, separator, or whatever I think best suited to gain the end desired—viz., a nice gold contour needing but little finishing on the approximal surface, most of which can be effected with the burnisher.

Dr. Sidney S. Stowell, Pittsfield, Mass. The treatment of carious cavities in approximal surfaces of bicuspid and molars is subject to so many modifying conditions that no fixed rule applying to all cases can be followed. Some cardinal principles should be observed—first and greatest in importance is: The object in filling teeth is, or should be, to preserve them, not to display our skill as dental jewelers or to enrich ourselves at our patient’s expense.
Therefore, if the patient is young, or the tooth is soft, or the cavity deep, the excavating should be carefully done around the margins, leaving plenty of the leathery decay as a natural capping and permanent protection to the pulp, with the assurance that kind old Dame Nature will recalcify much tooth-structure which has been softened by decay if assisted a little and given a chance by protecting the parts with an antiseptic cement made by incorporating one-quarter by bulk of hydronapthol powder with the oxid of zinc of our common oxyphosphate cement, first having bathed the cavity with 25 per cent alcoholic solution of hydronapthol and drying it out. A greater percentage of bicuspid teeth are found missing or with devitalized pulps than any other teeth, as a result of delayed or unwise treatment. Therefore conservatism in their treatment cannot be too strongly urged. Allowing that the tooth is in condition for permanent filling, the cavity should be so shaped as to bring buccal and palatal margins well out from between and away from possible contact with adjoining teeth, that the margins may be automatically or self-cleansed; cervical margin should be cut to or below the gum line—masticating margin cut through the fissure, forming a dovetail anchorage for filling, which should be compound. Cervix or floor should be cut flat or slightly beveled outward and grooved for anchorage; perpendicular walls should be grooved sufficiently to retain the filling; cervix should be filled with tin and gold foil, No. 4 gold and No. 4 tin folded once together; use matrix in every case, placing it loosely at cervix at first to allow the tin and gold to swell out over margin, filling that part more than full that it may after be burnished and finished back to exact flush. The bulky portion of cavity may be filled with soft or semi-cohesive gold, or if on distal surface with tin and gold. Complete the filling with cohesive gold, contouring to nature and burnishing and polishing to perfection.

Rubber Dealers Combine.—Consolidation of three biggest concerns in the country. Akron, O., April 17. Negotiations to consolidate the Goodrich of Akron, Goodyear of Connecticut and Butler of New Jersey, the three leading hard rubber companies of the country, have been closed.

Strychnin in Chloroform Poisoning.—In a desperate case of voluntary poisoning with chloroform, after the failure of all other means, the patient was restored by injecting, several times, about three centigrams of strychnin, seconded by artificial respiration and electricity. No deleterious effects were noted.—Semaine Med., Dec. 15.
SULPHO-CYANID OF POTASSIUM IN SALIVA. By H. L. Albert. Read before Odontological Society of Great Britain. The methods hitherto employed in the quantitative analysis of the sulpho-cyanid of potassium in saliva are extremely laborious. With the help of Dr. Buckmaster I have devised an apparatus by which its amount can be estimated with the greatest ease in a few minutes. I hope it may help unveil the mystery of the origin, physiological and pathological significance of this characteristic salivary salt.

I will give a brief resume of the little that is known about it: Treviranus was the first, in 1814, to notice the deep red color produced by the neutral ferric perchlorid when mixed with saliva. In 1826 Tiedemann and Gmelin proved that the color was due to the formation of the iron sulpho-cyanid.—Jacubowitsch says it exists in mixed saliva in the proportion of .006 per cent, Frerichs in the proportion of .01, Lehmann in the proportion of .0064 to .009, while Wright states it to be as high as .51 to .98 per cent; the latter observer was, however, faulty in his method of analysis.—Its amount is said to vary in the secretions of the individual glands; thus in the parotid of man Mitscherlisch and Oehl state it to be .03 per cent. Maly found traces of it in the submaxillary, and Longet discovered a little only in the sublingual.—Oehl attempted a colorimetric estimation with solutions of iron.—Mitscherlisch, Jacubowitsch and Gmelin found it in the parotid of man, dog, horse and sheep, though Lehmann states that it does not exist in that of the horse.—Schiff says it is a decomposition product, and that by keeping saliva for twenty minutes to half an hour the iron reaction is better seen. I think from my own observation I can dispute this.—According to Munk and Gscheidlen the salt is constantly found in urine. Musso found it in milk, and Leared in the blood. Munk and Gscheidlen found it in the urine of man, horse, dog, cat and rabbit. It is believed by these observers that the salt is absorbed into the blood and constantly removed by the kidneys, since it has not been discovered in the faeces. In urine, however, it exists only in very small quantities, the amount being from .059 gram to .08 gram in 1,000 cc.—Sheridan Lea says it occurs only in the
urine of those animals who excrete their nitrogen chiefly in the form of urea.—Heidenhain and Gscheidlen cut the ducts of all the salivary glands in dogs and formed salivary fistulae. A total absence of the salt was found in the blood and urine, while the mixed saliva collected from the ducts contained it.—Carpenter, on the authority of Harley and Longet, says that the salt is absent in the herbivora.—Claude Bernard considers its presence to be due to carious teeth and tobacco smoking.—Lauder Brunton states that in the mollusca it diminishes reflex actions and quickens the heart beats, large doses arresting the heart in diastole.—Mons. Chouppé, experimenting on plants, found saliva fatal to vegetable life and attributed this to the contained sulpho-cyanid; and Hugenschmidt states it to have a distinctly bactericidal property.—Frerichs, Wöhler and others consider it to be non-poisonous in moderate doses. Dr. Florain in 1889 said though fatal to vegetable life it had no action on animals except in excessive doses.

I have tried the ingestion of pure potassium sulpho-cyanid in four rabbits, the amount used being between one and two grams mixed with about ten of bran a day. In every case death resulted in about a week. The symptoms produced were alike, viz., emaciation and loss of hair. In two a marked atrophy of the salivary glands was found, and in one of these, after dipping in a solution of ferric perchlorid, a microscopic examination was made, the ducts being found more deeply stained than the gland tissue. In all four large quantities were found in the urine and faeces, in fact the drug seemed to permeate, so far as one was able to judge, every organ and tissue, and to find its way in every secretion and excretion, even to the cerebro-spinal fluid. The emaciation was the most marked feature, bearing as it does on the statement of Dr. Fenwick, that the elimination—if it be an elimination—of the sulpho-cyanid by the salivary glands is a measure of nutrition occurring in largest quantities in the saliva of those who are well nourished and vice versa. I can from the observation of some few cases confirm this. I should say the emaciation in the rabbits was undoubtedly dependent on ingestion of drug, the normal quantity of bran being eaten.

Of the pathological significance Dr. Fenwick, in some lectures on functional diseases of the liver quoted in the Lancet of 1887, points out that those diseases where nutritive efforts are called forth are invariably accompanied by an increase of sulpho-cyanid, and further
DIGESTS.

states that for its appearance in the saliva the bile must enter the duodenum. He adds that as the two are so closely associated it is obvious that the salt owes its origin to some action of the hepatic cells. Dr. Fenwick's means of analysis consisted roughly of a series of shades of color produced by the admixture of a known quantity of the tincture of the perchlorid of iron in graduated solutions of the salt, the normal color being obtained by a comparison of the saliva of those whose appearance and history seemed to indicate a normal condition of health. The objections to this method are that the standards of comparison, being fluid, faded after a few weeks; and the tincture of iron, probably owing to the evaporation of the spirit, did not remain at a uniform strength. Dr. Fenwick made no attempt at a quantitative estimate.

Assuming it possible to construct some permanent means of measuring the amount of salt in saliva, it was obviously necessary to avoid these sources of fallacy; hence comparison with colored fluids was discarded. On the suggestion of Dr. Buckmaster it was thought likely we could adapt Oliver's hæmoglobinometer to our purpose. This instrument, the outcome of much labor and thought, is a means whereby the quantity of hæmoglobin is found by contrasting solutions of blood with graded red glasses, each of which corresponds to a known percentage of hæmoglobin. Resolving then to use unfading colored glass instead of fading colored fluid as a means of comparison, it was necessary at starting to try the tests for the salt, in order to ascertain which was simplest and which gave the best color. These tests are: (1) The perchlorid, discovered by Treviranus, consisting of the production of a blood-red color on the addition of ferric perchlorid, not discharged by hydrochloric acid, but disappearing on the addition of corrosive sublimate, thus differing on the one hand from the acetates and formates, and on the other from the meconates. (2) Böttger's test, discovered in 1872. Filter paper, soaked in tincture of guaiacum, dried and drawn through a 1 in 2,000 solution of copper sulphate, becomes blue when treated with saliva containing potassium sulpho-cyanid. (3) Solera's, based on the power of saliva of reducing iodic acid. When a weak solution of potassium sulpho-cyanid is mixed with iodic acid it becomes yellow, owing to the liberation of iodin. The test is rendered more sensitive if starch paste is used, the blue coloration produced by the iodin being more easy to recognize than
the delicate tints of the yellow. Solera claims such delicacy for it that he can detect .000004 gram.

Of these three tests the guaiacum was discarded, it being found necessary to make fresh preparations of that drug so frequently. The perchlorid test was chosen on account of its simplicity and sensitiveness, it being at least as delicate as Solera's. I decided then to use the red color of the iron reaction, and the next stage in the experiment was to obtain a color with a solution of the sulpho-cyanid of the same strength in which it occurs in normal saliva. This normal amount was based on the mean of Frerich's estimate of from .01 to .006 per cent.

To a .008 solution of sulpho-cyanid, therefore, liquor ferri perchlorid was added and sent to Lovibond's Color Laboratories in order to have the color reproduced in glass. In due course they were returned and the colors were found to be entirely matched. It was at once obvious that by a series of graduated red glasses of the same shade as known strengths of sulpho-cyanid solutions to which iron had been added, it would be possible to easily read off the percentage quantity of the salt in different salivas. It was only in the details of the experiments that any difficulties arose; of these the most serious was overcome by my colleague, Dr. Slater. Potassium sulpho-cyanid being so extremely hygroscopic it was found impossible to make up an accurate solution in the ordinary way. Dr. Slater kindly made one by a titration process, so accurate as to come almost within Frerich's variations of the normal. The solution was subsequently tested by Dr. Gardner and found practically correct, the exact strength being .010228 per cent. Not caring to trust to either the tincture of iron or the strong liquor, some trials were made with solutions of the neutral perchlorid in order to ascertain the amount necessary to produce the best color when mixed with the normal solution of the sulpho-cyanid. Some difficulty in weighing the iron occurred owing to its extreme deliquescence. After many trials a 50 per cent solution suited our purpose best.

Before proceeding further I would like to give a short account of the principle upon which the measurement is based. The color metric system is used in various ways as a means of quantitative estimation with the aid of color. Lovibond, the inventor, has fixed an arbitrary and equivalent unit in glass tinted in the three primary colors, the equivalence of the unit being established by the fact that
when the corresponding units of the three primary colors are superposed the color of each is destroyed, a neutral tint resulting. It is most interesting to note the total abolition of color produced by the superposition of even the lightest shades of the dominant colors. The latter are subdivided into shades and arbitrarily numbered in series, the shade of any color corresponding to the number of the shade of the other two colors. There are necessarily more light shades than dark ones, the human retina only being able to see minute distinctions of color in light shades. For matching and testing experts are employed.

The chart is a diagrammatic representation of the colors of known solutions of given quantities of sulpho-cyanid, to which a fixed amount of a 50 per cent solution of neutral ferric perchlorid has been added. It is called the "specific color curve." The numbers below the base line are the percentage amounts of sulpho-cyanid sent for examination, while those on the left correspond to Lovibond's own standard of color. The curve itself is formed by a line uniting the points where the colors of Lovibond's units cross the lines of the sulpho-cyanid solutions. It will be seen, on looking at the chart, that in the weaker solutions of the salt yellow only is discernible, in the medium solutions orange enters into its composition, while in the strong mixtures red only is present, the orange and yellow of the weaker solutions being totally disguised. The small numbers on the colored lines indicate the numbers of the colored units entering into their composition.

Having thus an unvarying and fixed means of quantitative examination at our disposal, it only remains to construct a graduated series of shades of red corresponding to the varying percentage of the salt in saliva, as evidenced by the depth of color produced by the iron reaction, and to make the method of examination itself unvarying. This gave rise to some difficulty for the following reasons: (1) Saliva, until it has been standing some time, has a decided color of its own. Obviously if it were to be compared with colored glass representing known strengths of sulpho-cyanid, its own inherent tint must be abolished or else that tint must be added to the red of the sulpho-cyanid. Its air bubbles and viscidity, too, were at first a disadvantage to quick work. (2) Given a clear, watery saliva it was necessary to use for each examination the same amount. (3) To be perfectly uniform, it was of course necessary to use an unva-
ryng light, the changing tones of a London atmosphere being useless. (4) It was necessary to determine the gradations of the scale to be used. (5) It was necessary to fix the amount of the 50 per cent iron solution to be used; and (6) To construct a convenient cell to hold the saliva.

(1) The visciditv of the saliva was easily overcome and its color and air bubbles destroyed by the addition of glacial acetic acid. Saliva thus treated yielded the same reaction with iron as saliva to which no acid had been added. The proportion of acid employed is 1 in 3. (2) It was obviously a matter of indifference what quantity of saliva was examined, so long as the same amount was used for each examination. We decided on 2 cc. of the mixed acid and saliva. (3) The light difficulty was overcome by adopting Oliver's practical suggestion of using double transmission. It was found, as stated also by Oliver, that reflected light showed a deeper color than singly transmitted light. That of an ordinary candle was employed, the reflecting surface being placed under the cell holding the saliva. (4) The scale was made to consist of intervals corresponding to an increase or decrease of .0025 per cent, with the exception of the two lowest shades. Of these one corresponds to a mixture of distilled water and glacial acetic acid in the proportion of 1 in 3, to which .045 cc. of the iron solution is added. This was of course necessary in order to be able to detect the entire absence of the salt. The other low shade was put in the scale to enable us to detect a mere trace, and corresponds to a .0001 per cent solution of the sulpho-cyanid. The scale will thus tell three degrees of increase, the normal, four degrees of decrease and the entire absence of the salt, the readings being, in order, zero, .0025, .005, .0075, .001, or normal, .0125, .0150 and .0175 per cent. Besides these definite gradations, quarter, half, and three-quarter shades of the intervals were prepared. (5) The amount of the 50 per cent solution of the neutral ferric perchlorid necessary for each examination is only .045 cc. The quantity used is more than a hundred times as much as is necessary to combine with the maximal quantity of the salt that is ever met with in saliva. (6) A cell was made to hold 2 cc. It was constructed of black vulcanite, the color used not imparting any additional tinge to the contained fluid, and the acetic acid having no chemical action on it. In consequence of using reflected light it had to be placed on an opaque base, one of an absolutely colorless
nature. The hydrated sulphate of lime, used by Lovibond for this purpose, was employed. The cell and lime were then cemented on to an oblong piece of glass to make it convenient for handling.

Having thus made the requisite color standards and settled all the details, it was only necessary to send the former to Lovibond’s Color Laboratories to have the colors matched in glass. They were reproduced so perfectly accurately that no trained eye even could detect the slightest difference. The glasses are mounted in series in a convenient form for handling. The colors of the quarter, half and three-quarter shades were also made. They are, however, only approximately correct, as curiously enough, though the intervals in the strength of the sulpho-cyanid are practically uniform, it was found that the color of the fractions of each did not quite correspond. I think, however, they are near enough for all practical purposes. Perfect accuracy could be obtained by having specially prepared glasses made for each interval, but as it would add to the cumbrosomeness of the apparatus—a consideration where clinical investigation is aimed at—and also greatly increase the expense, it was not thought worth while to do this. The glasses corresponding to the fractions are called riders. The complete apparatus consists of: (a) test tube, fitted to economize space, over (b) centimetre measure; (c) scale of colors; (d) cell; (e) cover glasses; (f) pipette for measuring the iron; (g) camera tube for contrasting the colors; (h) riders. For clinical work they are packed in a small case, in which room is found for the candles. Besides these, for laboratory work it is as well to have a metal camera tube on a stand. I have had a miniature darkroom made and painted black, to exclude all light but that of the candle placed within it. At the lower aperture of the camera two holes are perforated, under one of which is placed the saliva to be examined and under the other the color standard with which it is to be contrasted. To one side of the upper aperture a piece of green glass is attached for the purpose of rendering the retina more sensitive to red light should the eye become fatigued.

The method of using the instrument: Some saliva is first collected in a test tube and 2 cc. poured into the centimetre measure. By this little manœuvre the air bubbles are retained in the test tube. To this 1 cc. of glacial acetic acid is added and shaken a little to insure complete mixing. Next the .045 cc. of iron is taken up and mixed with the acid and saliva, it being necessary to pass them two
or three times up the tube of the pipette to make certain all the iron is added. The cell is then filled from the centimetre and a cover glass—which by the way is absolutely colorless—placed on top. If the cell is accurately filled to 2 cc. a small air bubble will be seen on the surface of the fluid. It is then placed under one hole of the camera and the standard with which it apparently corresponds placed under the other. The candle is then lit and placed in such a position as to equally illuminate the surfaces of both saliva and standard. If the two colors correspond the amount of the sulpho-cyanid is at once known. If they do not, it is necessary only to shift the standards till one is found of the same shade. Should none be found to exactly match, the riders are brought into use, taking care that for every rider employed an additional cover glass be placed on the cell in order to equalize the reflecting surfaces.

Of what use the instrument may be remains to be seen. I have worked with it enough to be unable to confirm Schiff's statement that the sulpho-cyanid increases in saliva kept a few hours, owing to decomposition of the fluid. I can also say its existence does not in any way depend either on the presence of carious teeth or on the use or non-use of tobacco.—Brit. Jour. Dent. Sc., March, 1898.

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ELECTRO-DEPOSITION OF METALS. By Dr. L. B. Wilson, Cumberland, Md. Read before New Jersey State Dental Society, July, 1897. Having paid great attention to the subject of electro-deposition, I have met with many difficulties which careful experiment and perseverance have overcome. A form of battery which I have found most constant and certain in its action I will describe further on. The electricity generates in a cell, passes from the zinc to the carbon element of the battery, and from thence it proceeds along the wire issuing from the carbon, traverses the solution and returns to the cell through the wire which is attached to the zinc element, and so on. The zinc is the positive and the carbon the negative element, but the end of the wire attached to the zinc becomes the negative pole, whilst that proceeding from the carbon becomes the positive pole. The anode or positive pole is that wire which is attached to the carbon, and to this wire or pole is suspended in close contact the sheet or plate of metal which is destined to resupply the solution with the amount of metal which it loses by the deposition which takes place on the cathode or mould to be coated.
The cathode or negative pole is the wire which issues from the zinc, and it is this wire or pole which receives the deposit in the bath.

The battery which I recommend consists of a stone jar holding about one gallon or more. Fill this jar with hot distilled water, add to this two ounces of bichromate of potash, one ounce of bisulphate of mercury and two ounces of sulfuric acid. The bisulphate of mercury will keep the zinc well amalgamated and prevent local action. The carbon is placed in this solution and the zinc only when in use.

Preparation of Moulds.—Take a plaster impression (in case the tooth or teeth have cavities before taking impression, fill and contour the cavities with wax), dry plaster impression, then pour in the following fusible metal: one-half lead and one-half tin. Just before it sets, stick a good-sized copper wire in molten metal, remove mould, and in all parts on which you do not desire the deposition to take place: (1) For copper solution, with your wax spatula cover the surface with melted wax. (2) For gold solution, cover all parts on which you do not want the deposit to take place, either with gutta-percha or rubber, dissolved in chloroform; the cyanid of potassium in the gold solution will dissolve wax.

Electro-Deposition of Gold.—The solution of gold should be generally worked hot. I have observed that a bath containing five or six dwts. of gold to the quart of water, and the necessary proportion of cyanid, and worked with the battery above described, has required a much larger surface of anode to be exposed, to a given surface of negative electrode, than would be required to plate in a solution containing one and one-half dwts. to the quart of solution, hence I infer that the latter solution is the better conductor of the two.

Gold Crown Made by Plating.—The fusible metal crown or bridge to be plated must be clean, attached to the zinc pole of the battery and immersed in the solution, which should be kept hot while the deposition is going on. It is of the greatest importance to let the anode nearly come in contact with the solution in starting. The work should be kept in the solution until it receives the proper thickness of deposit, which will be aided by occasionally removing the work, and after cleaning and scratchbrushing, reimmersing it. It is also necessary in order to get a bright deposit, to keep the work moving in the solution.

The solution is easily made by connecting the battery to two gold plates and suspending them in a strong solution of cyanid of potas-
sium until the one attached to the zinc plate of the battery receives a deposit. This can then be taken out and the solution is ready for use; the other remaining in is gradually dissolved and keeps uniform the amount of gold in solution. When the deposit is as thick as desired, the crown is removed then and held over a Bunsen burner. The fusible metal will melt and run out, leaving a seamless crown, bridge or plate that will fit and come nearer perfection than by any method I have seen.—*Items of Interest, March, 1898.*

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**TIN FOIL.** By H. L. Ambler, D.D.S., M.D. Read before New Jersey State Dental Society, July, 1897. Tin foil should always be handled with clean pliers and never with the fingers, and only enough should be prepared for each case, keeping the remainder in the book placed in the envelope in which it is sold, otherwise some extraneous matter collects upon it; when exposed to the air for a great length of time it will oxidize slightly.

In using this metal for filling we completely protect the underlying tooth structure, and if we comprehend the material and how to manipulate it we will surely be rewarded by success in saving various teeth.

The extra tough foil which can now be obtained is chemically pure, and in the presence of perfect dryness we can take it and begin at the base of any cavity, and with hand or mallet force produce a filling which will be one compact mass, so that it can be cut or filed without separating into layers. On account of its pliability it is easily adapted to the walls and margins and a perfect fit is made, thus destroying capillary action and preventing further decay. Of all the metals used for filling, it is the best tooth preserver and most compatible with tooth substance, and the facility with which a saving filling can be made largely commends it. Gold in contact with immature dentin, by reason of great thermal change, may prevent complete calcification; also when dentin contains an excess of organic matter, as young teeth do, we believe that when caries begin the process is increased by thermal changes, which induce galvanic currents, attended by chemical action.

In such cases, if a metal is used, tin is good on account of its low conductivity, and because it does not change its shape after having been packed into a cavity, for contraction and expansion are detrimental to any filling material. Under tin teeth are calcified and
saved by the deposit of lime salts from the contents of the dental tubuli; we term this progressive calcification.

The oxygen in the saliva helps blacken the tin, and the metallic oxid permeates the dentin more or less, acting as an antiseptic and a protection, because it is insoluble in the oral fluids. When there is a battery formed in the mouth containing tin fillings and gold fillings, and the fluids of the mouth are the exciting media, tin will be the positive element and gold the negative element; thus when they form the voltaic pair the tin becomes oxidized and the current practically ceases. When tin fillings have been removed we have often found that the dentin was somewhat discolored and greatly solidified as compared with its former condition, and we believe that this calcification or solidification is more frequent under tin than gold, which is partly due to its being such a poor conductor of heat. We have also seen cases where the pulps have partly calcified under tin fillings, and it has been known for years that tin would be tolerated near the pulp without causing any trouble, and we feel sure one reason is on account of its low conductivity. Gold is nearly four times as good a conductor of heat as tin, and six times as good a conductor of electricity.—*Items of Interest, March, 1898.*

**EVOLUTION OF THE DOCTOR.** From all lands and all places come the medical journals with their editorial complaints and subscribers' lamentations over the free dispensary evil and the so-called overcrowding of the profession. In one and all there is nothing new; people wearing sealskins and diamonds are crowding our dispensaries; the latter are multiplying; restrictive and reactionary legislation is demanded and lauded as the only possible means whereby to contend against such conditions; while the recent graduate—and his name is legion—finds his preceptor at last driven to the point of agreeing with him that he has made an ass of himself by entering a profession wherein opportunities are notoriously less than obtained twenty years ago. So much for the facts of where we stand to-day, without tracing herein our growth and development from the days of Esculapius.

Now, if this century is remarkable for one thing more than another, it is for the growth and development of new machinery; everywhere new and wonderful machines have come into use in the various industries, and everywhere the laborers have been forced
out into new and hitherto unexplored industries, while between
the owners of the machine and the laborers there has waged a con-
stant war—cruel, relentless, unceasing in its effects, but inevitable;
and, as was to be expected despite all restrictive legislation, the
machine has won. Progress has no concern whatever over the indi-
vidual, but conserves society at large.

Hence we shall do well to bear in mind such relations in consid-
ering the so-called free dispensary evil. For the free dispensary is
simply a new and improved form of labor-saving machine; evolving
out of certain social necessities of our environment, it has proved
conclusively that it can do the most work, at the smallest possible
cost, and for the greatest number of people. No medical machine
yet devised can in any way approach it in quality and facility of its
work. This, we believe, is a fact that every physician will admit,
and needs neither argument nor further demonstration for its proof.

It is true that there are facts which, when suddenly confronting
us, seem to be a direct threat at our bread and butter, and in many
industries it is not policy to admit them; but so far as physicians
are concerned their best and greatest interests all lie in the direction
of progress. Hence, unlike certain business men's associations that
are engaged in a vain fight against department stores, medical men
have no need to engage in a foolish struggle against the inevitable;
comparable only to the Chartists' riots of fifty years ago, at a time
when laborers sought to destroy every machine that took the work
out of their hands.

What the social conditions are that go to make the free dispensary
an absolute necessity, must of course be trite enough to every phy-
sician. In this country, that had barely one hundred thousand
people out of employment twenty years ago, to-day we have over
three million. This fact makes it scarcely a necessity to mention
hopeless poverty as a result. Nor is this a merely temporary con-
dition, for we know absolutely that, with no more free land available
and consequently no chance for expansion, the army of the unem-
ployed must every year become greater and greater. New machinery
will continue to be invented, and will displace the laborer faster than
new industries can be devised to meet his wants.

There are of course countless other logical reasons for the exist-
ence and maintenance of the free dispensary and the troubles of the
recent graduate; such as the multiplication of medical colleges, and
the deplorable but growing intelligence on the part of the public that leads it to require less and less medicine as the years go on. But again, these are conditions scarcely to be met by reactionary legislation.

Now what is the remedy; how are physicians to receive adequate compensation for their services in attendance on free dispensaries? Obviously there is but one way, namely: Taxation. The dispensary, if it must be general, must be supported the same as our schools and colleges, and the doctors properly compensated the same as teachers. With this object in view we may be able to effect something through legislation.—Medical Standard, April, 1898.

PAST AND PRESENT IN DENTISTRY. By C. N. Peirce, D.D.S., Philadelphia. It has been stated that the evolution of languages, regarded as a psychological process, is largely determined by social conditions.

The following inquiry seems pertinent: Is there a profession, an industry, an enterprise of any kind affecting the human family that has been so shackled, so embarrassed, so handicapped by social conditions as the profession of dentistry? Compare its position with that of the obstetrician, the ophthalmologist, the laryngologist, or indeed, any specialty of medicine; socially it is in the shade. Is the limited education possessed by the masses in the profession an important factor in this? Or is it the occupation itself which places a stigma upon the character of a dentist regardless of other conditions? It has been said by a prominent dentist that within the limits of the dental profession there are men so skilled in medicine and the arts that, were those pursuing the latter stricken with paralysis and the former disabled by accident, their ranks could be so quickly filled by members of the dental profession that the ripple upon the wave of society would be but temporary indeed. However this may be, there are those in the profession whose intelligence and education should be a passport admitting wherever they desired, without question or comment. Believing in evolutionary processes, and that dental education in its development is not unlike other growths, its votaries have been persistent in their efforts to advance its status from the simple to the complex, from the elementary to the scientific; yet there have been periods in this progressive stage that may be denominated as expressions of degeneracy. Of these we will speak later on.
A hasty glance at the condition of dentistry and dental education fifty or seventy-five years ago, and a comparison with its condition forty or more years later, or at a more recent period, will demonstrate the marvellous change. In early times an applicant for instruction was charged a fee, the amount of which was in an inverse ratio to the time to be spent in obtaining the desired information. Six hundred dollars for three months, or two hundred for twelve, was not an unusual fee demanded and paid. The value to the prospective dentist of this economy in time was almost without price, for in a few months his fortune was supposed to be secured. Nor could the preceptor be more jealous and careful regarding the character of the one to whom he was intrusting the secrets of his laboratory and admitting to his office to watch the movements of both patient and operator. The result of this care brought men of character into the profession.

In 1846, when the first dental college opened for the reception of students, it was regarded with but little favor by those whose annual income had been materially augmented by fees given for private instruction. In order that the college should enjoy the patronage of a sufficient number of students to pay interest on the outlay and necessary expenses, it was quite incumbent on those conducting the enterprise that very limited requirements in anatomy, physiology and chemistry should be exacted, and also limit in time required to obtain a degree and an attesting parchment. But limited as it was, it was an advance in the opportunity offered for thorough, honest teaching in the practical branches—operative and prothetic. One important element, however, was eliminated—the personal contact with and the influence of teacher upon pupil.

Within six years from the establishment of the first school, with fifty students in attendance, three were in successful operation, with a patronage of a little more than two hundred students in the three. In 1870 five schools had been established, their combined classes numbering but about, or less than, three hundred students, while in 1896 the country enjoyed the disgrace, shall I say, of fifty-eight dental schools, with over six thousand five hundred (6,500) names on their matriculating lists.

That one or more schools with centres and agents for the sale and distribution of diplomas have been established in this country is a well-recognized fact, but it must be remembered that these have only
been in response to the demand for a parchment giving the holder thereof the right to practice dentistry. Hundreds of these unearned documents have been distributed over this as well as the various countries of Europe, thereby increasing the number of charlatans in the profession, and helping not a little to sink it into that slough of despair and degradation in which it is now involved.

It was the activity of this villainous practice that led the dental profession to seek regeneration and protection in state examining boards. These were to be the "antitoxin"—the source of redemption; much was anticipated, hoped for, by many sincere and able men in the profession. Before making the inquiry as to the extent of the remedy secured from these examining boards and the realization of the hopes of their originators, let me pay a well-merited tribute to the integrity, honesty, and singleness of purpose of the professors and teachers conducting many of our schools. Men more devoted, more earnest in their advocacy of, and in their efforts for, the advancement of the dental profession are not to be found. This is well illustrated in the adoption as rapidly as possible of a broader curriculum, an increased length of each session, and an addition to the number of sessions required before a candidate for graduation could be admitted to final examination. This speaks emphatically for such schools and demonstrates the purpose of the faculties in charge.

In recurring now to the inquiry regarding examining boards: Have they given satisfactory evidence of a due appreciation of their responsible position? Has their influence been for the protection and encouragement of the best schools? Are the men composing the boards as well versed in the science and art of dentistry as the professors in the best schools? Have they given evidence of any better, or as great an interest in the advancement of the profession? Are they men of equal scientific attainments, or of a higher, unswerving moral character? These are pertinent questions. What the profession—the higher element in it—has a right to demand is that competent, conscientious teachers shall be protected against charlatanism in any form, and that proficient students, recent graduates, well educated in all departments, shall be dealt with justly—shall be relieved of a rivalry with the ignorant and unscrupulous. The truly professional men and teachers are discouraged, not to say utterly disheartened, at the commercial spirit which pervades educational
institutions to-day. The atmosphere of barter and sale infests the class-room, and high ideals in the pursuit of a chosen profession are not encouragingly present in the majority of students.

In a dental school the recital of a practical case, or the description of a manipulative process has every ear and eye; not a word or movement to be lost. But the origin of a structure, the etiology of a disease, the evolution of a form—not having a fee apparent or prospective—is a matter of inattention and indifference.

Have the examining boards tended to remedy this evil? Have they encouraged the student to ideals? Do they estimate the value of well-grounded principles and urge to proficiency in such? Or are they not, at least some of them, burdened with the same commercial spirit, seeing no value in anything save possessed of an earning capacity?

The position of a critic is an unpleasant one, but when devoid of personality or malice may stimulate to improved conditions. A student having completed only the first year's course in college, after an examination by a state dental board, received the following certificate:

"It gives me great pleasure to inform you that your examination before the board was satisfactory in every respect, and I have been instructed to express to you the appreciation of the members of the examining board as to the high standard of the work which showed such careful and thorough preparation on your part, and at the same time to congratulate you on the fact of your being the first applicant who has come up under (the five years' clause) our present arrangement who has passed the examination at his first examination. We wish you the greatest success in the profession you have entered under such favorable auspices."

(Signed by secretary of the examining board.)

This certificate naturally led the holder to believe it insured entrance into the senior class, and for that purpose was presented to the dean. This application was positively refused, but that the applicant might also be convinced of unfitness for such promotion he was asked to submit to an examination in physiology, after which the request was not repeated.

A graduate of more than usual merit, having received a diploma, which was shown to an examining board, passed before said board all examinations satisfactorily, at least was so informed by a mem-
ber thereof, who also extended personal congratulations, and re-
quested a friend to write a letter to the successful individual
“expressing in complimentary terms the satisfaction given the
board.” A few days subsequent to the personal interview and
reception of congratulatory letter, imagine the young man’s surprise
at receiving the following from the secretary of the board:

“DEAR SIR,—I regret to inform you that your examination before
the examining board was not satisfactory, and it will be necessary
for you to refrain from practicing dentistry in the state. You will
have an opportunity for a re-examination.”

(Date in July.) (Signed by secretary of the board.)

This correspondence was shown to a man of prominence, an ex-
representative, and three days thereafter the applicant received the
necessary certificate, and without another examination or waiting
four months for it. These facts are certainly evidence of the absence
of any fixed principles, or of a settled policy on the part of the board
to advance the status of the profession or of dental education.

Moral. Were personal considerations a factor in the above cases?
Evidence of dishonesty or degeneracy are always painful to recall
and record, but unless some steps are taken to check this downward
tendency and avert its consequences, dental education will be greatly
impeded and the position of the profession a travesty, a burlesque,
on a scientific pursuit.—International Dental Journal, April, 1898.

ALVEOLAR PYORRHEA. By Dr. G. H. Thompson, Hone-
oye Falls, N. Y. Read at annual meeting of 6th, 7th and 8th
District Dental Societies of New York State. I will refer briefly
to the etiology and treatment of alveolar pyorrhea. In no disease
of the oral cavity has the scientific research of the past few years
produced more beneficial results. It is but a short time since all
cases of loosened teeth with a discharge of pus from the gingival
border were grouped under one class and considered due to local
causes. Now we look farther and endeavor to trace to their foun-
tain-head the various symptoms presenting themselves. In some
cases this is a comparatively easy matter; in others it requires the
most painstaking and exhaustive examinations.

We find two distinct forms of the disease—the one local, taking
its origin in the saliva, the other systemic, due to some constitu-
tional derangement. In the first form we find the exciting cause in
in a deposition of calcium phosphate and carbonate around the gingival border. This deposition gradually accumulates and infiltrates itself into the gum-tissue and pericemental membrane, causing inflammation and subsequent discharge of pus. Our treatment of this form consists in, first, the thorough removal of all deposits. To accomplish this we should employ suitable instruments both for the hand and the engine, and taking one tooth at a time proceed carefully, avoiding the laceration of the surrounding tissues as much as possible. By passing trichloracetic acid on a piece of orange-wood around the deposits they may be removed much more readily. Where we find pus exuding the pocket should be washed with pyrozone and then packed with cotton saturated with a suitable antiseptic, and for this purpose listerine acts well. The patient should be given a mouth-wash for home use and instructed as to its use.

In the second form we find the symptoms of an entirely different character. Here we find local treatment by the dentist unavailing, unless coupled with an intelligent systemic treatment. In this form of pyorrhea we find the deposits upon the apical portion of the tooth. To distinguish the trouble in this case is sometimes very difficult, and for this reason our diagnosis should be performed with great care. Urinary examinations should be made and oftentimes repeated.

We find from the experiments made under the direction of Dr. C. N. Peirce that the deposits consist of calcic urate, sodic urate, with some calcic phosphate and carbonate; uric acid is the predominating element of the urates, and its existence shows that it is a precipitate from the blood exudation. We find that the tissues most liable to receive this exudation are the connective tissues, on account of their density and non-vascularity. It is easy to be seen why the pericemental membrane, composed largely of connective tissue, should become the seat of these deposits. The deposits are found upon teeth where there is a faulty articulation, or a tooth in which the pulp has died, and by this means set up an inflammation of the surrounding tissues.

We find two classes of patients suffering from an excess of uric acid in the system. In the one patient we find the excess due to an imperfect oxidation of food products, superinduced by high living and a lack of exercise. Then we find the anemic patient. Here
the tissues have become so starved that the system is unable to throw them off in the regular way. In our treatment we should distinguish between these exciting causes. The systemic treatment of the one suffering from an overabundance of tissue-producing material would be quite different from the one where there was a lack of this material. In regard to diet, the first should be restricted to such an amount of nitrogenized food, whether animal or vegetable, as the system can satisfactorily dispose of, having at the same time due regard to nutrition and strength of body. Plenty of exercise is necessary in order that the system may be induced to use up the extra food products in a legitimate way. The second should have a fairly full and nutritious diet. All malt and stimulating liquors should be prohibited. Both classes should drink plenty of water. Alkaline salts, that will cause an elimination of the uric acid from the blood, should be advised. The bitartrate of lithia, introduced to the profession by Dr. E. C. Kirk, acts very happily in this respect. The digestive organs need attention, and for this purpose we should invoke the hearty cooperation of the physician, as no amount of lithia salts will cause an eradication of the trouble. The local treatment by the dentist would be much the same as in the case where the disease was salivary in its origin. No matter how permanent we may think our treatment, the trouble may recur. We should warn our patients to return to us on the reappearance of the symptoms.—*Dental Cosmos, April, 1898.*

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**CLINICAL REMARKS ON MISCELLANEOUS CASES.** By Edmund W. Roughton, B.S., M.D. (Lond.) F.R.C.S. Eng. Case of syphilitic necrosis of nasal septum and palate. Removal of sequestrum through nose without perforation of palate.—A laborer was sent up to me from the country as an incurable case of ozena. On examining the nose I found that the septum was extensively necrosed. I removed several small sequestra and then found that there was a large piece of dead bone which, although loose, I could not dislodge without giving the man more pain than he could stand. A few days afterwards I had the patient anesthetized, and after somewhat of a struggle I managed to extract from the nose a sequestrum an inch and a half long, half an inch wide, and more than a quarter of an inch thick. It consisted of the median portion of the hard palate as far forward as the anterior palatine canal, and the
portion of the nasal septum which is formed by the crests of the superior maxillary bones. The muco-periosteum of the hard palate was not injured, consequently there was no perforation and speech was not in any way affected. The patient took iiodid of potassium in ten-grain doses thrice daily. The discharge soon ceased and he went home cured.

There are several lessons to be learnt from this case. First, with regard to the use of the word ozœna. Ozœna means an offensive discharge from the nose. This condition is often produced by atrophic rhinitis, and some people use these two words as if they were synonymous. But there are other conditions causing an offensive nasal discharge. In this case the cause of the discharge was syphilitic necrosis. Second, whenever there is a purulent nasal discharge the nose should be carefully examined with light, speculum and probe. Third, when a sequestrum of the palate can be removed through the nose it should not be attacked through the mouth. Had the palate been perforated in this case the speech would have been greatly impaired.

Necrosis of maxilla in a patient who had taken (medicinally) large quantities of phosphorus.—A gentleman aged 45, as a result of worry in connection with money matters and family troubles, became addicted to the use of alcohol and of morphia. As a natural result his general health suffered considerably, and this led to his taking various tonics and amongst them phosphorus. For about two years he took rather more than a grain of phosphorus a day in the form of a pill. A few months before he came under my care he had a carious upper molar filled. This was followed by much pain, due apparently to inflammation of the bone surrounding the socket. The tooth was removed, but without giving the desired relief.

When I first saw him he was in a wretched condition. He could take no food except a little soup. He took large quantities of brandy during the day, and could not sleep at night except when under the influence of morphia. He was suffering great pain in the right upper jaw, radiating over the whole of that side of the head. The mouth could be opened only to the extent of separating the incisor teeth about half an inch. A probe passed into the socket of the extracted molar impinged on dead bone. There was a purulent discharge from the right nostril, indicating that the trouble had extended to the antrum. Feeling sure that he was suffering from
rather extensive necrosis of the maxilla, I determined to explore the parts affected with a view to removing the sequestrum if possible. An anesthetic was therefore administered and the mouth fully opened with a gag. I found that the sequestrum was not loose, and being unable to determine its extent, I contented myself with gouging away enough of it to make an opening about a quarter of an inch in diameter into the antrum.

The immediate result of the operation was not very encouraging. The pain was only slightly diminished and the trismus was unaffected, but the antrum was drained and could be kept fairly clean by irrigation. About a fortnight after the operation there was much swelling of the hard and soft palate on the affected side, extending to the naso-pharynx, blocking the eustachian tube and causing deafness. I then began to fear that the necrosis was extending and that I should be obliged to attempt some further and more extensive operation. As the swelling did not increase I decided to leave matters to take their own course. About two months after the operation the patient detected that something in the jaw was loose, and after one or two attempts managed to extract a sequestrum about the size of last joint of thumb. On examination I found that it consisted of the tuberosity of the maxilla, with a portion of the floor of the antrum. After this he soon got well, as the discharge ceased, the swelling subsided, the hearing power was regained, and the general health improved wonderfully. The opening into the antrum filled in to a large extent with soft tissues, and has now been effectually covered by a plate bearing teeth replacing those that had been lost. He has now given up morphia, takes only a moderate amount of stimulant, eats and sleeps well, and has resumed his ordinary occupation.

There are several points of interest in this case, but the question which interests me most is what was the cause of the necrosis, and was the phosphorus which he had taken in such large doses responsible in any way for the trouble which ensued. It is well known that inhaling phosphorus fumes is a fertile cause of necrosis in people who have carious teeth, but it is open to doubt whether phosphorous when absorbed through the stomach can produce the same effect. It occurred to me that phosphorous fumes might reach the mouth by eructation from the stomach containing the partially dissolved pills, but the patient denied having experienced anything
of the sort. On the whole I am inclined to think that the phosphorus was not the cause of the necrosis in this case. I regard it as a case of necrosis of dental origin in a patient whose vitality was at a very low ebb.

Acute necrosis of mandible. Pyemia. Death.—A boy, aged 7½ years, sat in a draught at school one day. The same night he complained of pain in the left side of the face. Next day his face was swollen and his temperature 105. Three days later rigors occurred, he was slightly delirious, and the swelling had extended to the parts below the jaw. I saw him on the sixth day of his illness and found the first molar quite loose and pus welling up around it on pressure. I removed the tooth, which was apparently quite healthy, and incised the swollen tissues in the neck freely. On the following day there were signs of peritonitis and pneumonia, and the child died eight days from the first onset of his illness.

I regard this case as one of acute infective panosteitis of the mandible, that is to say, an acute inflammation of the bone due to the action of microorganisms, probably the staphylococcus pyogenes aureus. Whether the case commenced as an alveolar abscess or not is comparatively an unimportant point. Inasmuch as there was no dental caries, the microorganisms must have reached the affected part through the blood stream and not through the mouth.

Alveolar necrosis of mandible involving mandibular nerve.—A young woman came to the hospital some two or three years ago, suffering from a carious lower third molar. There was very severe pain extending along the course of the mandibular nerve, and the skin over the chin on the same side was anesthetic. The tooth was extracted but the pain was not relieved. I passed a probe into the empty socket and detected dead bone, and a few days afterwards I removed a ring of dead bone. The pain did not subside at once but went away gradually. In this case the inflammatory trouble had evidently spread to the nerve and set up neuritis, which continued for some little time after the source of irritation was removed. I lost sight of the patient as soon as her pain was cured, so I cannot say whether the anesthesia was permanent.

Sinus discharging on gum, due to a buried stump.—This is one of several cases which have come under my notice during the last few years in which a tooth has been incompletely removed and a discharging sinus has been the result. My excuse for referring to
a class of case which is not very rare or very interesting is, that I
wish to impress upon you the importance of removing the tooth, the
whole tooth, and nothing but the tooth. Should a stump be
unavoidably left behind, it is well to inform the patient that further
treatment will be necessary. His confidence in your skill will not
be increased if he has to put up with a pus-discharging sinus for
months or years, and finds out eventually that it has been due to an
imperfect operation performed by you.

The patient was a man, aged about 30, who had had a sinus dis-
charging pus on the gum near the roots of the upper cuspid and
lateral incisor of the left side, which had been incompletely removed.
A probe passed into the sinus impinged on something hard, whether
dead bone or a buried stump I could not tell. Under anesthetics I
proceeded to expose the affected parts, but the operation was cut
short by the patient stopping breathing. We resuscitated him all
right, but deemed it wise to leave the operation unfinished, and as
might be expected no benefit resulted. I lost sight of the patient
for a year, when he again submitted to operation, and I removed
two buried stumps, scraped out the sinus, and effected a cure.

Necrosis of mandible (probably of dental origin), followed by
fracture of mandible during mastication.—This man came some
months ago with swelling of the lower jaw near the angle on the
left side. He had a carious molar extracted. It soon became
evident that there was rather extensive necrosis, for numerous small
pieces of bone came away from time to time, and eventually one
large piece about an inch long. One day when he was eating he
felt a snap. Next time we saw him we found that his jaw had
broken right across at the seat of necrosis, and that the anterior
fragment was overlapping the posterior.

The question that presented itself to us most forcibly was how we
should secure union and overcome the deformity sufficiently to
restore the bite. The fracture being near the angle, there was no
possibility of fixing any form of retentive apparatus to the posterior
or smaller fragment, therefore the choice lay between adapting some
form of interdental splint and wiring the fragments together. As
my dental colleagues did not seem sanguine as to the result to be
attained with the interdental splint, I decided to wire the fragments,
and with this object in view recommended him for admission to the
hospital as soon as the discharge of pus had ceased and the sinus in
the mouth had healed. However, when he arrived at the hospital a week afterwards he was found to have an abscess in his cheek and a temperature of nearly 105. Operation was clearly out of the question, so we opened the abscess from within the mouth. In a week's time the abscess had healed, and we sent him to a convalescent home to get into a better state of general health. On his return there was another abscess, this time pointing on the skin near the angle of the jaw. This we were obliged to open from without. I am afraid our chance of rectifying the deformity has now gone by, as there is firm fibrous union, binding the fragments together in their abnormal position.

Pain in the ear due to a carious lower third molar.—This case is an example of a fairly common condition. A nurse was sent to me on account of earache and deafness in the right ear. On examining the ear I found the membrana tympani healthy. I then examined the mouth and found the lower third molar on that side extensively decayed. The tooth was extracted and the pain was relieved. The deafness was due to eustachian obstruction, and was soon cured by inflation with the eustachian catheter.

Three cases of injury to the jaw inflicted by the surgeon during operations on the mouth.—A boy with a dentigerous cyst (follicular odontome) at the angle of the mandible. After the contents of the cyst had been evacuated I was trying to reduce the size of the cavity by crushing in the cyst walls; while doing so I felt the thinned and expanded bone break through. A four-tailed bandage was applied and the fracture united in due course without giving rise to any trouble.

A precisely similar accident happened to me whilst I was operating on a dental cyst in connection with a carious lower molar. In this case also the patient was a boy, but I was not aware that I had fractured his jaw until the first time I saw him after the operation. Good union occurred.

A short time ago I was operating on a lady's nose. During the operation the mouth was widely opened with a gag to enable me to pass my finger into the naso-pharynx. When the operation was concluded she began to talk unintelligibly, as patients often do when recovering from anesthetics. I paid no particular attention at first, but presently I heard her say "My jaw is stiff; I can't shut my mouth." Then I found there was a unilateral dislocation. On
reducing this her speech became at once clear and intelligible. She had recovered very quickly from the anesthesia, which had not been deep.

Tumor of submaxillary salivary gland. Operation. Collection of saliva in wound.—A medical student noticed a small lump the size of a marble in the left side of his neck close by the lower corner of the hyoid bone. I diagnosed it as an enlarged gland, probably tubercular. I removed the tumor and found that it was closely adherent to the lowest part of the submaxillary salivary gland. During the operation he had a sudden violent attack of coughing. This might have been due to the presence of mucus in the throat, but inasmuch as he took the anesthetic (chloroform) very quietly and nicely, I think it was due to stimulation of the superior laryngeal nerve during manipulation of the tumor.

The wound healed by first intention. When I removed the dressings and took out the stitches (a week after the operation) I found that there was a swelling just as big as that for which I had operated. In the meantime the supposed gland was subjected to microscopic examination and proved to be a new growth exactly resembling the tumor so often found in the parotid gland. My first impression was that the growth must be highly malignant and that recurrence had already taken place. In a few days, however, I was able to detect fluctuation. A tenotomy knife was then inserted through one end of the scar and about half a dram of viscid saliva evacuated. There was no further trouble. It is now about three years and a half since the operation and there is no sign of any return of the disease.

Tubercular glands of neck, secondary to carious teeth. Operation. Injury to parotid gland.—A young lady was sent to me by Mr. Frank Farmer. She had a lump in the left submaxillary triangle, obviously a glandular swelling. She had had some trouble with her lower molars on that side, which Mr. Farmer had treated. However, in spite of the removal of this source of irritation, which I have no doubt was the cause of the glandular enlargement, no diminution in size took place, so I advised her to have the lump removed. I operated and excised two tubercular glands. One of them was very closely adherent to the parotid salivary gland and had to be dissected off it, some of the lobules of the latter being injured in the process. I dressed the wound five days after oper-
ation and found it healed, but there was a fluctuating swelling about twice the size of the original glandular tumor. I reopened one end of the wound and drained away about two drams of clear watery saliva. The saliva continued to leak into the wound for a week. During that time I kept in a small gauge drain. The wound healed soundly and there has been no further trouble with it.

In this case it seems to me pretty clear that the tubercular infection of the glands below the jaw took place through the carious teeth. I believe that tubercular infection occurs in this way more often than is generally admitted. When we remember that tubercle bacilli have ready access to the mouth by ingestion of tuberculous meat or milk, and that tubercle bacilli have actually been demonstrated in the pulps of carious teeth, it is not to be wondered at that infection of the glands of the neck should occur. It is worth while mentioning that this patient was a healthy country girl with no tubercular history, either personal or family. I therefore hope that the removal of these tubercular glands has at the same time removed all tubercular infection from her system.—*Brit. Jour. Dent. Sc.,* April, 1898.

**ELONGATED UPPER MOLARS.** It often happens that the upper molars are elongated to such a degree as to prevent the use of antagonizing molars upon a lower partial denture. This difficulty can be utilized to the decided advantage of the patient. Let the base-plate be of modeling compound to give rigidity. Mount soft pieces of wax upon the base-plate and have the patient close the jaw naturally. The impression of the elongated molars is made in the wax and this can be duplicated in fusible metal. Where these teeth are not only elongated but present an oblique position, this method insures a more perfect occlusion and mastication even more thorough than if teeth were employed.—*J. A. C. in American Dental Weekly,* April, 1898.

**TREATMENT OF PULPLESS TEETH WITH HYDROGEN DIOXID, ETHEREAL SOLUTION.** By George S. Allen, D.D.S., New York. Read before the N. Y. Institute of Stomatology, Feb. 1, 1898. Notwithstanding the great amount of study and care taken by biologists and chemists, the production of an ideal germicide for stomatologists seems yet afar off. In medicine the chief uses for
which a germicide or antiseptic is employed are either to keep pathogenic germs outside the system or from open cuts or wounds, or to provide a serum that will render the system immune to their hurtful action. So far as the teeth are concerned, for reasons not necessary to mention, the main want seems to be to find a germicide that will either utterly destroy the germs of putrefaction and fermentation, together with the decomposing contents of the pulp-chamber and tubules of so-called "dead teeth," or form with them some indestructible and inert compound, one that will not be a menace either to the safety or appearance of the teeth afterwards.

None of the organic germicides, such as creosote, carbolic acid, or any of the essential oils, will meet the conditions. Most of them are simply antiseptics, temporarily only inhibiting the growth of germs. Very soon they become an additional source of danger, for in time they are acted upon by the germs and destroyed, and so add fuel, as it were, to the flames. A pledget of cotton soaked with any one of the above named agents and placed in the open cavity of a tooth in a few hours becomes offensive and exhibits all the characteristics of decomposition and destruction. Of all the agents employed that will act upon dead tissues and form an indestructible compound, formaldehyde, I believe, is the most effective. I am uncertain, though, as to the duration of the compound that is formed—that is, whether it is absolutely indestructible by the agencies in the mouth for any great length of time.

Formaldehyde is a gas that is held in solution in water. A forty-per-cent solution is generally employed, but it is not permanent, for even if kept corked it is constantly losing its efficiency. In a preparation that I have had for a year or so in my office, one can to-day hardly detect the odor by placing it to the nostrils. And the odor is usually very strong and pungent. It is, however, a very valuable agent, is a real germicide, and is rapidly growing in favor.

The action of hydrogen dioxid is that of a destroying agent. It unites with the organic products of a dead pulp and absolutely destroys them as well as the germs themselves. The dead material is carried away with the gases generated. Hydrogen dioxid is simply oxygenated water. The symbol of water is \( \text{H}_2\text{O} \). Hydrogen dioxid is \( \text{H}_2\text{O}_2 \). In other words there is an extra atom of oxygen united with the two atoms of hydrogen. Pure hydrogen dioxid is a heavy liquid which is a chemical curiosity and most dangerous to handle.
We know it only in its solutions—either the aqueous or the ethereal solution. The two solutions have somewhat different properties, although acting on the same lines. The \( \text{H}_2\text{O}_2 \), in breaking up, becomes \( \text{H}_2\text{O} \), plus the atom of oxygen liberated, and it is this atom of freshly liberated oxygen that does the work sought for. The ethereal solutions, five and twenty-five-per-cent, we are acquainted with are fairly permanent ones. The figures are accurate and really represent the strength of the solutions. They are caustics, but their caustic properties are not injurious and soon pass off. The treatment of a tooth containing a dead pulp with \( \text{H}_2\text{O}_2 \) is a very simple matter. The object desired is to bring it to an aseptic condition, and it is to this point more than all others that I wish to draw attention. The virtues of \( \text{H}_2\text{O}_2 \) as a bleaching agent have been heralded for several years, and in the hands of almost all good practitioners it has become an agent they cannot do without, its action being so quick, so certain and so satisfactory to both operator and patient. But no attention, so far as I am aware, has been drawn to the fact that these teeth ought to be treated with \( \text{H}_2\text{O}_2 \) or with some other germicide, not alone to bring about the natural color but also to restore the teeth to a healthy and so far as possible aseptic condition. I have been in the habit, since the first preparations were brought to our notice, of treating pulpless teeth, even molars and roots preparatory to capping, where discolorations would not be noticed, with \( \text{H}_2\text{O}_2 \) for the purpose of bringing them to a healthy condition, and the practice is proving very valuable. The treatment is, of course, the same that one would employ in bleaching—the apices of the roots being closed and the rubber-dam applied when possible; the \( \text{H}_2\text{O}_2 \) is freely used.

As to bleaching I would say a word. Many use a twenty-five-per-cent ethereal solution and some a five-per-cent for this purpose. Others still claim they obtain a more prompt and effective action by means of the electric (cataphoric) current. So far as I can see there is nothing gained by using the cataphoric current for bleaching purposes. There is no advantage in using the twenty-five-per-cent solution of hydrogen dioxid, and I always employ the five-per-cent solution. If a five-per-cent solution is used the evaporation soon reduces it to a twenty-five-per-cent solution, and by repeatedly swabbing out the cavity the desired change in color can be quickly obtained. I do not know that I have ever failed in my
effort to bring a discolored tooth back to its normal color. It is well to be cautious and stop a little short of the full measure of success. Then seal a small quantity of the five-per-cent solution in the tooth for a day, and usually no further treatment will be required. Bleaching can be and often is overdone. Great care should be exercised in guarding the adjoining teeth, if living, from the action of the agent. Even if the tooth be sound it may be affected, but if there happen to be an open cavity, there will surely be trouble and possibly intense pain, which may last for several days. A gold filling is only a partial preventive at best. To guard against these unpleasant sequences one must either isolate the tooth he is operating upon or else protect the adjoining teeth with a coating of wax or rubber in some way so that the \( \text{H}_2\text{O}_2 \) will not come in contact with them.

Whenever it becomes necessary to remove the pulp from a tooth the contents of the tubules also should be removed, for the latter are quite as likely to prove a cause of future trouble as is the pulp itself. In fact, it may safely be asserted that far too little attention has in the past been given to this point. It is only partly true that the dentinal fibres are hermetically sealed in the tubules after the pulp-chamber has been filled. The contents of pulp-chamber and tubules once removed, too great care cannot be taken to prevent the ingress of germs or germ foods in the future. \( \text{H}_2\text{O}_2 \) is, so far as I know, the only agent that will completely make way with everything objectionable.

In the treatment of deciduous teeth, when from absorption of the roots root-filling is impracticable, an easy and reasonably sure method of practice is, after the removal of the pulp and contents of tubules, to first sterilize the pulp-chamber and tubules by using the three-per-cent aqueous solution of hydrogen dioxid. The open ends of the tubules should then be closed with some preparation like cavatine, and the cavity and pulp-chamber only filled with gutta-percha or other soft filling material. A temporary tooth carefully treated and filled in this manner seldom gives trouble, and the absorption of the roots is not necessarily interfered with.

"The most satisfactory manner of obtaining absolute \( \text{H}_2\text{O}_2 \) for dental purposes is by immersing a pledget of absorbent cotton in pyrozone, twenty-five-per-cent solution, and allowing the ether to evaporate. To prepare a fifty-per-cent solution it will be found
most satisfactory to employ glycerin as the solvent. One tube of pyrozone, twenty-five-per-cent solution, should be poured on fifteen minims of glycerin and allowed to stand in an open dish until the ether has evaporated. The glycerin will then contain fifty per cent of \( \text{H}_2\text{O}_2 \). The uses of a solution of this strength will readily suggest themselves to the practitioner. Aqueous solutions of twenty-five-per-cent strength can be readily prepared by shaking the contents of a tube of twenty-five-per-cent solution with half a dram of distilled water and separating the mixture through a funnel, or better, by means of a pipette drawing off the ether floating on the top. The lower layer will contain the \( \text{H}_2\text{O}_2 \) in aqueous solution. Pyrozone, five-per-cent solution ethereal, can be prepared by adding the contents of one tube of pyrozone, twenty-five-per-cent solution ethereal, to half a fluid ounce of pure sulfuric ether. It is interesting to note the behavior of the different aqueous solutions towards nitrate of silver. If there should be any hydrochloric acid present, its presence will be indicated by a more or less flaky precipitate. A faint opalescence, however, does not indicate any acid reaction.

The twenty-five-per-cent ethereal solution comes in small tubes hermetically sealed. They can easily and without any danger whatever be opened. It is wise to cool the tube before making the attempt. Then hold the tube wrapped in a wet towel, gently cut the end with a file and break it off. Make the cut some distance back from the tip and point the tube away from the face.

The most convenient vessels that I have found in which to make the aqueous solutions are the one-dram (120-minim) glasses to be had at all druggists. Those with parallel sides are to be preferred. This aqueous solution, however, is not permanent. It can be kept for perhaps a week, but it gradually deteriorates and becomes cloudy and unfit for use, but as it is quickly prepared, one need not deny himself any advantages it may offer.

The aqueous and glycerin solutions of \( \text{H}_2\text{O}_2 \) do not seem to give the same amount of pain as the ethereal solutions, and this because the ether evaporates much more rapidly than the glycerin, and there would not probably be the same rapid disengagement of gas. I have within the last few days taken the twenty-five-per-cent aqueous solution and swabbed out cavities with it in living teeth when excavating, without saying anything to the patient, and no notice was
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taken of it. I make these remarks with some caution, because I do not know what further experiments in this line may lead to, so that I would advise anyone who thinks of using it to be cautious, because the pain that this \( \text{H}_2\text{O}_2 \) gives is greater than that caused by any other germicidal solution that we have; if we could get rid of that one objection, I think it would take the place of every other germicide for dental purposes.

Wishing to demonstrate the action of the ethereal solutions of \( \text{H}_2\text{O}_2 \), whether it would penetrate from the tubules through the cementum and to the outside of the tooth, I took this double root of a molar and coated the outside with wax, and also the exposed broken end, so that the only entrance for the \( \text{H}_2\text{O}_2 \) would be through the pulp-chamber; I then put it in a twenty-five-per-cent ethereal solution and left it for an hour. As will be seen, the tooth, which was very much discolored and quite dark, is now restored to its normal color outside as well as inside, showing that the action of the \( \text{H}_2\text{O}_2 \) has been through the tubules and cementum, and that if the treatment had continued a great length of time there would have been pain in the socket of the tooth from the penetrating property of the gases through the whole thickness of the tooth to the periodontium. In bleaching teeth in the mouth I have many times obtained the same results. I have seen a portion of the roots exposed, stained dark yellow or brown, and restored to their natural color, the exposed portion of the root as well as the crown, and wholly from the action of the \( \text{H}_2\text{O}_2 \) in the pulp-chamber. Enamel is likewise penetrated by it through the dentin but more slowly.—*International Dental Journal, April, 1898.*

* * *

SHOULD WE DRINK AT OUR MEALS? In an interesting and somewhat historical article, Dr. C. A. Ewald, of Berlin (*Zeitschrift fur Krankenpflege*) discusses this mooted question at some length. He considers soup, because of its small percentage of nourishing material, merely as fluid; he states that, aside from what is directly taken as drink, much fluid reaches the stomach during a meal, through the sauces and from the water percentage (both natural and by cooking) of the meats, vegetables, etc. Most persons feel the necessity of adding more fluid to the meal by drinking either ordinary water, carbonated waters, or alcoholic beverages. The more one eats, generally the more one drinks, and the greatest
eaters are generally the greatest drinkers. If drink be prohibited, the amount eaten is less; indeed, on the above very greatly depends the secret of the "Schweininger cure" for obesity. It is a well-known fact that if the appetite is weak and the mind and nerves are somewhat relaxed, a drink of water will excite the appetite and stimulate both brain and nerves; and this is due directly to the fluid and not to alcohol contained, for we find these facts the same in abstainers. The more fluid in the way of drink is added to the gastric juice, the greater is the quantity secreted; hence the greater the tax upon the gastric glands. Under normal circumstances, however, the stomach without detriment accommodates itself to a range of large quantities of fluid. Ewald says that much of the fluid passes into the intestines, another portion is absorbed; hence there never is in the normal stomach a stagnation of large quantities of liquid. The widely accepted belief that alcoholic fluids (not taken to the point of toxicity) retard digestion does not seem to be borne out by the recent experiments of Chittenden. Not even whisky and brandy seemed to retard digestion. The proteolytic power of the stomach and the power of the pancreatic juice are uninfluenced by small quantities of alcohol-containing fluids. The extraction of body warmth through cold drinks the writer considers as very much overrated. He attributes the bad effects of such drinks to irritation of the stomach mucosa, which becomes, therefore, a possible starting-point for acute or chronic inflammatory conditions. In the normal stomach the author concludes that not only does drinking at meals, within certain limits, not interfere with digestion, but it even aids this process. With patients suffering from stomach or other diseases, however, the case is different. Drinking *ad libitum* cannot be allowed. To the question, Shall patients drink nothing with their meals? Dr. Ewald answers that he sees no reason why small amounts of fluid should not be allowed, excepting to patients suffering from dilatation of the stomach. As above shown, fluids, and particularly alcoholic and carbonated fluids, will even in limited amounts aid digestion and increase the appetite and will more than counterbalance the so-called ill-effects of drinking at meals, viz., the possible slowing of digestion, the dilution of the solid constituents of the meal, the overburdening of the stomach, a very improbable lowering of body temperature, etc. Even admitting that such effects do occur, the question of drinking before, during or after meals Dr.
Ewald considers as belonging to the hokus-pokus of suggestion therapy; the physiological act is not influenced if fluid is taken one-half hour sooner or later. The fluid should not be very cold; further, we must follow the indications of the disease and as far as possible the wish of the patient. Naturally alcoholic fluids that have a direct local irritating effect will be withheld, e. g., in ulcer of the stomach, new inflammatory processes, necrosing neoplasms. Another question is, How far shall we allow abnormally increased thirst to be quenched, as in diabetes, fever, and some chronic diseases? The writer answers that the thirst should be quenched with as little liquid as possible. This is particularly true in cases of stomach dilatation, when the patients have the tendency to drink large quantities, partly because stomach absorption is very slow and imperfect. Moreover, though this seems paradoxical, thirst may be lessened by forbidding water as a drink. Then, too, thirst often depends upon dryness of mouth and pharynx; so frequent moistening of the mouth and gargling will often lessen thirst.—Medical Record, April, 1898.

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TWO POINTS. M. A. Mason, D.D.S., Fort Wayne. A neat little marker to use on broaches in measuring root-canals is the little round rubber waste made by using the punch on the rubber-dam. A broach will easily pierce the rubber, which can then be readily adjusted to any length.

A practical point came to hand to-day that may some time be of use to some of your many readers. A young lad of tender years was taken by his mother to the dentist. He was very brave and talkative until seated in the operating-chair preparatory to an examination, when he absolutely refused to open his mouth. After considerable persuasion on the part of the mother and the dentist, without avail, the mother, impatient with her offspring, grasped him by the nose and shut off his supply of air until he was compelled to open his mouth.—Indiana Dental Journal, April, 1898.

PARISIAN LADY SPECIALIST.—A lawyer writes to The Lancet, asking who was Dr. Marion Sims. Being a layman, he says, he had not heard of him, "but," he continues, "I happen to have seen the other day a circular bearing the name of a chemist not unknown, describing something invented by the 'late Dr. Marion Sims, a famous Parisian lady specialist.' I once heard of a man who took Marion Crawford down to dinner, and found her a most charming and accomplished lady. If this is a parallel case it might amuse your readers to hear of it."
To the Editor of The Digest,

Mr. Editor:—On the 16th inst. the Central Dental Association held its last meeting until fall, and as usual it was well attended. Dr. Dwight L. Hubbard read a paper on "Some Contributory Causes of Disease of the Antrum—Preventive Treatment." It was a practical and scientific exposition of this often troublesome disease. Dr. Hubbard is dean of the New York Dental School, which he is raising to a high standard of excellence by his energy and zeal. He is a valuable acquisition to the corps of dental instructors. His manner is attractive and his address forcible and clear.

The C. D. A. always has music during the banquet which precedes the meeting, and this time we had several members of a stranded opera troupe. We have before taken advantage of a like state of affairs to secure some fine talent.

At the opening fall meeting Prof. Trippler has positively promised a paper on liquid air, and also to perform some of his wonderful experiments. This agent bids fair to come into practical use in dentistry, and we await its development with great interest.

We understand that the board of examiners wrestled with eighteen or twenty candidates at the recent meeting, for the first time under the new law. We do not know how many failed to pass, but some were not successful. As usual, New Jersey is receiving its customary pounding from some of the dental journals. It is noticeable that two of the editors who have attacked the law are also college professors. It would seem that their criticism was not altogether unbiased. Blessed be New Jersey, in that she has no dental college to have her board influenced by college men.

The section of the new law which the International attacked, which allows a person to come before the board upon a certificate signed by five reputable practitioners, attesting his fitness and character, is in reality a step in advance, as is the Massachusetts law. If anyone can successfully pass the practical and theoretical examinations of the board, and has the necessary preliminary education,
why should he not be allowed to practice? Further than that, New
Jersey does not allow class legislation, as it is unconstitutional, and
to prevent any but college graduates from being eligible for license
is class legislation pure and simple.

All our energy is now directed toward making a great success of
the summer state meeting, which is to be held at Asbury Park, July 21-23, and everything bids fair for a large attendance and an
interesting and practical meeting. The various committees are
gathering their material together, and reports were made to the
officers at the C. D. A. meeting.

At the meeting of the New York Institute of Stomatology on the
3d instant the society was successful in drawing to the afternoon
meeting about eighty men from New York, New Jersey and the
Eastern states, which was an excellent showing. The papers at
the afternoon meeting were upon the one subject of independent
journalism, and it looked very much to an outsider as if it were an
effort to boom a certain dental journal. There was a dinner at the
hotel between the meetings, which was well attended, and Jersey
men were there in abundance. It was equal to the dinners of the
C. D. A., which is as high praise as we can give. At the evening
meeting a very undignified and uncalled-for attack was made on one
of the editors present, who was a guest of the society. It was read
from manuscript, so was not called forth upon the spur of the
moment, and it cannot be seen what excuse could be offered for this
indignity. The person against whom it was directed was gentle-
manly enough to pass it by without any answer, which clearly gave
him the vantage-ground.

We hear that New York has gone New Jersey one better in its
dental law just amended. Cannot find out just what it is, but
know that it makes it much harder for the dental parlors to exist.

The New York State meeting is a thing of the past. It was a
very large and successful convention, the best and finest for a num-
ber of years. The lobby of the Kenmore was well filled with prom-
inent dentists from all over the state, as well as some from the
adjoining ones. The papers read were above the standard and were
well received.

The question of forming an Eastern branch of the National Den-
tal Association was brought up during the meeting as advertised.
It was fully discussed and practically killed by being referred to the
meeting of the National in August. It was the concensus of opinion among a number who were spoken to about the subject previous to the meeting that it was ill-advised and savored too much of politics, which they have been trying so hard to eliminate.

There has been considerable discussion about accommodations at the Omaha meeting by a number of persons in the East, and serious objections have been raised about going there. Many have favored Chicago and some have mentioned other places that could properly look after the comfort of members. Cordially yours, Hornet.

**NEW YORK LETTER.**

*To the Editor of the Digest, New York, May 20, 1898.*

Mr. Editor:—The New York Institute of Stomatology opened the series of meetings May 3 that will follow from now on to autumn. There was material for much mental acting and we had it, as will be made known by the published proceedings. We are glad to add that the meeting was a decided success, in a goodly number of well prepared papers, freely discussed, and a menu that was a credit to the proprietors of the Windsor Hotel. To be sure, there was a marked absence of familiar persons. This is easily accounted for in New York, as the split in the odontological society has taken on a seeming decision to stay split, although there is a little backward leaning from both sides, but not enough to indicate an entire willingness to let bygones be so. While it is a subject of no little regret by many, it looks as though the break were irremediable.

Among those from outside New York was the venerable John B. Rich of Washington. Hale and hearty at 87, and daily at his chair. He looks his age in the face a little, but his figure is erect and vigorous. His mental action not at all abated and his voice as clear as one of fifty. In his debate he struck with all the strength and courage of his convictions against curbing the disposition to patent the improvements of dental auxiliaries, while not at all encouraging secret nostrums or processes. He did not say much to encourage the hopefulness of independent journalism, except as men would put their hands liberally in their pockets and help on by funds.

Dr. Meriam, of Salem, Mass., a greater man than ever, did credit to his ability as a debater. He stood close by President Elliot, of Harvard College, in all his denunciation of unprofessional dealing of professional men in patents. Dr. Meriam is a nice gentleman
and a credit to New England. He is not in "ladies' delight" cultivation any more, although once he excelled in that line, and for several years when he visited the Odontological Society of New York brought a box of his finest and gave out a beautiful boutonniere for each one. Latterly he has given attention to raising boys for college and has a son in Harvard.

Dr. Potter is a good specimen of Boston's best. His paper was conservative and very forcible in composition. Boston need not fear from more of such stamp of men.

"Plymouth Rock" Shumway is a jovial good fellow and added a genial talk. One laughs all the time while listening to him. He thinks there is little danger from patents, because most of them are good for nothing. He has tried it and found that his proved so.

The venerable father of Dr. Davenport, of New York, was present from Northampton, Mass.

Professor Litch was felicitous in his talk and conservative, trained and cultured—a good representative of Philadelphia.

Dr. Jack turns up firm and decided every time. Independent journalism is fully on his heart.

Baltimore is very fortunate to be represented by so able an advocate as Dr. B. Holly Smith. He is a careful thinker and writer. His closing peroration, from the songs of Solomon, was beautiful.

One dentist present said to us that he almost thought in reading the last New York letter that we had written it, and he said a good many things in a nice way, just as we aim to do. This reminds us that we were told by a good fellow of the craft that we say "so many good things of so many men. Do you mean them?" We replied, "How does it strike you when we mention you?"

Dr. St. John Roosa opened the discussion of the evening from a medical man's standpoint, and showed that the medical fraternity has enjoyed all the improved help in their profession by a complete absence of patent aid. As one of his profession said to us, "Dr. Roosa is a king pin among his fellows." He has risen to eminence as an aurist, both as a writer and practitioner. He has been foremost, as we emphasized in some of our former letters, in securing immunity from the old written code of ethics for the medical fraternity of New York State, so that medical men have the privilege of consulting with any other member of the profession, of whatever party. He declares that instead of its being in any sense a detri-
ment, it has given a decided impetus in advance, although they are debarred from participating in the American Medical Association. Bigotry can foster only narrowness and be a hindrance to the best interests of all that belongs to the helpfulness of mankind.

Dr. Davenport, of New York, made the point of the evening, we think. He said we have arrived at a period of development that calls upon us to produce an avenue for strictly professional lines; and in no way can we so emphasize our ability as professional men as by a strictly professional journal. Say what we may, there is \textit{esprit de corps} in our calling, and the disintegrating results that are so manifestly apparent in these days come from a lack of recognition of the fact. Dentistry is a humanitarian calling and there is no escape from the moral obligation that holds us to the professional character of our position, although we are in much danger from the grasping commerce of the day, and we do not believe we are going to see any decrease from it until the end of the age comes.

Dr. Bogue, the president, felicitously said in closing: "Christi-
nanity will not convert the world in our day at least, nor will altru-
istic doctrines prevail, but we can improve and we should do so.

It was intimated that the new national body will be asked to con-
sider the proposition of a truly professional journal, but the trade journals will fill the place for which they are fitted. There is a demand for them and it will be satisfied.

There is a rumor that Dr. Farrar is not well. We say Stop! put down the books and go to Europe. No man has a moral right to go to a premature grave, and Dr. Farrar is too useful a man to break down in his prime of good judgment.

We are glad to report that Dr. Norman W. Kingsley is much improved in health.

Queer report from the Washington correspondent concerning a law-suit for illegal practice in dentistry. So we know it all? It does not look as though we did from expert testimony. Jurispru-
dence is much needed in our line. If ever much of our legislation gets an airing before a court of legal knowledge, we shall find that would-be legislators of dental law have overdone things.

What a statement this, "Only one oral surgeon in the United States." What would our dear and much-admired Garretson say if he could speak? We have omitted to say that these remarkable sayings are published in the May number of the \textit{International}. 
The writer of the letter has much ability as a letter-writer, and is only emphasizing the facts as they came before the court of the District of Columbia.

We are soon to be electrified with another marvelous invention from California, and from what we hear it will make us look up.

We have but lately learned of the death of another of Brooklyn’s favorite dentists, Dr. Elmendorf. He was one of the early members of the Brooklyn Dental Society, and no member was more popular. His musical abilities were very entertaining, and often gave pleasure to the society at its banquets. He had a large practice and was much liked by his patients.

Professor Truman’s editorial in the May number of his journal shows that the indications are not favorable for harmony in the new national body. We think the editorial quite right—that it is too soon to consider the formation of auxiliary bodies in the four corners of the country. Professor Truman sees only a repetition of methods that have worked ill for the American Association. We hold that merit is the prime requisite for permanent membership, and to have a truly professional association succeed it must be on a basis of true professional attainment.

A dentist who has held the office of president in many societies, both state and local, said to us within a week, “I have lost my interest in our state society and do not think I shall attend its meeting this year. The time is spent so foolishly over matters that are of so little interest, to say nothing of profit.” We are glad to learn, however, that the recent state meeting was well attended and very profitable.

The New York Odontological Society has held its May meeting. The clinics were largely attended and a decided interest was manifested. Why not, when something is given that will interest? Most men know a good thing when they see it. Dr. Jackson never fails to interest, for he has something to show and shows it in a skillful demonstration. Dr. Guilford always fills the bill.

It goes without saying that Dr. S. G. Perry has a gifted way of doing things, and he puts on the poetical touch as he goes along. Poetry is worth much, for like music, it borrows a ready ear from the fearing patient, and moreover, if Dr. Perry does not prevail with his poetry, he has a fiddle which makes them dance (with delight).

Our calling is prolific with fertile ability. Dr. John H. Meyer is
"at home in the ceremonies," as the late Dr. Crowell termed it. We want more of it. We mean anomalies in artificial teeth, but how many dentists are ready to pay over fifteen cents for teeth?

We are more and more convinced that skill is what brings big fees. Professor Harlan said a good thing on his last visit to New York. "Is there any reason why I should not receive good compensation for surgical services in treating pyorrhea when I have devoted my time and talents (what I have) to make myself proficient?" When another dentist says, "All I can charge is fifty cents, or possibly one dollar, for "cleaning teeth," we say "amen." That is the way to put it.

Cordially,

NEW YORK.

PHILADELPHIA LETTER.

Dear Digest:

PHILADELPHIA, May 20, 1898.

While Philadelphia is the recognized cradle of liberty and is taking much and active interest in the present conflict, which is waged to free fellow men from bondage, and while we all take great delight in Admiral Dewey's superb naval victory at Manila, and in President McKinley's firm hand over the whole situation, yet the war smoke has not clouded the professional atmosphere hereabouts in the least. Since our last letter the Academy of Stomatology has been favored with essays from two most valued practitioners—Dr. Perry of New York and Dr. Peirce of this city.

Dr. Perry's theme was the "Cervical Border," and he handled it in a very entertaining way. He felt it was a dry subject, but we fear most of us have found it at times to be a rather moist one. The Doctor presented some novel hand matrices and pluggers which added to the interest of the subject.

At a later meeting Professor Pierce presented an essay upon "Comparative Odontology." No one in the profession can speak upon this subject with more authority than Dr. Peirce; he has always been a close student and has enjoyed the personal friendship and association of many of the scientists of our time. The Doctor's discourse was very able and elaborate, being illustrated with many charts and natural specimens. The theory of Weisman, that acquired characteristics cannot be transmitted, Dr. Peirce did not accept, as he believed that modifications of structure which were advantageous to the animal were transmitted, and in this way not
only new varieties but new species might be or were established. If this were not the case the evolutionary theory, that all beings were but modifications of preexisting forms, would certainly not be sustained.

Our predecessor, "Quaker," at one time referred to the excellent library in the possession of this society and to its librarian, Dr. William H. Trueman. This gentleman is one of the rare dental practitioners of this city of brotherly love. He is a conservative, conscientious worker, a thorough gentleman, and a man of unusual mentality. Dr. Trueman, like many others, has a hobby, and it shows itself in his library. He collects all of the old and rare works bearing upon dentistry that he can lay his hands on, and when he goes abroad during his vacation seasons he visits the old bookstores and stalls and usually resurrects some valuable work. The Doctor is a great reader and has a retentive memory, and we always consider it a pleasure and a privilege to chat with him, especially upon the evolution of the dental profession. It has on several occasions been suggested that Dr. Trueman write a history of dentistry, which we hope he will think favorably of. There is no one better fitted for the task than he, and the work no doubt would prove something more substantial than a labor of love.

The young salesman (representing a Western supply house and misrepresenting Dr. Crouse and "Fellowship" alloy) of whom we wrote a few months ago, is in town again. He has yet to favor us with a call, but we get it from good authority that he is anxious to meet us. He has been converted, no doubt, and wishes to thank us for starting him on the right road. That was our object in speaking of him as we did, to show him the folly of attempting to do business upon other than business principles, and we learn that he appears to be a wiser but sadder man.

The funeral services of Dr. Thomas W. Evans, celebrated as the American dentist in Paris, who died in Paris some months ago and whose remains were brought from that city this week, will be held next Wednesday afternoon, the 25th, at St. Mary's Episcopal Church. Pending the erection of the mausoleum provided for by Dr. Evans' will, the body will remain in the receiving vault at Woodland Cemetery. A most remarkable and eventful career is ended, and all that is mortal of the man comes back to the place of his birth to repose. Fraternally, 

THE SPECTATOR.
THE DENTAL DIGEST.

Baltimore, May 21, 1898.

Dear Digest:

Sir Lucius O’Trigger says, ‘An offense handsomely acknowledged becomes an obligation’; but not to be able handsomely to acknowledge dereliction brings a fellow grotesquely on his marrow-bones. That I have not lived up to my opportunities in the last two issues of the Digest is not because I do not appreciate the honor or distinction conferred upon me by association with the gentlemanly and scholarly scribes, who more faithfully perform their duties; not that I am altogether above the flattery of seeing my drivel printed in a clean, well-edited journal; and again, not that I am unmindful of the delicate, not to say unmerited attention and comment of the Regulus of the Items of Interest, but simply that I am affected with human limitations and an Arab nature.

How’s that for a bird of bright plumage? Some one will call me a terrapin next. All right, so it is not a western slider, but a real Chesapeake diamond-back; then I think I might get our friend the editor of the Items over to Rennert’s some night and persuade him that I am not a bad bird, and I would even engage to convince him that there are no bad birds connected with the Digest.

By the way, three months ago I was of the opinion that every editor, every college professor, every member of an examining board, was spoiling for a fight, and when the war broke out the only question in my mind was as to how the government would make room for anyone except dentists in the army. Lowell says: ‘The course of events is apt to show itself humorously careless of the reputation of prophets,’ and so it has happened in our section. No doubt all the Western dentists have gone to war, but South it is not so. Indeed, I asked the colonel of a regiment in the Carolinas last week if he had any dentists in the state troops and he said no; he had tried to get one but he slipped off a day before the regiment started; he hadn’t turned up; probably he had drowned himself. Well, I don’t know; we ain’t so warlike; who’s afraid? I’ll sass all I please. I give fair warning, however, that my scolding must not be taken for a manifestation of warlike spirit; I am fashionable, if anything.

I am delighted to notice on the program for our tri-state meeting, to be held June 3-5, three names from Chicago—Talbot, Cigrand and Crouse. This Western contingent will be welcome and no doubt
will do us good. The presence of the editor-in-chief will be a treat and will give to our meeting a sort of natural aspect. By the way, why doesn’t he change the first letter of his name to G; then he would be Grouse—not necessarily of the ruffled character, though even that would be acceptable if it extended a long-standing cordial friendship into kinship, and our flocking would then be still more delightful.

Our examining board has suffered a great loss in the resignation of the president, a high-toned, zealous man, in whom the professional spirit is accentuated as it is in few. He has been a guiding spirit in dental legal matters for years, and while in our judgment not always right, he has always been clean and above suspicion of intentional wrong. We are sorry to lose him.

The ideal features proposed as amendments to our dental law failed of passage before the legislature, as did many other good measures. The character of that body was so thoroughly known to those who favored the changes, and the amendments of the quacks were so dangerous, that it seemed wise not to urge any change until we had more decent legislators to deal with.

I will let you hear from the meeting, which promises to be a corker.

Cordially,

ORIOLE.

To Avoid Inhaling Patients’ Breath.—Dentists could save themselves from the unpleasantness and unhealthfulness of inhaling their patients’ breath while performing long operations, by placing a sheet of paper from a gold-foil book before patient’s nose, securing it under the dam and elastic fasteners. It also prevents moisture from the breath coming in direct contact with the gold while packing.—G. H. Reynolds in Dom. Den. Jour.

Drinking Water.—Schumburg has thoroughly gone into all known methods of purifying drinking water, and finds that bromine is the only disinfectant which can be removed after serving its purpose, without spoiling the appearance and taste of the water. The quantity of bromine used is very small; a kilogramme is sufficient to sterilize 16,000 litres of water. The author uses the bromine in the following solution: Water, 100; potassium bromid, 20; bromine, 20. 0-2 C.C. of this solution is sufficient to sterilize in five minutes 1 litre of water from the river Spree. The calcium salts or ammonia of very impure river or surface water use up some of the bromine before it has had time to develop its disinfectant properties. In such cases enough must be added to cause a slight yellow coloration of the water, which should last at least half a minute. The 0-2 C.C. of bromine solution may be removed by adding an equal quantity of 9 per cent ammonia.—Pharm. Zeitg., xlii., 174.
MORE SOCIAL INTERCOURSE IN OUR PROFESSION.

When it is remembered that the occupation of the dentist necessarily confines him exclusively to his office during business hours, where he comes in contact with a very limited number of people, it can readily be understood how such a life must shut off the broadening influences which contact with numerous people gives in most other occupations. We scarcely see any other individuals except the patients under our immediate care, and with these the important duty of serving each patient properly, combined with the pain inflicted in so doing, makes our intercourse with them anything but pleasurable.

For these reasons it is especially important that the dentist should devise ways of having more social intercourse with his fellow men, and especially with his fellow practitioners. There is no good reason why practitioners in small towns, as well as in larger cities, should not have social relations and clubs to a much greater extent than they do. Such intercourse would lead to much good in various ways and benefit all professionally and otherwise. It would be a practical remedy for much of the littleness in the dental profession which often goes under the title of "small potatoes."

Where this sociability exists it makes its impress on each individual. It need not be wholly confined to regularly organized dental societies. Small clubs of a social nature made up of dentists would do much good. The most that is done at present is in the regularly organized dental societies, and the plan of these necessarily shuts out much of real sociability, the earnest work consuming the time and energies of each individual. Yet even the dental meetings, aside from their educational advantages, do much to give good feeling and to broaden the characters of the members.

The lamentable part of the whole matter is, however, that so far we have reached only such a small proportion of the whole number of the profession through the dental meetings, while the great mass
of dentists continue to lose these benefits both intellectually and socially. While it cannot be hoped that practitioners of long standing will ever unite with these societies to any great extent, if they have not already done so, surely the graduates and new comers can be brought into closer relationship with their profession. We often wonder if this lack of sociability in our profession is the fault of those who give their first impress to dental practitioners—the college teachers—or is it due to the material of which the classes in our colleges are made up. Who will answer?

**SECTIONAL BRANCHES.**

We learn before going to press that the completion of the eastern branch of the National Dental Association was deferred until the annual meeting. We think the delay a wise one, as it seems to us an open question whether sectional branches such as contemplated in this movement will be a benefit or hindrance to the national organization. At any rate the necessity for, or the benefits to be derived from these branches has never been made clear to our mind. On the other hand, we can see how they may be detrimental to the National Association. This may be our lack of full comprehension of what is expected to be accomplished, however, and we would like to see a well-defined plan of the workings of these branches in type.

There is one important change in the plans of the National Dental Association which must not be lost sight of in the formation of these branches. We refer to the change in the future membership of the National Association. The fact that only state societies can send delegates to these meetings, and these are organizations which meet only once a year, must change to a very great extent the character of the work to be done by the National as now arranged. All new members of this association coming from state societies must naturally attend to the interests of the society they represent. Heretofore all local societies and colleges were entitled to representation by delegates; consequently more varied interests were represented and considered.

We are free to admit that the work heretofore done by the American Dental Association was not nearly what it should have been, and perhaps this limiting of members to state societies will bring about a better working organization, but this change in representation was adopted for other reasons than this. It is the most radical change
in the plans of the new organization, and in time if continued will change the character of the membership and nature of the work previously done by each society which now constitutes the National Dental Association.

The question that arises in our mind is, is the membership of these branches confined to members of state societies, or is it to be made up of members of the profession belonging to other organizations. In other words, are these branches to be composed of men who shall represent the National Dental Association, or are these branches to be advisory only, without power of enforcing their plans?

It is needless for us to mention here that we think that confining the representation to members of state societies is a mistaken plan.

What we hope to see is one great organization which each year will represent the good of all the societies in the United States. This can be brought about only by the most earnest efforts of the organizations now in existence. If forming sectional branches will aid in getting this needed cooperation of local societies, it will be sufficient reason for their formation, but as yet it has not been shown that such organizations can be of any assistance in this direction in the association. Let us have a well-defined plan that we can study.

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**Notices.**

**CHICAGO COLLEGE OF DENTAL SURGERY.**

The sixteenth annual commencement of the Chicago College of Dental Surgery was held April 6, 1898, at Central Music Hall, Chicago.

**SOUTH DAKOTA DENTAL SOCIETY.**

The annual meeting of the South Dakota Dental Society will be held at Madison, June 1-3, 1898. An exceptionally good program is to be rendered. D. St. I. Davies, Chairman Program Committee.

**MISSOURI DENTAL COLLEGE.**

The thirty-second annual commencement exercises of the Missouri Dental College, Dental Department of Washington University, were held at the Fourteenth Street Theater, St. Louis, Thursday evening, April 28, 1898.

**CALIFORNIA STATE DENTAL ASSOCIATION.**

The twenty-seventh annual meeting of the California State Dental Association will be held at San Jose, Cal., beginning Tuesday, June 21, 1898, and continuing four days. Frank C. Pague, Sec'y.
NOTICES.

BIRMINGHAM DENTAL COLLEGE.

The annual commencement exercises of the Birmingham Dental College were held at O'Brien's Opera House, Birmingham, Ala., Tuesday evening, April 5, 1898. The annual address was delivered by Judge J. J. Banks, and valedictory by Dr. H. T. Hamblin of Texas.

NORTH DAKOTA BOARD OF DENTAL EXAMINERS.

The next meeting of the North Dakota State Board of Dental Examiners will be held at Fargo, N. D., July 12-13, 1898, and a meeting for the reorganization of the state dental society immediately following on the 14th and 15th. 

H. L. STARLING, Sec'y.

G. V. BLACK DENTAL CLUB.

At the second annual meeting of the G. V. Black Dental Club, held May 5, 1898, at Minneapolis, the following officers were elected for the ensuing year: President, Dr. Glen F. Andrews; Vice-President, Dr. James E. Weirick; Recording Secretary and Treasurer, Dr. J. Milton Walls; Corresponding Secretary, Dr. Russell W. Berthel. J. M. WAlLS, Sec'y.

TO NEW JERSEY DENTISTS.

Notice is hereby given that dentists who desire to become members of the state society at the annual meeting at Asbury Park, July, 1898, will be enabled from this date to secure the necessary blanks and information, thereby saving time and securing the early action of the membership committee on all applications. WM. E. TRUEX, Chm. Membership Committee.

NORTHERN IOWA DENTAL SOCIETY.

The fourth annual meeting of the Northern Iowa Dental Society will be held at Waterloo, July 5-7, 1898. An excellent program is being prepared, and an interesting and profitable meeting is expected. The Waterloo Chautauqua Assembly will be in session, and all who attend the meeting will have an opportunity to take in some of the best numbers on the program. Reduced rates on all railroads. WM. H. STEELE, Sec'y.

WISCONSIN STATE DENTAL SOCIETY.

The twenty-eighth annual meeting of the Wisconsin State Dental Society will be held at Madison, July 19-21, 1898. A cordial invitation is extended to all dentists in the state of Wisconsin who are not members of the society, and also to dentists of other states, to attend the meeting. An interesting program has been provided. The hotels and railroads will make the usual reductions.

W. H. MUELLER, Sec'y. R. G. RICHTER, Pres.

MISSOURI STATE DENTAL ASSOCIATION.

The thirty-fourth annual meeting of this association will convene at Merrimack Highlands (near St. Louis,) July 5-8, 1898. All dentists practicing in the state who are not members of the association and wish to become such,
and dentists from other states, are cordially invited to attend. When purchasing your railroad ticket remember to secure certificate from ticket agent so that a rebate can be secured on return ticket. A large attendance is anticipated and we are assured of a profitable meeting.

H. H. SULLIVAN, Sec'y.

NEW JERSEY SUMMER EXAMINATIONS.

The New Jersey Dental Examining Board will hold the summer examinations at the commission rooms, 88 Broad st., Elizabeth, commencing July 5 and lasting three days. All applications must be in the hands of the secretary before June 21. Attention is called to the new dental law of the state, which requires preliminary education equal to a high-school education in New Jersey. Candidates who have not the necessary papers to show this standard will be given an examination under the supervision of the State Superintendent of Public Instruction. All preliminary examinations must be finished before the application can be accepted.

G. CARLETON BROWN, Sec'y, 88 Broad st., Elizabeth.

NEW JERSEY STATE DENTAL SOCIETY.

The twenty-eighth annual session of the New Jersey State Dental Society will be held at Asbury Park, July 20-22, 1898. The commodious and pleasant "Auditorium" has been secured for the sessions, with unlimited space for clinics and exhibits. Papers and clinics from many eminent dentists have already been secured. Preparations are being made for the largest display ever before given of electrical appliances used in dentistry. One hundred and ten and 500 volt currents will be attainable, and those having water motors to present can be accommodated with high water pressure. The Hotel Columbia adjoining has been secured for headquarters for members and visiting friends; the rates will be $2.50 and $3 per day.

CHAS. A. MEAKER, Sec'y.

TRI-STATE MEETING.

The tri-state meeting of Indiana, Michigan and Ohio will be held at Put-in-Bay, Ohio, June 21-23, 1898. This meeting will be one of the largest and most interesting of the year, and we would urge all dentists who can to attend. The railroads have granted the usual fare-and-a-third rate.

Delegates from Chicago and the West should take the Michigan Central Railroad to Detroit, where connection is made with steamers for Put-in-Bay. Full particulars regarding transportation arrangements, rates, etc., can be obtained from Mr. L. D. Heusner, general western passenger agent, 119 Adams st., Chicago.

ILLINOIS STATE DENTAL SOCIETY.

At the annual meeting of this society, held at Springfield, May 10-13, 1898, the following were elected officers for the ensuing year: Dr. Chas. P. Pruyn, Chicago, President; Dr. A. S. Waltz, Decatur, Vice-Pres.; Dr. A. H. Peck, Chicago, Sec'y; Dr. E. D. Swain, Chicago, Treas.; Dr. C. R.
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Taylor, Streator, member of Exec. Com.; Dr. A. W. Harlan, Chicago, member of Com. on Dental Science and Literature; Dr. J. E. Keefe, Chicago, member of Com. on Dental Art and Invention; Dr. W. E. Holland, Jerseyville, Dr. W. A. Hoover, Gibson City, Dr. P. J. Keater, Chicago, Com. on Ethics; Dr. L. W. Skidmore, Moline, Supervisor of Clinics; Dr. Garrett Newkirk, Dr. J. H. Prothero, Dr. H. J. Goslee, all of Chicago, Local Com. of Arrangements. 

A. H. Peck, Sec'y.

LATEST DENTAL PATENTS.

602,084. Arm-support for dentists, Lauritz P. J. V. Kjoer, Copenhagen, Denmark.


603,524. Electric dental engine controller, James J. Coachman, Rio Janeiro, Brazil.


TRADE-MARKS.

31,458. Preparation for the painless treatment of irritated pulps, Gustav Scharmann, New York, N. Y.

(List furnished by John A. Saul, patent attorney, Washington, D. C.)

NATIONAL DENTAL ASSOCIATION.

The next annual meeting of the National Dental Association will be held in Omaha, commencing Tuesday, August 31, 1898.

Attention is called to the fact that all who were members of the American Dental Association and of the Southern Dental Association at the time of the formation of the National Dental Association, are now members of the latter organization.

The constitution, article iii, section 5, provides as follows: "It is hereby specially provided that all persons at present permanent members of the American Dental Association and of the Southern Dental Association are permanent members of this association and entitled to all the privileges of the class to which they belonged without further action, and the treasurer is hereby directed to transcribe their names upon the roll of membership of this association."

The officers of the National Dental Association will leave nothing undone
to make the meeting at Omaha a success, and they hope the attendance and
interest in the first active annual meeting of the association will be commen-
surate with its importance.

THOMAS FILLEBROWN, President.

EMMA EAMES CHASE, Cor. Sec'y.

MASSACHUSETTS BOARD OF REGISTRATION.
The meeting of the Massachusetts Board of Registration in Dentistry for
the examination of candidates will be held in Boston June 13, 1898, at 9:30
a. m., at the Boston Dental Infirmary, Tremont street. Examination in
operative dentistry at 10 o'clock. Each candidate must come prepared with
rubber-dam gold-end instruments to demonstrate his skill in operative den-
tistry. Anyone who wishes may bring his patient, but so far as possible
patients will be furnished. The theoretic examination will include anat-
omy, physiology, histology, chemistry, pathology, materia medica, operative
and prosthetic dentistry. All applications, together with the fee of $20, must
be filed with the secretary of the board on or before June 6, as no applica-
tion for this meeting will be received after that date.

G. E. MITCHELL, Sec'y, 25 Merrimack st., Haverhill.

News Summary.

SALE OF COCAIN.—Governor Adams, of Colorado, has signed the bill pro-
hibiting the sale of cocaine without a written prescription of a licensed phy-
sician or dentist.

TUBERCLE BACILLUS AND X-RAYS.—Bergonie and Ferre report after two
series of investigations that the rays had no action on either the virulence or
the vitality of cultures of tubercle bacillus.

THOSE PRINTERS AGAIN.—A local paper, speaking of a street accident, says:
"Dr. Jones was quickly summoned, who, after examining the patient's
purse, decided that the case was hopeless."—Medical Times.

PAINFUL DENTITION IN INFANTS can be relieved by frequently washing out
the mouth with a 1 per cent solution of chloral hydrate, which is antiseptic
as well as analgesic. Rub the gums to soothe the pruritus with the follow-
ing: Cocain hydrochlorat, 15 centigrams; chloroform, 1 gram; glycerin, 20
grams; essence of roses, 6 drops.—Presse Med., Oct. 20.

FIXING LEATHER TO METAL.—Digest crushed galls, 9, in water, 8, for six
hours and strain through linen. Soak glue, 1, in water, 1, for twenty-four
hours, then melt. Coat the leather surface with the warm gall nut extract
and the warm metal surface, previously roughened, with the glue, then fix
together and allow to dry in the air.—Sci. Amer., lxxvii., 326.

REMOVAL OF TEETH FROM RUBBER PLATES BY BOILING.—Instead of hold-
ing the plate over a gas-jet until the teeth can be prised off, unpleasant odors
may be avoided by boiling the plate for a few moments, when the rubber
will be found yielding, and by grasping it with the pliers the rubber may be
sprung from the teeth, and a few repetitions will complete matters.
DISPENSARY PRACTICE has been affected by the war. In a downtown district a falling off in attendance at one of the dispensaries was noted for a few days, which could not be accounted for until it was found there was a "run" on a neighboring bank and the patients were busy drawing out their deposits.—Medical Record.

ANOTHER NEW DENTAL JOURNAL.—We have just received volume 1, No. 1 of the Dental Century. This journal is published monthly at Madison, Wis., and the editor is Dr. William Gird Beecroft. The associate editors are Dr. W. L. Whipple, St. Louis; Dr. Don D. Cornell, Iowa; Dr. J. G. Templeton, Pittsburgh; Dr. A. C. Runyan, Michigan; Dr. W. C. Davis, Nebraska; Dr. V. A. Gudex, Wisconsin. This journal is intended to represent the dentists of the Northwest, and to be essentially practical. We wish it success.

ORTHOFORM ANESTHESIA.—Orthoform does not produce anesthesia on sound skin or mucosa, only on open wounds. Hirschbruck recommends the injection of a 3-per-cent mixture of orthoform and water, with which he has obtained excellent results. He precedes it with 0.002 cocaïn mur. to prevent pain from the injection. The anesthesia thus produced is lasting and the absolute non-toxicity of orthoform adapts it to many of the minor operations.—Berl. klin. Woch., 1897, No. 49.

UNILATERAL PAROTITIS WITH CARIOUS TEETH:—

B Ung belladonnae,
Ung Hydrarg........................................... a a ³ss
M. S.—Apply night and morning.

Also:
B Cinchonidinæ salicylat ................................... ⅔i.
Div. in tabulae No. xx S. One every three hours. —Eshner.

WHAT A MAN EATS IN A LIFETIME.—It is computed, by a contributor of inquiring mind to an English journal, that a healthy man with a good appetite and average drinking capacity assimilates into his system during seventy years ninety-six and one-half tons of material, solid and liquid; or, putting it in another way, and assuming his weight to be twelve stones, he consumes over twelve hundred and eighty times his own weight of nourishment in the course of a lifetime.

NEW BOOK BY DR. BURCHARD.—We have been favored with a copy of Dr. Burchard's "Dental Pathology, Therapeutics and Pharmacology." This volume forms the third of the series of American Text Books of Dentistry, of which Kirk and Essig were the first two. The book is abundantly illustrated. We give a transcript of title: "A Text Book of Dental Pathology, Therapeutics, including Pharmacology, being a Treatise on the Principles and Practice of Dental Medicine. For Students and Practitioners. By Henry H. Burchard, M.D., D.D.S., Special Lecturer on Dental Pathology and Therapeutics in the Philadelphia Dental College. In one very handsome octavo volume of 575 pages, with 388 engravings and 2 colored plates. Cloth, $5.00; Leather, $6.00. Net. Lea Brothers & Co., Publishers, Philadelphia and New York.
SPECIALISM APPRECIATED.—At one of our large dispensaries having special departments, an applicant recently took tickets for each class and spent the day obtaining expert opinions on the condition of his eyes, nose, throat, internal organs and skin, and it is said even had a little surgery done and got a tooth pulled.—Medical Record.

CRITICISM has been freely bestowed by the daily press upon a physician of New York city who declined to respond to a night call from a grocer who had refused to pay his doctor's bill. Perhaps some time the public will learn that a good way to make sure of timely medical attention when needed is by paying for what it receives as it goes along.—Medical Age.

MOISTURE AND VITALITY.—From a number of experiments on this subject, Dr. A. J. Ewart concludes that there is no truth in the statement often made that seeds, spores and mosses can withstand complete desiccation without losing their vitality. It is impossible to deprive anything of a vital nature entirely of water without destroying its vitality. Dr. Ewart found that the minimum percentage of water sufficient to maintain vitality is from 2 to 3 per cent of the dried weight of the organism. Protoplasm containing the minimum amount of water necessary to maintain vitality is perfectly dormant; it can neither respire nor assimilate; it can neither add to its substance nor diminish it.—Trans. Liverpool Biological Society, 1897, p. 151.

TO REMOVE NITRATE OF SILVER STAINS FROM CLOTHING.—A solution of iodin in ammonia water, the so-called colorless tincture, will remove nitrate of silver stains from the hands, clothing, etc., but owing to the danger of the formation of nitrogen iodid, which is a powerful explosive, it is not recommended. A solution of iodin in iodid of potassium dissolved in water is nearly as quick and quite as effective. Dissolve fifteen parts of iodid of potassium in fifty parts of water and to the solution add ten parts of iodin. When the latter is dissolved add sufficient water to make five hundred parts. Keep in a well-stoppered bottle. Treat the spots with this, and after a few minutes with a 10 per cent solution of caustic soda, which will remove the silver iodid formed by the first treatment.—The National Druggist.

NASAL MICROORGANISMS.—In all bacterioscopic investigations of the nasal fossæ, in all researches as to the action of nasal mucus, etc., a clear distinction must be made between the vestibule of the nose and the proper mucous cavity. The former is lined with skin, and is not part of the nose cavity proper, but only leads to it. Contamination with the lining of the vestibule is difficult to avoid, even when this source of error has been realized.

In the dusts and crusts of mucus and debris deposited among the vibrissæ of healthy subjects, microorganisms are never absent, and are usually abundant. On the Schneiderian membrane the reverse is the case; under normal conditions microorganisms are never plentiful here, are rarely even numerous, and in more than 80 per cent of cases no organisms whatever are found and the mucus is completely sterile. The occurrence of pathogenic organisms must be so infrequent that their presence on the Schneiderian membrane can be regarded only as quite exceptional.—Archives of Otology.
USE OF AN INTRADENTAL BAND.


Recent cyclopedias and writers have conferred upon the word dentistry a new and appropriate definition, limiting its province to the art and science of treating diseases and lesions of the teeth, and supplying artificial substitutes where natural ones are missing. All present will agree that this specification embraces a dominion sufficiently large to afford activity to even the most latent talent of man. The operation of extracting a tooth, the removing of necrosed maxillary bone, or kindred operations distant from the teeth, do not come within the scope of the true meaning of dentistry, but belong to another division of the science of medicine and must be classed with such operations as are not intended to save dental organs and their immediate surroundings, and fall within the specialty of oral surgery. Many of our journals and some few of our dental textbooks are accepting this view of the word dentistry, and I am of the opinion that in the near future the words "dental surgeon" and "oral surgeon" will be employed with more decisive meanings.

Dentistry has come to be registered in the dictionary of humanity as a synonym for the following five words: dental—preservation, restoration, regulation, affixation, and substitution. This quintet completely embraces the innumerable operations and treatments which we as practitioners of dentistry are called upon to perform, and includes the various mechanisms which are employed in the correction and construction of all appliances used in these processes.

Dental elimination or extraction of teeth—the antonym of dentistry—has been placed within the realms of oral surgery, and is not a part nor has it any relation with the true meaning of dentistry, which if it means anything must stand for a purpose diametrically the opposite.

No less than five of our most recent dictionaries, and nearly all
of the dental text-books which have come from the presses since the
Columbian Dental Congress, have placed this construction on the
word dentistry, and it is to be hoped that in the very near future we
may have not only a clear understanding of the word, but our liter-
ature may be crystallized into a medium of mental exchange, so as to
be a channel through which we may safely send thoughts on any
subject pertaining to our vocation without fear of misconception.
In every calling we are conscious of a needed change, and when we
shall have effected a complete system of dental nomenclature we can
be reasonably certain that more rapid progress in our special field of
medicine is assured. While we are all anxious for this day to arrive,
we can contribute our quota towards effecting this grand result by
lending such assistance as is possible and communicating our deduc-
tions to the various committees who have the nomenclature of the
profession in charge.

Since there is not at present an accepted terminology in any of
our divisional specialties, it is our right and opportunity to enter into
the coinage of new words or classification of the old or modification
of either, but it is with some reluctance that I present to your atten-
tion the words "intradental" and "circumdental" bands, and in
relation to them some few other terms. As there were no words in
our dental vocabulary which even approximately covered the ideas
involved, I searched about and finally decided that these compound
words would clearly designate the purpose of their dental use.

Dental surgery may be divided into two grand divisions, namely,
the branch of prosthesis and the branch of aphaeresis. The former
means to add, to restore, to replace, or to affix; accordingly it
implies nearly all dental operations, since for little else is the dentist
called upon; while aphaeresis denotes to take from, to omit, to
remove, to subtract or to sever.

As dental surgeons we are interested in both these branches; but
as dentists we are concerned mostly in the prosthetic, since the
major portion of our work is of a strictly prosthetic character. But
in order to accomplish prosthetic results our initial work must inau-
grate the aphaeretic branch. In the preparation of a cavity for gold
we labor in an aphaeretic sense, in that we remove defective enamel
and dentin. If we crown a root we again resort to the same branch,
when we trim down the cervical borders and shape the joint-end,
and when we fill the pulp-chamber and canal we likewise engage in
aphaeretic art, in removing the pulp. But this is only partial aphaeresis, while the complete indicates that the tooth or teeth have been extracted. And it is the purpose of my paper to advocate dental prosthesis in its fullest meaning, and I hope to emphasize that as dentists dental preservation is our distinctive function, that before resorting to the use of aphaeretic tactics we must have exhausted

our complete supply of prosthetic devices; and I intend to give a method whereby the most hopeless root can be restored to usefulness in retaining some form of dental substitute.

Too many of our practitioners employ the forceps unnecessarily. It is a deplorable fact that too frequently the lateral or first bicuspid roots are extracted, and a tooth supplied by some system of bridge-work, as it is generally called, cutting down the sound adjoining teeth, collaring them with gold, when it was within the art of prosthesis to save the root and place upon it an individual crown, such
as would afford the natural denture with a hygienic substitute, and in concord with physiological laws.

Nature dislikes to be tied up, bound or confined, and the present systems of bridgework, with their yokes of gold, chaining and enslaving one tooth to the other, is contrary to nature and works ill-results. More especially so when the load is unbearably large, as in the case with the mammoth attachments, carrying five and even six artificial teeth upon two natural roots. How much better to save the roots of such laterals and bicuspid, build them up and give nature the right to ask assistance when occasion demands, and let her return the compliment when opportunity presents. The individual tooth as nature supplies it is free from immediate support, the neighboring teeth approximate but are in no sense attached; they lend one another strength in that they are positioned in an arch which demands that at the contact point each tooth shall touch its immediate neighbor, and the teeth are so arranged that a strain which falls on any one tooth of either half of the superior or inferior dental arch is communicated to the several teeth on that side of the jaw, thus distributing the strain. In some mouths there is considerable space between the dental organs and their approximal surfaces do not come in contact, and in these mouths the alveolar ridge and maxillary bones are well developed and hold the isolated teeth firmly in position. But the teeth as we generally find them, and as they normally ought to be, are slightly in touch, yet each as independent of its neighbor in its functional character as though the masticating apparatus consisted of but a single superior and two inferior teeth or vice versa. To avoid applying bridgework in every instance when we can, and insert individual crownwork instead, should be the earnest and indefatigable effort of every member of the profession.

The intradental band, as I have chosen to call this method of restoring and strengthening roots which are about to carry full or artificial crowns, can be employed to good advantage in many of the prosthetic dental appliances; and though I shall mention in this paper some of the more important uses which it has, it shall be my real purpose to confine myself to its merits as a factor in building up and strengthening roots which seem hopelessly decayed and suggest the use of the forceps.

The band, as its name implies, is placed in the tooth substance
immediately within the cervical circumference, and in partial crown-work at a point midway between the cusps and the neck of the tooth. The width of the band depends entirely upon what process of dental retention is desired, but in most cases it is seldom more than an eighth of an inch wide and generally made of gold or iridio-platinum, about 30 gauge. The band in all instances is anchored into the root by means of cement, and need not necessarily form a part of the crown proper, but may be set independent of the latter.

The instruments for accomplishing these effects are simple and their application readily understood. The set or system consists of two trephines of sizes usually desired for banding the ten anterior teeth, and a gauge-mandrel which has two stumps the exact complement of the trephines. If it is intended to band a root of the size of the large trephine, the gauge-mandrel indicates on its side nearest the large stump the exact size of the gold necessary to fit the selected trephine. The trephine is so constructed that the face of it is slightly larger than its body; this allows the instrument to cut without pinching; it has two large slots in its circumference, admitting of the steel yielding in the event of uncertain leverage; and the teeth of the trephines are modeled after those of the log-circular-saw, and the small grooves leading from the teeth permit the saw-dust to escape without clogging the instrument. It requires but a few revolutions of the trephine to effect a perfect intradental groove. Figs. I, J and K.

The ferrule which all operators now produce, and which surrounds the necks of the teeth, I have designated as the circumdental band, such as we have in the Richmond Crown. Practitioners have recognized long since that the circumdental band is not an ideal appliance and that it has features which make it undesirable, and among these demerits we mention that it constricts the intradental space; that it impinges on the living tissues; that it is unsightly and contrary to dental esthetics; that it induces pain, that it is too easily broken; that it quite generally affords lodgment for food, and in turn harbors pathogenic organisms.

There is a maxim in general mechanics that "a chain is no stronger than its weakest link," and this is most applicable to the construction of crowns. Notwithstanding that the Richmond crown is an esthetic dental appliance, there are innumerable defects which induce us to look about and design new ideas, in the fond hope of
obtaining a crown which may approximate nature and yield hygienic and physiological results equal to the demands.

In assembled-crowns, as I prefer to call bridgework, we must admit that the Richmond occupies a place which cannot be substituted by any of the several crowns now in use. This fact is due primarily because it is a combination crown, constructed of porcelain and gold, the latter acting as a medium to which can be readily soldered the adjoining artificial teeth; but I am of the opinion that porcelain dental art will in the near future be in full possession of the domain now controlled by it.

For individual crownwork I am becoming more convinced each day that the Logan is the nearest representative of nature, and when it is attached by the method I here suggest it cannot be other than a most excellent dental substitute.

I fully recognize that it requires no small amount of courage to assail the Richmond crown, since it is quite established in dental mechanisms, yet a sense of conscientiousness impels me to say that I am losing faith in it for individual restoration. Other operators present will, I hope, candidly acknowledge their adverse experiences and freely and fearlessly criticize my paper, since it has been written with a view of learning from the practitioners here assembled the true status of crown-prosthesis in Iowa.

In setting the Logan with the intradental band, you first trim down the root, Fig. A, up to the alveolar process, and then proceed to grind and adjust the crown to the root. Then select the proper size of trephine, place same in the handpiece, and with a few rapid revolutions of the trephine the intradental groove is produced. Now make a gold band complementing the respective trephine-stump on the gauge-mandrel, and after soldering the band and trimming off the rough portions, you are ready to set the band with cement. But before setting same it is well to put a plug of cotton in the root-canal to prevent the cement from filling up the canal while attaching the band. Mix the cement to a creamy consistency, add cement to the two surfaces of the band, and register it over the trephine groove, then press it home, Fig. B. Let the cement thoroughly set and with corundum stone grind the band even with the trimmed face of the root.

The next step in setting, so as to attain enduring success, is of great importance and must be carefully executed. Place a small
amount of oxyphosphate on the post, and paint the joint end of the porcelain with a film of chloro-rubber, the latter being produced by adding chloroform to red vulcanite in a sufficient quantity to make a thick paint. Having thus prepared the crown, and having protected the root from moisture, insert the post and gradually bring the crown into the desired position. Instead of the chloro-vulcanite I frequently employ a disk of gutta-percha, heating the crown with the latter and then applying the requisite cement. This method has been advocated by many operators. I have found that chloro-rubber is fully as good and possibly better for this particular service in that it can be handled with greater ease and does not become aged so soon. By setting the crown in this manner permanent operation is accomplished. The cement acts primarily as an anchor for the crown, while the chloro-vulcanite serves to make an absolute joint and protects the cement from the ravaging influences of the acids of the mouth.

When I attach an individual Richmond, I anchor it on an intradental band, Figs. D and E. The method of construction is simple and free from the technicalities accompanying the old method. When constructed with an intradental band, the latter and its cote may be made of platinum, since this metal admits of being closely fashioned to the root and makes a perfect joint. The crown is then made as usual and is set by the method before described.

The Richmond may be made with the intradental band acting as a hollow post, Fig. C, and this method has some few advantages, namely, the circumferences afford extensive surfaces for cement attachment, the latter clinging to the external and internal surfaces of the band; and should there arise any apical difficulties the case can be treated interdentally, since access to the pulp-chamber can be readily had, there being no obstruction in the form of a post.

The use of the intradental band is not limited by the several operations which I have detailed; it may be employed in many cases and with considerable satisfaction in crowning a root which has been fractured, Figs. F and G. The following description from an article by Dr. H. J. Goslee is valuable, coming from one who has had an extensive experience with crownwork: 'While the intradental band as used and advocated by Dr. Cigrand may no doubt have a place of usefulness and possess many virtues, its successful application in a particular instance has enabled me to obtain a
result which should no doubt mark it as almost invaluable in similar conditions.

"The case was that of the root of an upper left central incisor, which had carried a crown and the adjacent lateral for some time, but which from strain and poor protection of the circumdental band had become badly fractured, divided or split longitudinally into two parts. The labial fragment extended from the face of the root to about the apical third and was perfectly loose, being retained only by membraneous attachment. It was very desirable to retain this portion, as its loss would virtually destroy the usefulness of the root, necessitate the extraction of the same, and indicate using the approximal sound teeth for the purpose of bridging; hence was suggested to my mind the use of Dr. Cigand's system of the intradental band.

"I first retained the loose fragments in position, tightly twisting silver suture wire around the neck of the root, high under the gums. This held the parts firmly in apposition, after which I proceeded to trephine the intradental groove into the densest portion of the root; then the band was carefully fitted into the groove and ground down smooth with the surface of the root. The wire was then removed and the parts were found to be held very rigidly together. The root was then crowned with a peripheral band and is now carrying the bridge so very successfully that I am gratified in attesting to the usefulness of the intradental band in at least this particular."

When the root, be it any of the anterior six teeth, presents conditions as outlined in Fig. H., a circumdental band is contraindicated, since the root is decayed down to and even below the alveolar process, and in consequence the circumdental band cannot be fastened to the outer circumferences of the root. In such a case the intradental band will most excellently fill the want, as it can be used both as a band to strengthen the root, and also to serve as a skeleton around which to build the material with which to restore the general contour of the root.

If the root is one of the anterior teeth and it is desired to attach a Logan, a trephine of the size indicated is selected and the groove cut into the root; then the band is made to fit the groove and the band is of sufficient width to allow it to reach the top of the intended metal contour. Before cementing it into position cut into the free end of the band several incisions thus making fimbriations on the
metal. Now by means of cement anchor the band into the groove with the fimbriated end extending, and subsequent to the setting of the cement. Build up with amalgam to required outline, bending the fimbriations in such a manner as to clinch the amalgam as you add it to the mass, tipping one metal point toward and the other from the center of the root. The patient may now be dismissed to call again in a day or two, when with drills and burs an opening is effected into the amalgam to correspond to the position the post will occupy when the crown is permanently set. If it be desired to build up a badly decayed bicuspid root, and it is intended to carry a gold telescope crown, the method of procedure is similar to the one just described, differing only in that the intradental band is much wider and some few holes are punched or drilled through its surfaces to afford further anchorage for the amalgam.

It has been my pleasure to have employed this system in various ways during the past few years, and many operators in neighboring states have adopted it as productive of excellent results, and I earnestly hope that methods which are intended to save and restore badly decayed roots may receive your consideration. If I have awakened in your minds the responsibility of retaining and preserving these factors of natural dentures, and encouraged a single member present to apply this or any other efficient method for accomplishing the result, I shall feel thoroughly satisfied that my paper has fulfilled its humble mission.

MEETING OF AMERICAN MEDICAL ASSOCIATION.

Reported by Geo. V. I. Brown, D.D.S., Milwaukee, Wis.

The fifty-first annual meeting of the American Medical Association convened in Denver, June 7-10, 1898, and was as usual attended by a large representation, embracing nearly every state in the Union. In point of scientific interest it is believed to have been fully equal to others in the long line of meetings, while the hospitality of its citizen hosts, facilitated by the points of interest in the neighborhood, made pleasure an easy and natural accompaniment to scientific pursuit.

As regards the section in which centers our especial interest, that of Stomatology, the record of its proceedings may be outlined as follows: The plan of a joint session with the Colorado State Dental Society proved to be one of mutual pleasure and profit, the chair-
man of the section, Dr. Geo. V. I. Brown, alternating in occupancy
of the chair with Dr. W. K. Sinton of Colorado Springs, president,
and Dr. E. B. Warner of Denver, vice-president of the society, and
the program was so arranged that it included members from each
organization.

The first upon the list was the chairman's address by Dr. Brown,
in which reference was made to the fact that "Stomatology," the
new title of the section, had been properly earned by the scientific
character of papers read in other years, as recognized by the members
of the section in the association, and was a matter of general pride.
The recommendation of Dr. Andrews, chairman of the last meeting,
as to the examination of the mouths of public-school children by
competent dentists, and instruction given concerning the care of the
teeth, was reiterated as of important consideration.

Attention was called to the fact that the interests of the section,
and also of higher dental education, demanded that an effort be made
to urge upon the National Association of Medical Faculties, as well
as the corresponding Association of Dental Faculties, to adjust the
requirements so that students of more than ordinary ability and
ambition may be able to take both the degree of D.D.S. and M.D.,
and without unnecessary sacrifice of time. It was urged that in
medical colleges having a dental department, the dental students
taking the same lectures in the fundamental branches as the medical
students, and passing examinations with an equally high average,
should be allowed full credit for these upon the medical course and
ought to be given some distinguishing degree, such as "cum laude,"
which would enable them to graduate in medicine with a shorter
period of additional study than would be necessary for students
taking the regular course in dentistry alone.

In point of scientific interest note was made of the value from a
clinical standpoint of the photo-micrographs of Dr. J. Leon Williams
recently published, showing the nerve supplies of the peridental mem-
brane in their possible bearing upon nervous diseases, and the term
"Jaw-strain" was introduced in the same relation as "Eye-strain,"
a more commonly recognized but perhaps less frequent etiological
factor in these affections.

The discussion was freely taken up by members of the section and
society, and turned chiefly upon the educational suggestions. All
were unanimous in expressing the conviction that great advantage
accrued not only to the individual but to the profession as well, through the practitioner of dentistry being equipped with both degrees, by reason of the broader education necessarily thus acquired.

The paper of Dr. G. T. Carpenter, of Chicago, entitled "A Method of Handling Alveolar Pyorrhea," was of particular interest in its practical development of methods of treatment. It was illustrated by a most ingenious adjustment of teeth with the roots surrounded by rubber, in imitation of gum tissue, and encased in plaster, with pockets as in pyorrhea cases, after the Brown method, set up in the jaws of a Bonwill articulator, with a broad rubber-band fashioned to represent the orbicularis oris muscle, the whole designed to test the practical utility of various instruments used in removing serumal deposits in the mouth. The paper was eagerly discussed, showing not only interest in the methods of the essayist, but also that his topic was very much alive in the minds of his audience.

Dr. Eugene S. Talbot of Chicago gave a lecture upon the "Stigmata of Degeneracy," illustrated with the stereopticon, before the Colorado Society, and one upon "Irregularities of the Dental Arch" at the joint session. All who were present felt convinced of the vast amount of scientific research necessary to the collection of such a mass of evidence in support of the theories advanced, and although some of the expressions heard in the general consideration of these subjects were not entirely in accord with the deductions advanced, all were unanimous in recognizing the possible future value to science, and particularly its import applied in the treatment of pathologic conditions, altering, as a thorough understanding undoubtedly will, many of the present therapeutic standards. According to the statements of the lecturer, extreme variations of form, noticeable particularly in the outline of the face and head and irregularities of the jaws, often in the extremities also, were indications of an arrest of development, or an excessive or disproportionate growth in certain parts. These variations were known as atavistic—having a tendency to return to some earlier type of less perfectly developed man; or degenerate and representing a reverse type. In either case the conditions were due to unequal distribution of the brain cells, and were therefore the outward signs of a more or less irregular brain conformation, which might be evident in the individual by predomination of some one or more of the intellectual
faculties, producing a genius; or of the animal tendencies, making him brutal or criminal. Want of normal stability, inebriety, cocaine and morphin habits were all expressions of degeneracy, and patients thus afflicted, in common with many inmates of penitentiaries and houses of correction, ought to be treated as sick people by a physician, rather than by minions of the law.

"Sencoplakia" was the subject of a paper by Dr. John S. Marshall of Chicago. It was descriptive of a diseased condition of the mucous membrane of the mouth, the diagnostic signs of which were distinguished by white patches which had a tendency to form ulcerations upon the surface somewhat similar to syphilitic patches, though differing in appearance in not having the characteristic border. It was shown that these ulcerations were prone to degenerate and become malignant, and if neglected might often become sarcomatous. The etiological factor was some form of irritation, doubtless favored by certain conditions of the blood, rarely ever noticed in women, most frequently among men excessively addicted to the use of tobacco. The treatment was to remove the source of irritation and treat locally with antiseptic remedies, but avoid escharotics, which tend to a still further loss of tissue. The pathology of the disease was treated in a most scientific manner and full quotations showed extremely careful research by the author in preparation. A summary of the discussion would be simply a very general sense of obligation upon the part of all interested in treatment of the oral cavity toward anyone who might elucidate one of the little understood pathologic conditions, and particularly one of those which, while probably of much more frequent occurrence than is commonly recognized, because of unfamiliarity with its symptoms, is yet a source of danger in predisposing to cancerous affections.

Dr. W. B. Hill, Professor of Materia Medica in Milwaukee Medical College, read a paper upon "Methods of Teaching Materia Medica to Dental Students." He called attention to the ideal from the instructive standpoint and the real or practical in dealing with present necessities. The former meant a perfection possible only through taking the entire regular medical course upon the subject, the latter showed the practical disadvantages of requiring the average student of dentistry to devote too much time to one branch, and thus perhaps cause him to neglect important matters of technical instruction. As between the two extremes he urged that more
thorough instruction be given the dental student in those particular drugs with which he was most concerned in the practice of his special branch than was necessary to the general practitioner of medicine, and less time be expended upon those he would seldom be called upon to use; although for the student who could be induced to do so, and whose ability was equal to the task of taking the entire medical course, such an additional education was of inestimable advantage in his later practice, because it was a recognized fact upon the part of physicians that dentistry was a rapidly growing specialty of medicine, an understanding of which was important to the practitioner in much the same way as a medical education was advantageous to the dentist. He warned, however, against the narrowness which is likely to be the accompaniment of too great a specialization and urged as broad an education in every way as possible. Proof sheets were distributed showing the plan of instruction which he had adopted, upon which were printed those portions of the subject which it was deemed best that the student should study beforehand, and these being given to the class in advance, only recitations were necessary upon these portions of the subject. The rest he thought could better be given by lecture, particularly the therapeutic application of the remedies, into which could be infused not only the individual ideas of the lecturer but much of his personality as well. The subject was discussed by the deans and teachers of a number of dental schools who were present, and all unanimously agreed with the author.

"Only a Baby Tooth" was the subject of an essay by Dr. W. H. Hall of Denver. This was an appeal for the preservation, and for a more careful study of the necessity of a method to retain the deciduous teeth, forbidding their extraction on the ground that malformation of the jaws was likely to result from their too early extraction. The ideas advanced as to methods of treatment of those teeth and the manner of educating patients to a realization of the importance of the subject was very carefully elaborated. The subject being in line with the paper to be read by Dr. Baldwin, discussion was postponed in order that they might be considered together.

Dr. A. E. Baldwin of Chicago then read a paper entitled "Some Facial Deformities and Their Prevention." In a very forcible and effective manner attention was called to many errors on the part of the laity and also, unfortunately, by practitioners of dentistry, the
effect of which was to produce in the natural course of development of the child more or less alteration of the form of the development of the jaws, and indirectly the contour of the lines of the face. These two papers were discussed together and the statements of the authors upheld in every particular.

Dr. J. Taft of Cincinnati read a paper entitled "The Management of Pulpless Teeth," and handled the subject in a very scientific manner. The use of cocain in the extraction of pulps, instead of devitalizing with arsenic, was advocated, as was also the immediate filling of the roots of such teeth, the essayist expressing the belief that the use of arsenical poison as a destructive agent was frequently a source of serious trouble, whereas the use of cocain in the manner described was quite harmless; and the roots of teeth, proper precautions having been taken, were never in a better condition for filling than immediately after the hemorrhage incident to extraction had subsided. Other phases of the subject were fully treated, thus covering the entire subject in a most comprehensive manner. A variety of expressions was elucidated in general consideration of the essay, for perhaps in no other one branch of the dental profession is there such a diversity of views as in this one, but the keen interest that the paper excited was extremely satisfactory and beneficial.

Dr. A. H. Peck of Chicago read a paper entitled "The Essential Oils, Their Relative Value as Antiseptics, and Irritating and Non-Irritating Properties." This was perhaps one of the most valuable additions to the literature of the subject that has been or will be added for some time, and is quite beyond the ability of even attempted description. It is sufficient to say, however, that those present fully appreciated its value and the extreme self-sacrifice the author had undergone in experimenting upon himself with various drugs in the interest of science.

Dr. W. G. A. Bonwill of Philadelphia gave clinics galore before the Colorado dentists and read a valuable paper as well, all of which caused a lively interest, and was a general distribution of valuable information to all who were so fortunate as to be present.

Dr. Vida A. Latham of Chicago gave, as has been her custom in years past, a valuable addition to the program, entitled "Dental Septicemia in the Antrum," which was treated, as might be expected, in a most scientific manner.

A most enjoyable feature of the meeting and association with the
Colorado dentists was a banquet given members of the Stomatological section of the State Dental Association of Colorado at the St. James Hotel. Something over a hundred were present, and if the hosts enjoyed themselves as much as the visitors did, they must indeed have been amply repaid for the care, pains and elaborate preparation made for the entertainment of their guests. Dr. E. R. Warner of Denver was toastmaster, and a stringed orchestra, delicious menu and rousing good toasts completed a most enjoyable and profitable program throughout.

**METHOD OF BACKING TEETH.**

By F. M. Poulson, D.D.S., Lansingburg, N. Y.

In the February, 1898, issue of the Digest is an article by Dr. W. A. Siddall, of Cleveland, on backing teeth. I wish to emphasize the importance of his method, for I have been working along the same line for several years, but unlike him I did not have the public spirit which prompted him to give it to his brother practitioners. It is one of the many little tricks which lighten our work and enable us to obtain better results, and in this case it very nearly approaches perfection.

My first attempt was also with the mallet to effect the compression necessary to force the backing down to the irregular contour of the tooth, but later I substituted the more gradual pressure of the ordinary bench-vise, being careful not to exert a force which would render liable the breaking of the tooth.

My present method of procedure is as follows: First fit the tooth to the plate or in place for the crown, allowing always for the thickness of the backing, and giving a slight bevel to the edges of the tooth. Then fit backing in the usual way, using 24 k. 34 gauge gold plate, cutting to cover as much of the tooth as is desired, and bend down or cut away the pins as is necessary. Now lay the tooth with the backing on a piece of car-spring rubber, $\frac{3}{8}$-inch thick, place a slab of lead over the tooth, hold the whole in position, place in a vise and exert gentle pressure. On removal we find a perfect adaptation. The projecting or overlapping edges of backing may now be trimmed flush with the sides of the tooth. If not perfectly adapted, or if disarranged in trimming, it may again be submitted to pressure in the vice.

An ordinary rubber tooth may be used with as good results as a
plate tooth by simply cutting off the heads of the pins, for a peculiar feature of this method is that the more unevenness of surface exists the better will be the results obtained.

I recommend pure gold for this work because of its pliability and higher melting point than any of its alloys. Platinum can be used with equally good results as regards adaptation, but it will contract under heat, and in time a discoloration will be very noticeable wherever the edges of plate are exposed.

THE NON-GRADUATE PRACTITIONER.

BY DR. GEO. E. GREENE, SOUTH GARDNER, MASS.

Is it not true that there are many good and successful dentists throughout the country who never saw the inside of the dental college? Men who have worked hard and studied hard, and as nearly as is possible satisfy the requirements in the communities where they live. Many of them were in practice before some of the recent graduates were born. If they would like a degree, is it justice, when their practical knowledge and skill are considered, to require them to leave their practices and devote the better part of three years to college work?

Would it lower our standing as a profession if some reputable college should afford an opportunity to acquire a degree in the following manner: Each applicant must be a dentist of not less than fifteen years practice, and a member of some reputable dental society. He should matriculate and the college could then outline a course of home study for him to pursue. At a suitable time thereafter he should take a short course of lectures at the college in the studies outlined, and then be examined in the same. If the result showed that he was qualified, let him be granted a degree of D.D.S.

I think an act of this kind would encourage many, whom we are pleased at times to look down upon and call ignoble names, to make an effort in the right direction, and would add dignity to the profession of dentistry.

A BLOW AT "FACE SPECIALISTS."—A bill has been introduced in the New York assembly to put a stop to unprincipled persons who make a business of removing facial blemishes and making dimples. The bill provides that such work may not be done by any but practicing physicians. A fine of $250 and imprisonment for six months will be the penalty for the first offense, a fine of $500 and a year's imprisonment for a subsequent conviction.—Medical News, April 2.
DIGESTS.

VALUE OF THE SALIVA IN DIGESTING FOOD. Even the merest tyro in physiology is familiar with the fact that saliva not only prepares the food so that it can be readily swallowed and acted upon by the gastric and intestinal juices, but that it contains a ferment which possesses to a high degree the ability of commencing and even carrying to completion the transformation of starch into sugar, or in other words, the preparation of carbohydrate materials so that they can be readily absorbed and appropriated to the various uses of the economy. For many years when patients came to a physician complaining of symptoms of indigestion it was the custom to administer pepsin and hydrochloric acid, under the erroneous idea that it was the proteids in the food which were not properly treated by the digestive juices and that relief could be obtained by aiding the stomach in the manner indicated. Only comparatively recently has the importance of pancreatin digestion been recognized as surpassing that carried out by the gastric juice, and still more recently has the profession come to realize the fact that in many cases the predigestion of starchy foods or the administration of diastatic ferments capable of aiding in their digestion is in a certain proportion of cases far more important than the administration of pepsin or pancreatin for their proteolytic action. Recent studies which have been made in the laboratories of Yale University emphasize the value of the saliva as a digestive juice. They were carried out by Professor Chittenden, who reported his results at the last meeting of the American Physiological Society in Ithaca. This investigator showed that great variations in the amylolytic power of the human saliva take place. Thus he found that saliva collected before breakfast is stronger in amylolytic power than that secreted after breakfast. He also found that this greater power before a meal is not due to any increase in alkalinity, but to the greater concentration of secretion coming from glands that have been resting. He also discovered that stimulation of the mucous membrane of the mouth by the vapor of ether or chloroform, or by any other substance which irritates that mucous membrane, causes a secretion richer in digestive powers and solid matters than that caused by mere mechanical stimulation. These
observations are of interest not only because the importance of amyolytic ferments, both real and artificial, is attracting more and more attention from the profession, but also because two habits, supposed to be particularly prevalent among Americans, seriously influence the secretion of saliva, namely, the chewing of tobacco and the use of chewing-gum, the latter having become particularly common since the introduction of the bicycle. Professor Chitten-den's experiments indicate the fact that those persons with deficient digestion of the starchy articles of food should avoid chewing any such substances for a considerable period of time prior to a meal, as by this means the salivary glands will have an opportunity to rest and the liquid which they pour out when starch is taken will then be competent to digest its share of the meal. Where tobacco and chewing-gum are kept in mouth until time of meal the salivary glands are not only unable to secrete enough amyolytic ferment to aid in the digestion of the starch, but are also unable to secrete enough fluid to thoroughly soften and disintegrate the food, and as a result the indigestion of all articles of food ensues, since the pabulum when swallowed is not in a fit condition for gastric or duodenal digestion.—Jour. Am. Med. Assn., April, 1898.

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WELDING PROPERTY OF GOLD, WITH DEMONSTRA-
TIONS. By G. V. Black, M.D., D.D.S., Chicago. Read before Chicago Odontographic Society. This subject has not been closely studied or followed within the last fifteen or twenty years, so that those who have come into the profession within that time have had little opportunity for the study of the subject. Some of the older members of this society may remember that during the sixties and the early part of the seventies there was much discussion relative to the welding property of gold—why it was that gold welded? why it was that it failed to weld? This is what I wish to illustrate to you to-day, for after observing dentists using gold and watching their results, I see plainly that not many are getting the full benefit of the welding property of their gold. Now in order to get my experiments along I will prepare a few ropes of gold and then give you something of the history of this subject. This is a sheet of No. 3 gold rolled into a rope, which I will pass in the annealing lamp and anneal, and another one I will prepare similarly. You see they stick together and when I press them strongly they will be
welded perfectly (illustrating). Now I will tie a thread about
these and drop them into a bottle of ammonia, not in the liquid but
simply in the dry gas above the liquid. This bottle contains ordi-
nary ammonia water. I will stick this bit of red wax on the thread
so that we will not mistake it. I have in this other bottle a solu-
tion of chlorin, and above the liquid the bottle is filled with chlorin
gas. In this I have suspended several ropes of gold so that they
do not touch the liquid. I will remove them now to the ammonia
and will explain later. They have been in the chlorin gas for
about half an hour, may be a little longer. I stick these threads to
the glass with wax so that they will not fall into the liquid when I
remove the cork.

When the welding property of gold was first discovered it was
thought by most dentists to be some special preparation of gold.
The facts were these: Dentists had been urging upon manufacturers
of gold foil the importance of the gold being pure, and that the sur-
face of the foil should be clean. This was urged from year to year
increasingly, and it so happened that in the effort to get the gold
pure and the foil clean the manufacturers found the gold foil became
sticky, and they were in considerable trouble because the sheets of
gold stuck together in such a way that they could not be unfolded
without tearing the sheet. This was regarded as objectionable and
they contrived various means for overcoming this stickiness before
the gold was put upon the market. But it so happened that some
books of gold went out that were still sticky, and Dr. Arthur, dis-
covering this, thought it was a curious thing. He tried the gold in
filling teeth and thought this adhesive property of the gold was a
great advantage. He therefore wrote to the manufacturers, asking
if he could have more of the sticky gold, and he was informed that
he could have all he wished, and that if the gold was freshly
annealed before using it would be more sticky. After careful exper-
iment he announced that gold would weld cold; that there was an
actual welding of the gold, not simply an adhesion, but absolute
cohesion. Then came the discussion of this cohesive property, why
it was developed and why it was lost, and we had quite a number
of papers, some very learned, dealing with this subject theoretically.
It so happened that I was somewhat engaged in the study of this
subject myself, and for other reasons entirely I had set up a chem-
ical laboratory in a room connected with my office, and was doing a
great deal of chemical experimental work, having class recitations
evenings. Now it was common in those days for dentists to have more
or less gold lose its welding property in such a way that it could not
be restored by annealing. While I was carrying on the chemical
experiments I discovered that I was having more trouble than usual
with the welding property of my gold, giving me the idea that the
gases escaping in these chemical experiments had something to do
with it. I therefore instituted a search, exposing gold to this gas
and that, and I discovered that each of a very considerable number
of gases would destroy the welding property of gold promptly. How
did it destroy it, was the next question. Why was it destroyed in
this way? I found that my reasoning upon it would not answer the
question. I therefore had to demonstrate it experimentally. The
results I can give you somewhat briefly. I found only a fact that
we had not known before. It was well known at that time that
charcoal, somewhat fresh from the furnace, if exposed to carbonic
acid gas would condense within its pores many times its own volume
of the gas, not simply filling the pores with gas in its ordinary rare-
fied state, but an actual condensation of the gas occurred until it
became in a degree a solid; otherwise it could not condense many
times its own volume of gas. This is one instance.

Another is this: We take a glass rod and dip it in a bottle of
water; it comes out wet. The molecules of water have a stronger
attraction for the glass than they have for each other, and a portion
of the water adheres to the glass rod. Again, if we take the same
glass rod wet with water and dip it into a bottle of oil, we will find
that the water has been removed and the oil adheres to the surface.
Here we have the fact that the oil has a stronger affinity or a stronger
attraction for the glass than has the water. It develops the fact
that each of these substances has an attraction to the glass, the one
having a stronger attraction to the glass than the other. The prin-
ciple with regard to gold is precisely the same. If we place gold in
the atmosphere of ammonia the ammonia is condensed upon the
surface of the gold; there is not merely an adhesion to the gold, but
an actual condensation of the gas upon the gold, forming a thin film
of a solid. If we dip it in chlorin gas that is dry we have the same
kind of condensation but in greater amount. If it is damp the chlorin
gas will actually attack the gold, forming a chemical combination.
But these others are not chemical combinations, they stop short of
chemical combination. Platinum is found to attract oxygen strongly, so that oxygen is condensed upon it in considerable amount. Indeed, if we take spongy platinum, and after annealing it expose it for a moment to oxygen gas, or simply let it cool in the ordinary atmosphere and then turn on it a stream of hydrogen, the platinum attracting the hydrogen as well as the oxygen, these two gases will be condensed in the pores of the spongy platinum so quickly that the latent heat of the gases is liberated so rapidly as to heat the platinum to redness and set the hydrogen on fire. If we can free the platinum from this condensation upon its surface it will weld. So it is with all metals. When you bring two metals in contact with each other they weld. If we take a piece of lead and cut it through and put it together again quickly, we may weld the two pieces together. If we notice the two cut surfaces we will find that a film spreads over them, and after this film spreads over them pressure will not cause them to cohere, because there is something interposed between them and they no longer weld. When we come to examine the whole list of metals we find a similar thing occurs, but the majority of metals attract oxygen strongly, and therefore welding is prevented.

I have dropped a rope of gold freshly annealed into the bottle of ammonia, suspending it above the liquid. You saw it weld readily at the time it was put in. It has only been a few moments. It requires some time for this to act. I take it out now and try to weld it (demonstrating), and you see the result. It does not weld; the welding property has been destroyed during these few moments by ammonia gas. If I anneal it, it welds. This is an experiment any of you can try at your leisure in your office. The loss of the welding property of the gold is not from any change in the gold; there is nothing on the gold that you can see by ordinary vision. There is no change in the appearance of the gold; it seems as though nothing had happened to it. There is no chemical effect; but there is a film of gas condensed upon the gold that prevents the surfaces from coming in contact, therefore the failure to weld. This film is driven off by heat in annealing and it will weld again.

I will now remove one of the rolls that has been subjected to the chlorin gas and then to the ammonia. I will cut it into pieces and anneal it a little bit differently. My object now is to show you that something has been condensed upon the gold. The gold looks
as it did before; we see no change in it; the appearance is the same. The gold will not weld. We may put these pieces together, compress them up together; they will not weld (demonstrating) Now I will select a tube. One will do as well as the other. I will drop those in the tube and the thought is this: If the gases have been condensed upon the surface of this gold we may form a salt on the surface by introducing another gas, introducing two gases which, when coming together, will form a salt. If we can distill away the salt that is evaporable by heat, possibly we may crystallize it and get sight of it or even analyze it afterward and see what it is that has been formed on the gold, as some of my students have done this winter. Then by subjecting it to ammonia and then to chlorin we would get ammonium chlorid, or if we subject it to chlorid and then to ammonia we would get ammonium chlorid formed. I will now anneal it. Watch it as closely as you can (demonstrating). You see a ring of ammonium chlorid forming on the glass where it is cooler (a white ring of ammonium chlorid forms in the tube). You can perhaps see it from all over the room. The condensed ammonium chlorid not attached to the tube you will see moving back and forth in the tube. This amount of ammonium chlorid now seen in the form of crystals was formed upon this one sheet of gold, a thing that we could not see upon the gold at all, but a thing that becomes very apparent to us when we have annealed the gold in the tube in this way so as to show the crystals of the ammonium chlorid that have been formed upon the gold. Here is another (repeating the experiment). I will say, gentlemen, as I go on, that this experiment may be performed in many ways in order to show this condensation of gases upon gold, and we may use various gases. It is not necessary that we use ammonia and chlorid always; we may use sulfureted hydrogen and ammonia; we may use various other gases, anything that will form an evaporable salt, and illustrate this experiment in a great number of ways. We are not confined to any one plan or any one set of gases for this purpose.

The gold used in this experiment, after it has been annealed, is just as good as it was before; it will weld just as perfectly. We take these pieces, stick them together (demonstrating) and weld them just as if they had not been subjected to these gases. The principle is this: If the gases uniting upon the surface of our gold are such as will form a volatile salt the welding property is lost. We
may remove the salt by annealing and restore the welding property. If the gases that unite upon the gold are such as will form a fixed salt we will not be able to restore the welding property of the gold by annealing. The salts formed by ammonia are generally volatile. Then if we keep gold in an atmosphere of ammonia so that the salts formed upon the surface of the gold will be ammonium salts, we may evaporate them from the gold by annealing and restore the welding property; therefore we are able to keep gold in perfect working order simply by keeping it in an atmosphere that has a proportion of ammonia in it, so that this gas will have possession of the surface of the gold. Then any other gas that is condensed upon the surface will be condensed in the form of an ammonium salt. The gases that destroy permanently the welding property of gold are carbonic acid, the sulfur gases and the phosphorus gases. Just what is formed upon the surface in these cases it is difficult to tell. We do not know all of that. We know only that gold subjected for a considerable time to these gases does lose its welding property permanently. There are probably some compounds of the carbon group formed that are stable and remain permanently upon the gold. Some of the sulfur compounds are formed that are stable and remain permanently upon the gold, and also others, and what others we do not know. But this experiment will show you how easy it is simply to have a bottle with a little ammonia in your gold drawer, renewed from time to time (just so as to get a scent of ammonia when you open the drawer is sufficient), and you will find the gold is working perfectly from day to day, month to month, and from year to year, it makes no difference how long.

The destruction of the welding properties of gold is not immediately complete in any of these cases. It occurs little by little, and by observing the action of some gases, particularly illuminating gas, we may discover how it spreads over the gold. In this case there is a peculiar discoloration of the surface of the gold and we find it begins in spots and radiates from those spots, so that it is flecked over, but the main surface will be clean. We often see our steel instruments rust, beginning in spots here and there, which gradually spread until finally the whole surface is slowly covered. Now illuminating gas will fleck over the surface of a sheet of gold in a similar manner. So will various other gases fleck over a sur-

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face of gold, so that the welding property is not lost upon the whole surface at one time. In the exposure of gold in the ordinary keeping of it, we have the welding property of the gold destroyed here and there over the surface of the sheet. The result is that while the gold appears to work fairly well, it does not work perfectly, and you are liable to have spots of nonwelding gold come in such a position upon your filling that a corner will break off, or the welding will not be perfect throughout the filling. There will be little spots of failure here and there. The filling will lack strength. There will be these little spots all through the filling, and if we put pressure on the filling it breaks away or goes down. It is imperfect. While the gold may appear to weld the filling will be flecked over its surface. It may even be so bad that it will pit and gradually crumble away. So much of the surface of the gold is injured that its welding property is really very imperfect. Now it is this imperfect welding of gold that is injuring so many gold fillings. Dentists do not get the full result of the welding property of their gold. Therefore I would urge greater care in the annealing and keeping of gold than has been exercised heretofore. We should endeavor to keep its surface in such a condition that every particle of the surface will weld. Time is an item in annealing gold. We can anneal it at a lower temperature than a red heat if we give it more time.

Dr. Morey—How about the gas flame? Dr. Black—A pure Bunsen burner gas flame is all right. It is as good as the alcohol flame. A Member—What about wood alcohol? Does it not answer the purpose? Dr. Black—I have not tried it. Dr. Taylor—It does not make as good a blaze.—Dental Review, April, 1898.

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PROSTHETIC DENTISTRY. By Dr. H. A. Smith, Cincinnati. Read before Isaac Knapp Dental Coterie, Fort Wayne. This subject suggests the oft-repeated remark by dentists, "There is nothing in the practice of prosthetic dentistry." Unfortunately it is true that the dentist does not as a rule receive just compensation for his efforts in this department of practice.

Inquiry as to the cause of this condition of things suggests, first that a uniform fee for "sets of teeth" of the same kind, as is the practice of many dentists, is unreasonable, not businesslike and a positive injury, not only to the individual practitioner but to the profession generally. A fixed fee for this service implies that a set
of artificial teeth is a product that can be turned out in a given time and at a uniform cost. The truth is, however, that every set of teeth, especially a full denture, is more or less an experiment. There is, in the first place, the element of uncertainty as to adaptation. Next the idiosyncrasy of the patient must be taken into account, and then the sisters and the cousins and the aunts frequently have to be considered. Every experienced dentist knows that it is often worth two or three times as much in money to make similar dentures for two different patients. Time and skill are the elements that enter into the value of productions of this character, and they should be paid for in proportion to their expenditure.

Second, Is it in accordance with correct business methods to always charge the rich and poor alike? The inability of a class to pay for our services may be in a measure compensated for by asking an increased fee from the well-to-do class. This is the custom usually followed in medicine and surgery and in the law. Even the minister expects a larger contribution from the rich member of his church than from the poor members, although the spiritual welfare of the rich and poor are of equal importance.

The immediate effect of the adoption of a gradation in fees in prosthetic work would be to bring up the quality of these operations. Opulent patients would receive our best efforts—that is, good working dentures in combination with the essential artistic features: while those less favored with worldly goods would get from our hands good, practical work, with the artistic element not wholly left out, as now frequently is the case.

In order that the practice of prosthetic dentistry may be made compensating, both the dentist and his patient should be brought to realize fully the old familiar truth, "The laborer is worthy of his hire."—Indiana Dental Journal, April, 1898.

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CLINIC ON A FUSIBLE ALLOY. By Grant Molyneaux, D.D.S. Made at Ohio State Society, Dec., 1897. The increased number and large variety of operations performed in the modern dental office, entailing as they do a considerable amount of mechanism, compel the busy practitioner to seek the most rapid method for the execution of his work. The construction of splints, supports for loose teeth under treatment, regulating and retaining appliances, bridges, crowns, etc., can be properly executed only under the direct
supervision of the attending dentist. If he be a busy man, both
time and patience are taxed to the utmost by the cumbersome and
lengthy methods generally employed in the execution of the purely
mechanical details.

The methods generally employed are to procure an impression
either in modeling compound or plaster of paris, followed by the
mixing and pouring of a plaster model, varnishing, waxing, sand
molding for die, counter-die and swaging. This requires two or
more visits of the patient, when one visit should suffice.

Rapidity in dental operations is always sought, but any new
method claiming such virtues is generally approached with fear and
trembling, especially by our older brothers. To allay that fear, I
will state that the subject of this clinic has been known to the dental
profession for a quarter of a century, and as possessing many virtues,
the greatest of which has been overlooked. In advocating this
new (?) rapid method we fully appreciate that old adage "make
haste slowly," for rapid methods are valuable only when they are
accurate and perfectly understood by the operator. Woods' metal
has been used in dentistry for many years and is known to contain
bismuth, cadmium, tin and lead. The alloy before you contains
the same ingredients as Woods' metal, the proportions being
changed so as to produce an alloy that may be cast into a modeling
compound or wet plaster of paris impression and give a smooth,
accurate model or die in metal.

The advantage of being able to cast metal directly with wet plas-
ter or modeling compound can be appreciated by all practitioners
of experience, if the model or die be accurate. We feel safe in
saying that an alloy composed of five parts of bismuth, three of lead,
two of tin and two of cadmium, properly compounded will produce,
when poured into either of the above named impression materials, a
more perfect model than can be obtained by the use of plaster, but
a model of this alloy cannot be used in place of plaster in all cases,
as in vulcanite or celluloid work, for the fusing point of the metal
is about 130° F. It is especially designed for the making of a per-
fect die and counter-die with the expenditure of not over five
minutes' time and with the very simplest kind of apparatus. By
the use of such an alloy the difficulties of sand molding are overcome
and the production of a perfectly adapted plate is the result. To
successfully use this or any low fusing alloy several points must be
constantly observed: (1) Castings are sharpened and nearest perfect when the alloy is poured close to the congealing point. (2) Overheating causes a loss of time and deterioration of the alloy. (3) To make a perfect and smooth casting in modeling compound the impression should be first oiled and then the alloy cast in a mush-like consistency, when it will fall in a thick soft mass into the impression, which is quickly jarred on the table, cooled in water and separated. A little practice will enable the operator to produce a perfect model in every instance. Take a plaster impression directly from the mouth, soak it thoroughly with sperm oil and pour the alloy at a little higher temperature than for modeling compound and let it stand until cold. In order to obtain a thick base for the model, take a thin copper strip (in lieu of this take a strip of heavy writing paper) about ten or twelve inches long and two inches wide, wrap around the impression and hold in place by snapping over it a small rubber band. Fill in spaces between band and impression with soft putty, which will always be ready for use by being kept under water. (A half-pound screw-top vaseline jar half filled with soft putty and covered with water will keep quite soft for years.) (6) To make counterdie, wrap the copper strip around the base of the die and fill all undercuts and unnecessary parts with the putty, paint over the surface with whiting dissolved in water or alcohol and cast the alloy as cold as possible. (7) Before remelting castings they should be cleaned of all putty and other dirt. If, however, the metal becomes contaminated it can be cleaned by heating until it becomes perfectly fluid, when the impurities can be removed with a piece of blotting paper. One illustration of the use of this alloy may be suggestive of its many valuable applications.

In adding a gold or platinum base for full dentures where the recession over the tuberosities and anterior ridge is so great as to make sand-molding without a core absolutely impossible, make the model or die of fusible alloy by casting into the impression. For such a case always use plaster, as this can be broken off in such a manner as to be restored and a second die cast. Upon this second the relief or vacuum chamber, made of block tin, can be attached with thick shellac varnish, or the relief can be first trimmed out of the impression. Use the second die for the first stamping of the plate, making the adaptation to the undercut as close as possible with riveting hammer. Try the plate in the mouth and properly
trim and wire if necessary. Replace on the used die and wrap the plate and die with one covering of cheese cloth or thin paper, place in shot-swaging device and swage.

The plate cannot now be removed from the die, but by placing the same in hot water the metal will run out of the plate, leaving it unchanged in shape. It can now be polished, and after transferring the relief from the old die to the unused one the plate is sprung onto it, and swaging with shot and melting the metal out as before will leave the plate with an adaptation that cannot be procured by any other method. In taking an impression for metal castings it should be a little thicker than usual, and any number of dies can be made from the same impression, all of which will be alike.

The compounding of this alloy requires greatest care in protecting it from action of air during first melting and in manner of adding the metals. As it never again approaches the first heat except by carelessness the metal will remain permanent in composition and working qualities indefinitely.—Ohio Dental Journal, April, 1898.

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VALUE OF INTERROGATION. By Frank L. Platt, D.D.S., San Francisco. Read before S. F. Dental Assn., Jan. 10, 1898. One of the leading objects of modern education should be that of teaching people to think and to think intelligently. The study of mathematics for this reason should be encouraged, and under a good instructor there is probably no other line of study which will so freely develop the reasoning power. But the ability to reason from effect to cause marks the true value of the student in any science. He who follows in the footsteps of others simply because footprints have been left in which he may place his feet, is but a servile imitator of those who have preceded him, lacking at once in certainty, originality of purpose, fertility of resource, and all the qualifications which constitute true success.

The failure of education to develop this reasoning faculty is due in the majority of cases to a lack of interrogation. The student who, when asked why he does a certain thing in a particular manner, replies, "My teacher told me to do it that way," gives an answer which should bring forth pity for the student and condemnation for his teacher. He should know the reason why, and why that is the reason—a consummation to be reached only by continued and oft-repeated interrogation.
A question in itself may be one of the simplest things imaginable, but the ultimate value of it as a producer of results may be almost incalculable. The answers to questions constitute the pith and point of all the knowledge of the world; but the questions preceded the answers, and all progress has for its initial starting point an interrogation mark. Life begins and ends just there. What is life? What comes after death?

Children know instinctively the value of interrogation, as is shown by their great ingenuity in asking questions; and it would speak volumes for our knowledge if we were able always to answer their questions cheerfully and logically; and we would be more careful of our statements if we oftener asked ourselves to what questions they might lead. The mother who told her son that God could do anything, would not have made such a statement had she foreseen that the young man would ask her, "Well, if God can do anything, could he make a three-year-old colt in fifteen minutes?"

We all possess within ourselves a fund of inquisitiveness that in most cases may well be represented by a large interrogation point; we want to know; our desire to find out something, no matter what, constitutes the long-felt want that students and teachers, workers and demonstrators are continually trying to fill.

Only the careless, the foolhardy or the reckless take a step in any direction without mentally questioning themselves in regard to its expediency. Lawyers and statesmen, philosophers and storytellers have often made their strongest points by simply asking a question. The congressman who asked "Where are we at?" had his reputation established at once. The author of "The Lady or the Tiger?" knew full well the value of the question with which he closed that charming narrative. All the force of the story lies in its closing sentence.

You may not have stopped to think of it, but it seems to me most of the people we meet are simply animated interrogation points, not so much because of the questions they ask as of the questions they suggest to us. There is nothing in the world which does not give rise to a question; the trees and stones, the streams and passing clouds all excite curiosity and lead us to ask what they are, whence they came, why they exist, and all the splendid array of natural sciences may trace their origin to questions thus asked.

It seemed to me better not to bring dentistry into discussion this
evening, so we might have a little recreation and jolt for a few minutes out of the ordinary rut in which so many of us run, but the subject must be brought briefly home to us. Let us stop and think how many mistakes might be avoided, how much better our work might be done, how much we might teach ourselves if we only stopped at each successive step in our procedures and asked the questions "Why do I do that?" "Why do I use this?" "What will improve my present method?" It would be a new education for many of us.—Pacific Medico-Dental Gazette, April, 1898.

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IDIOPATHIC SALIVATION. By Walter R. Jordan, M.D., Birmingham, Eng. On Dec. 31, 1896, a boy, aged 4 years, was brought to my out-patient room by his mother, who sought advice on account of the nuisance to herself and him of the constant dribbling of saliva from his mouth. The nuisance complained of was obvious, the boy's clothes for some distance below his neck being thoroughly soaked and the statement that he wet his clothes right through in this region was confirmed by a moment's examination. The child, it was stated, had always dribbled, very much so when cutting his teeth, since which time it had never ceased. The dribbling continued at night, so that his pillow was wet, but to a less extent, and the amount of saliva that escaped varied from time to time. The boy appeared quite happy and, but for the salivation, perfectly healthy. He was said to have good health, to eat well, and to have no digestive trouble, but to be always thirsty. He had ordinary diet and was very fond of porridge. He was intelligent for his age and talked plainly. Examination displayed no latent mischief or defect general or local. The mucous membrane of his mouth was healthy; the left tonsil was perhaps slightly enlarged; and of the teeth, which were cut normally, the lower first molars were already decaying. Four other children were quite healthy and had no tendency to salivation.

Three months later another boy, aged 2½ years, was brought to me, who in appearance and the tale told of him was an exact counterpart of the former. He too had dribbled very much during dentition, a process which began when he was four months old and was completed eight months later. The dribbling never after ceased, but was not given much attention till he was 2 years old. Since then it had got worse, and it was still getting worse, though it varied in
degree. His clothes were saturated. At one time it had continued through the night, but that had ceased. His general health was said to be very good, except that when he had a cold it "flew to his tonsils," and his appetite was not very good. He too had fed much on porridge. His teeth and the mucous membrane of his mouth were in a healthy state, but his tonsils, especially the left, were much hypertrophied. No other lesion of any sort was discovered on examination. He was intelligent enough; did not yet speak plainly but was getting on.

These two boys were typical examples of a class of cases of salivation which remain after the separation of all cases due to ascertainable causes, to be grouped together as "idiopathic." This is a condition of some rarity and of such interest as attaches to an affection not dangerous, but the cause of constant discomfort to the sufferer and those about him. H. Bohn speaks of the salivation as having its origin at the age of 3 or 4 months, with the customary salivation of dentition, and not thereafter ceasing. He refers to cases in children of 2 to 8 years old, of good physical and mental development, who had either successfully got through the ordinary complaints of childhood, or been ill seldom and never seriously. The salivation was apparent for the most part only in the erect position, and was therefore limited to the day and ceased at night; only one child dribbled in sleep as well. Emotions of the most varying kind diminished it. In one case a sort of control was established, the salivation appearing only on occasions which absorbed the entire attention. Iron was of undoubted influence on this form of salivation; but although some of the children were anemic, Bohn thinks it inadmissible to attribute to the anemia alone either the occurrence of the cases or the curative value of iron. He looks on the condition rather as having the features of a neurosis. The intermittent character of the salivation, its subordination to psychical influences, its peculiarity of either more and more abating with the progressive development of the body, or showing itself amenable to remedial drugs, point to a peculiar and isolated affection of the salivary-gland nerves in the developing organism of the child. The shortness of the period of observation did not permit of his seeing whether the salivation or the tendency to it ceased spontaneously at any particular age. It would then, he points out, run parallel to many forms of enuresis in children, in which, with complete soundness of the
rest of the body, a disturbed nervous impulse prevails; likewise in a very narrow province, which commencing puberty so often spontaneously adjusts.

In both my own cases the salivation continued during sleep; in other points, however, they correspond with those of Bohn. As regards duration, I can unfortunately add nothing to his statement. My second case, after getting over an attack of tonsillitis in April, contracted diphtheria in May and died after a few days' illness. My first case remained under observation till June 14, when he ceased to attend. Recently I found an attack of measles was the cause of his failure to come to the hospital. He had quite recovered from this and the salivation was still going on.

In this case I used belladonna persistently for five months. It relieved at first, but after a week or two the dose had to be increased, and this continued, cessation for a week or so on increased dose, with subsequent toleration and reappearance of the symptoms, till on May 26 mxx. of tr. bellad. were being taken three times a day and the salivation was in undisturbed progress. I then put him on iron, but the observation was shortly interrupted as above stated; and the progress of the second case, in which I also used iron, was quite too brief and complicated for any evidence of the value of the drug to be obtained from it.

An interesting point in these cases appears to be how far the salivation is actually the result of an increased flow, and how far it is due to a failure to acquire the habit of automatically swallowing the saliva. Bohn says nothing about the amount and appears to regard it as undoubtedly due to increased secretion; but the presence of hypertrophied tonsils in one case may indicate that a child who finds swallowing a more or less difficult process may simply fail to acquire the automatic swallowing habit.

The case reported by Finlayson is of a different nature, in that the salivation appeared rather suddenly at the age of 6. The child was otherwise strong and healthy, was bright and intelligent; had had at times shortly before she came under observation pains in the belly, and even occasionally slight sickness and diarrhea, ascribed to some error in diet. The discharge of saliva measured about 30 oz. in the 24 hours; but in addition to this all her clothes were found quite wet in the morning when she was dressed. She was treated with belladonna and was well in a month from the begin-
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ning of the treatment, the salivation having existed a month before treatment was begun. The case resembles very closely many cases of pyrosis. There is evidence of sufficient gastric or other abdominal irritation to account for the reflex secretion of saliva, which is the essence of most if not all cases of pyrosis. Had the fluid, instead of escaping by continuous dribbling, been retained for a time and then ejected in gushes, the aspect of pyrosis would have been completely presented.—Birmingham Medical Review.

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MOUTH-BREATHING—CAUSE AND EFFECT. By Gustavus North, A.M., D.D.S., Springville, Iowa. Read before Northern Iowa Dental Society, Sept. 1897. The subject which I will present to you has in my opinion not received the attention that it should. Mouth-breathing is not simply a habit, but the child is forced to breathe through the mouth on account of some malformation or foreign growth. Mouth-breathing is caused by some obstruction in the nose or naso-pharynx. The obstruction in the nose may depend upon a congenital narrowing of the passage or from deformed bony walls. In some cases the septum becomes thickened or deviated, and in other cases we find only the soft parts cause the obstruction.

I will not attempt to give treatment, but simply quote what a leading specialist says of these deformities: ‘Is it right to let the patient go through life with loss of hearing, deformities of face and chest, and with other inconveniences, mouth-breathing, etc., when a simple operation will give entire relief—an operation devoid of danger?’

Mouth-breathing in childhood has a tendency to cause malformation of the superior maxilla, which at this period is very soft and yielding, and the pressure of the lips and cheeks upon the maxilla and teeth will soon cause malformation of the dental arch and a V-shaped form will be developed.

Necessity for Nasal Respiration.—Nature intended the nose as a preparatory compartment to respiration. Inspired air is freed from dust and germs, receives its proper amount of moisture, and is raised or lowered to the proper temperature by passing through the nose. Even if the nasal cavities are in a normal condition, nasal respiration cannot take place if the naso-pharynx is obstructed. The muscles of the growing child become distorted by constantly keeping the mouth open day and night.
The action of these distorted muscles upon the soft and yielding bones of the child's face, together with the absence of admission of air to the accessory nasal cavities—the frontal, sphenoidal, ethmoidal and maxillaries—causes a deficient development of these sinuses, giving a flat appearance to the cheek bones and producing a peculiar physiognomy, characterized by the open mouth, vacant stare and almost idiotic expression of countenance.

The hanging lower jaw and constant mouth-breathing, together with deficient development of the bones constituting the nasal septum, and the pressure of the lips and cheeks upon the teeth and maxilla, develop a high arch and a narrow lower jaw with protusion of the front teeth; this is usually associated with long continued and excessive adenoid vegetation.

In infants the first symptoms to attract attention are as a rule "hard" breathing or snoring during sleep. In older children it is the dull voice and deafness which generally attract attention.

Irregularity of the teeth is oftentimes caused by neglecting the treatment of the diseases of the throat and nose, which should come under the care of a specialist.—*Items of Interest, May, 1898.*

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**PRACTICAL BRIDGE-WORK FOR DIFFICULT CASES.**

By Thos. P. Hinman, D.D.S. Read before Georgia State Dental Society. I shall treat of cases that are difficult on account of the weakness of the teeth to be crowned, in one instance, and the other where the teeth have to be abnormally short to secure sufficient cleansing space.

The first case we shall consider is one on the lower jaw, where the first bicuspid is in the mouth; the second bicuspid and two molars are out and the third molar remains. Of course you can see that it would be folly to make a fixed suspension bridge for this case, and I have hit upon a rather unique plan for such cases. The first thing is to crown the third molar and first bicuspid with crowns having perfectly parallel sides, but with properly articulated cusps. On these crowns bands of clasp-metal are made to fit them closely. You will notice that I say clasp-metal, for this is the only metal that is adequate for this purpose, possessing both hardness and rigidity. To make these bands fit the crowns perfectly, each crown is imbedded in moldine and then withdrawn; metal is poured into the form thus made, giving you a metal model of each. To this, you can
readily see, the clasps are fitted. The next step is to take an accurate plaster impression of the alveolar ridge between the abutments, so a metal die and counter are made, and a 20k. gold plate, 26 gauge, is swaged to fit the ridge. After this is done the crowns, holding in position the bands, are placed over the teeth in the mouth, and the gold plate, swaged to fit the ridge, is also placed in position. An impression of this is taken in plaster, the crowns being removed from the impression after it is taken from the mouth, but allowing the clasps to remain in the impression. A plaster and marble-dust model is now made of this, which shows the relations of the bands and plate. The bands are now firmly soldered to the gold plate; after this is done it is carried to the mouth, after putting the abutment crowns in position, to see if the relations are correct. A proper bite is now taken, using the gold plate as a base, and gold plate or saddle-back teeth are now soldered in position. The crowns are now set permanently in the mouth, but before the cement is thoroughly hard the bridge is slipped into position. This insures the correct relation of the abutment crowns and of the bridge. It should be allowed to remain in position for at least six hours before removing to clean off excess of cement. Your work now is completed and you can readily see that you have a practical removal bridge, which can be readily cleansed, but gets its support from the gums entirely, no unnatural strain coming upon the abutments, as would be the case in a fixed bridge. I have several such cases in the mouth which have proved themselves a great satisfaction to my patients as well as to myself.

Case No. 2. The following method is used in cases where the teeth crowned for abutments are very short, and is used exclusively on the lower jaw. After the crowns are prepared in the usual manner, the impression taken, and the plaster and marble-dust model made, holding the crowns in their relative positions, a platinum bar, about 16 gauge, is soldered on the approximal surface of one abutment, extending to the opposite. Cusps are now swaged up to fit the intermediate space, and are waxed upon the top of this platinum bar. The case being now invested and turned cusps downward, solder is flowed around the bar, and filling the cusps solidly. The case is now taken and filled from both sides, so as to leave the solder over the platinum bar the greatest thickness at that point, or in other words, the bridge is bevelled from both sides instead of only from
the lingual side, as is done in ordinary cases. This gives you what might be called a double cleansing space, and leaves no room for the accumulation of filth, but at the same time gives the greatest possible strength. I have a case of this description which has been worn about a year and has given great satisfaction, whereas a bridge made after the old style, of the simple lingual cleansing space, caused the gum to grow up around the bridge in such a manner as to make it unbearable in the mouth, and I devised this plan overcoming the difficulty.—Southern Dental Journal, April, 1898.

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INTERALVEOLAR ADMINISTRATION OF EUCAIN. By Dr. Stewart J. Spence, Harriman, Tenn. My best results in the administration of eucain have been when injection has been made into the alveolar process. By this means it appears that the solution reaches the pericemental membrane better than when injected into the gums.

As an ordinary sized hypodermic needle is too frail for this operation (its point becoming blunted and bent, even if the stem does not break), recourse is had to the larger sized needle used by veterinary surgeons, which, when cut off at say a quarter of an inch from the reinforcement portion of the needle, is strong enough to penetrate the outer wall of the alveolar process.

But as the piercing of the gum by a needle of this size is itself rather painful, the writer first injects the gums with a fine needle in the old-fashioned way, at about an eighth of an inch from the gingival margin. This preliminary injection not only prepares the way for the more severe one, but also for the lancing, which is painful when injection is made only into the alveolus. The penetration of the alveolar process is usually made at about a quarter of an inch from the gum margin, and on both sides of the tooth, the palatal side being perhaps the better. Where there is chronic abscess present the syringe point is, if possible, driven into it.

I have noticed no bad results from this practice during the three or four months of its employment. The dosage ordinarily used is about fifteen to twenty drops of a five per cent solution. This dose has never in my hands during nearly a year's use of it caused the slightest systemic effect, not even a brief giddiness; whereas ten drops of a two per cent solution of cocain frequently caused trouble in previous years.—Items of Interest, May, 1898.
TO LESSEN WEIGHT IN BRIDGWORK. By Thomas Crenshaw, D.D.S., Atlanta, Ga. In all suspended gold crowns, after reinforcing same, select a porcelain tooth corresponding in size to the class desired. Wrap this with thin sheet platinum, first having coated the platinum inside and out with the proper flux. Place small bits of 22k. solder in bottom of gold crown, then place the platinum-wrapped tooth in the crown with solder liberally arranged between tooth and crown. Invest and direct the flame at the bottom of the investment. This attracts the solder to the cutting edge or crown surface, insuring perfect contact at all points. We have had the pleasure of seeing this practically demonstrated and are impressed with its two great desideratums—economy in gold and a minimum of weight, without impairing in the least the strength of the bridge.—J. A. C. in Am. Dent. Weekly, May, 1898.

SCIENCE OF SWAGING. By Ernest A. Smith, London. The swaging of a metal plate in order that it may conform to every detail of the die affords a striking illustration of the application of the property of flowing possessed by malleable metals. This property of flowing is closely allied to the flow of liquids and is of great importance in industrial art. The relation between the behavior of solid metals and fluids has long been recognized by scientists in the fact that atomic motion is common to solids and fluids.

If a viscous liquid, such as syrup or treacle, be placed in a vessel provided with a cylindrical hole in its base, on the removal of the plug which temporarily closes it, the liquid will flow out, owing to the mobility of its particles, the end of the viscous stream being rounded.

Carefully conducted experiments by M. Tresca of Paris (in 1867) have proved that metals under suitable conditions may also be made to flow from one point to another. If an iron vessel with a cylindrical hole in its base be filled with discs of metallic lead at the ordinary pressure the lead will remain there, but on the application of extra pressure the metal will flow readily through the orifice, the end of the jet being rounded, the lead thus proving by its behavior that it is really a viscous solid. The general law which Tresca deduced from this and similar experiments is that "when pressure is exerted upon the surface of any material it is
transmitted in the interior of the mass from particle to particle, and tends to produce a flow in the direction where the resistance is least." It will thus be seen that when a malleable metallic mass is extended by compression, such as stamping, rolling, etc., a veritable flow of the particles of the mass occurs, analogous in all respects to the flow of liquids.

As previously stated, the swaging of a metal plate presents a good example of molding a plastic metal, and of the true flow of metal, under pressure, into the sunk portions of the die. The flow of metals is also well illustrated in the striking of a gold crown from one piece of metal, also in the stamping of impression trays or the striking of a coin. "The production of complicated forms, like a jelly mold, from a single sheet of copper, under the combined drawing and compressing action of the hammer, is a still more remarkable case." The softest metals, such as lead, tin, cadmium and gold, naturally flow more readily than the harder metals, and require the exertion of less pressure, and on this account lead and tin are used as suitable metals for taking "patterns" in the dental laboratory. When a metal is hammered, it becomes hard and less easy to work, owing to the strain produced by mechanical treatment, which causes the molecules of the metal to assume abnormal positions. If the hammering be continued a point is reached at which it may be impossible to still further alter the shape of the piece of metal without cracking it. The original softness of the metal may, however, generally be almost entirely restored by subjecting it to the process of annealing, which consists in heating the material to a temperature which must be suited to the metal under treatment, and allowing it to cool slowly, or in some cases quickly. The application of heat to a metal produces a molecular change in its structure, the nature of the change depending on that of the metal or alloy and on the treatment it has undergone.

When, therefore, the molecules of a metal have been forced into unnatural position by hammering, they are brought back to their normal condition and the strain in the metal released by annealing or softening by heat. The process of annealing is resorted to at intervals during the swaging of metal plates as soon as the material gives indications of becoming dangerously hard.

The annealing of a plate is usually affected by heating it to a uniform dull red heat, and then plunging it while still hot into a
vessel of cold water. The application of too high a temperature usually so far changes the character of the metal or alloy that it becomes weak and is said to be "burnt."—The Dentist, May, 1898.

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FORMALDEHYD: ITS ANTISEPTIC AND IRRITATING PROPERTIES. By A. H. Peck, M.D., D.D.S., Chicago. Read before Chicago Dental Society. In one of the pharmaceutical journals F. C. J. Bird gives a very interesting account of the history of formaldehyd. Among other things he says, in substance: The antiseptic and disinfectant properties of formaldehyd have been extensively investigated during the past two years, and the results obtained both by bacteriologists and in the practice of various industries have given it at once an important position among bactericidal agents. Formaldehyd is gaseous at ordinary temperature, but is now obtained commercially as a concentrated solution containing 40 per cent of the aldehyd. Most of the published experiments have been made with this solution, which is placed on the market under various trade names.

Hoffman discovered formaldehyd in 1867. Loew subsequently demonstrated its germicidal powers, and Berlioz and Trillat suggested its use as a powerful disinfectant free from poisonous properties. It is a powerful reducing agent and when oxidized yields formic acid. A solid polymeric variety—paraformaldehyd—is also known. There are several chemical processes by which the aldehyd may be prepared, but the most practical is that dependent upon the limited oxidation of methylic alcohol. If a current of air charged with methylic alcohol vapor be passed over a coil of glowing platinum or platinized asbestos and the escaping gases condensed in a Liebig condenser, a weak solution of formic aldehyd in methyl alcohol results. The substitution for the platinum spiral of a roll of superficially oxidized copper gauze gently heated in a glass tube through which the mixed vapors are passed, the product being led into water, greatly increases the yield, it being possible by this means to obtain a solution containing fifteen to twenty per cent of formic aldehyd. The commercial solution "formalin" is manufactured by a process similar to the foregoing.

The forty per cent solution of formaldehyd as met with in commerce is a liquid of a pale sea-green tint, specific gravity about 1.070, acid reaction, and possessing a pungent and very character-
istic odor. In more concentrated solutions the formaldehyd tends to pass into the polymeric and comparatively inactive form; this, therefore, is the strongest solution which will remain permanent. The acidity is due to formic and acetic acids, and the faint sea-green tint to a salt of copper, a distinct film of that metal being deposited on the surface of a piece of polished steel when immersed in the liquid for a short time. When exposed to the air formaldehyd vapors gradually diffuse and the solution loses strength.

With regard to the toxicity or otherwise of formaldehyd in solution, when taken internally, no record of exact experiments relating to its physiological action on the human subject appears to exist, and information such as we possess concerning salicylic acid, carbo- loric acid, mercuric chlorid, etc., is wanting. The solid polymer may be given in doses up to ninety grains as an intestinal antiseptic, its action depending on small quantities of formaldehyd that are continuously liberated; and that is put forward as one proof of the harmless (?) nature of the antiseptic. Dr. Tideal is said to have taken a considerable quantity of a one per cent solution without experiencing any ill effects.

Formaldehyd ranks high as a deodorant. Either as vapor or in solution it almost instantly removes the putrid odor of decomposing animal or vegetable matter, combining with sulphureted hydrogen, ammonia, and ammonia bases generally, to form inodorous compounds. Putrid meat, broth, brine, etc., are immediately deodorized when treated with a little of the forty per cent solution.

The vapors given off by the solution are extremely irritating to the eyes and to the mucous membrane of nose and throat, so that care should be taken when handling the solution not to spill any on the hands or skin, as it is found to have an effect similar to that of strong carbo- loric acid. No pain is felt at the moment, but afterward the skin becomes quite insensitive and very rough and white wherever the liquid has been in contact with it.

Gelatin exposed to formaldehyd vapor becomes insoluble, even in hot water, and animal tissues generally are hardened in a remarkable manner. This property is turned to account in the rapid hardening of tissues for microscopical examination and in photography. Dr. C. L. Schleich has also prepared from the formalized gelatin an antiseptic dusting powder for wounds. Dr. Schleich dissolves gelatin in water, adds twenty-five minims of "formalin" to
DIGESTS.

the pound of gelatin and dries and powders the product. This powder in contact with healthy or inflamed tissue disengages formaldehyde vapor, thus maintaining an antiseptic atmosphere around the wound. Necrotic tissue, or masses of dried secretion, may prevent contact between powder and wound, in which case recourse is had to a weak hydrochloric solution of pepsin, which liberates formaldehyde from the powder equally as well as the living tissue.

As a hardening agent in microscopy and for the preservation of vegetable structure formaldehyde solution promises to be of the greatest service. Mr. E. M. Holmes read an interesting paper on this subject some months since and his experience confirms the statements that have been made as to the advantages of formaldehyde over such solutions as chromic acid and mercuric chloride, or even absolute alcohol. Dr. Eccles, writing to the British Medical Journal, has stated that while the last named reagents required a period of time ranging from four or five to fourteen days, and the tissues either became brittle and unequally hardened or the staining was interfered with, those sections treated with formaldehyde were sufficiently hardened in three days, did not become brittle, and stained well, the cells retaining their original shape.

Formaldehyde, as shown by Slater and Tideal, when employed of such strength in weak alcoholic liquids as to be fatal to lactic and butyric acid organisms and other bacteria which produce injurious secondary fermentation, does not interfere with the growth of the yeast plant, nor does it hinder in any way the formation of alcohol. This fact has been turned to account in the brewing industry for producing pure cultivations of yeast, and preventing sourness, cloudiness or ropiness in the finished product; it should also prove equally useful in insuring soundness in such fermented liquids as orange and ginger wines, perry, cider, etc. The proportion necessary is from 1 in 20,000 to 1 in 10,000.

This illustrates a striking peculiarity in the antiseptic action of formaldehyde, for while it exerts an intensely powerful inhibitory effect on bacteria generally, especially those of putrefaction, in contrast it has but a comparatively feeble influence in preventing the development of the lower forms of plant life. Hence vegetable solutions preserved by its aid, though retaining their color and other physical characters to a remarkable degree, are exceedingly prone to develop moldy growths, etc., and if this is to be avoided, the
proportion of antiseptic must be increased to an extent far greater than required simply to arrest putrefactive change.

Meat, fish, etc., may be kept for several days during the hottest weather by placing in a well covered dish with a tuft of cotton-wool moistened with from four to eight drops of solution of formaldehyd. The antiseptic vapor does not communicate the slightest odor or taste to the meat, etc., and after considerable experience of this method I have never found it to fail to maintain the articles absolutely untainted for four or five days, even under the severest conditions of temperature.

Disinfection by formaldehyd vapor generated directly from methyl alcohol has lately attracted considerable attention. The simplest form of apparatus for the purpose consists of an ordinary spirit lamp provided with a coil or spiral of platinum extending about one inch above the wick. After lighting the lamp and allowing the platinum to become red hot, the flame is extinguished. The platinum continues to glow in contact with the air and methyl alcohol vapor, and the latter rising from the wick becomes partially converted into formaldehyd, the action being maintained as long as any methyl alcohol remains in the reservoir. In this apparatus a large proportion of the alcohol escapes oxidation, and in consequence several improved forms have been devised. In one resembling a plumber's blowlamp, a stream of methyl alcohol vapor is directed upon incandescent platinum; there are also air holes which can be so adjusted as to regulate the proportions of air and alcohol vapor; in this lamp the greater part of the alcohol is converted. Formaldehyd vapor may also be generated in an apartment by spraying the solution into the atmosphere, or heating it in an evaporating dish. Diffusion, however, is slow in the latter case, as has already been stated, and it is much better to allow the solution to fall drop by drop on a heated plate of metal. A handy arrangement for effecting this consists of a tin plate tray supported on the ring of a retort stand, and heated by a spirit lamp, the formaldehyd solution being contained in a glass separator held in an upper ring of the stand, and, by regulation of the stopcock, allowed to drop slowly on the heated tray beneath.

Careful experiment has shown that disinfection with formaldehyd vapor is most thorough and effective, the vapor diffusing very rapidly and penetrating everywhere, dust on the walls, in the air, and even
in cupboards being almost immediately sterilized. Owing to the irritating nature of the formaldehyd fumes on the mucous membrane and air passages, it is imperative that after disinfection by this means currents of air should be allowed to pass through the apartment for a quarter of an hour, and complete removal of the disinfectant should be insured by free ventilation for at least two days.

Of late the dental profession has taken up this agent for the treatment of pulpless teeth, the treatment of abscesses, and for devitalizing pulps, etc., and many are reporting most wonderful results from its use. Not long since I read an article in one of our journals in which the writer paid a most glowing tribute to this agent as a most efficient and desirable one for the treatment of nearly all conditions of pulpless teeth. Having had some experience with it myself, and because of some negative results experienced, having had my suspicions aroused as to whether it was just the proper thing to be used about the mouth, I decided to investigate it as thoroughly as possible, and first I tested it as to its antiseptic properties, and found it to be a powerful antiseptic—the formalin preparation, which is a saturated solution of the gas formaldehyd in water, being nearly as potent an antiseptic as the oil of cassia. In 10 c. c. of sterilized mutton broth $\frac{3}{10}$ D. of oil of cassia prevented development of bacteria, while it required $\frac{1}{10}$ D. of formalin to accomplish the same result. This renders formalin potent as an antiseptic in 1 to 1,400 parts. Somebody has been so enthusiastic over this agent as to make the statement that it is fully as potent an antiseptic as is bichlorid of Hg. This is certainly a mistake. I prepared a 1 to 1,000 solution of bichlorid of Hg. and found it required 9 D’s. of this solution to prevent development of bacteria in 10 c. c. of broth. I prepared a 1 to 1,000 solution of pure formaldehyd, which we have now in a solid state—the gas being reduced to such by chemical processes—and of this solution found that it required 30 D’s. to prevent development of bacteria in 10 c. c. of broth. Thus proving beyond the possibility of any doubt that formaldehyd is not so potent an antiseptic as bichlorid of Hg., by at least threefold. I next resolved to determine its ability to irritate soft living animal tissue—the same as I have done, during the winter months, with nearly all the agents we use. I took a small pellet of cotton, saturated it with formalin, placed it in a small rubber cap to prevent evaporation, placed it on
the surface of the skin of the lower part of my right leg, and covered it over with a large piece of court plaster, stuck tightly about the edges. This was placed there three weeks ago last night at 12:30 o'clock. I went to bed and went to sleep. Between four and five in the morning I was awakened by the pain, and could get no rest after that. The pain was quite intense and of a very peculiar character. It seemed as if something were inside my leg gripping it as if in a vise. Then it would take a turn and twist about, as if tearing the inside of my leg out. It would stop for an instant, and then the performance would be repeated again with renewed vigor. The pain continued more or less severe all day. I wanted to keep it there for twenty-four hours—the time adopted for other agents; but at the end of twenty hours the pain had been so constant and the tissues began to look so ugly that I concluded to remove it, and well it was that I did. The tissue to which it was applied and for about two inches in all directions was as white as pure snow, as if all the blood were driven from the parts. The pain was lessened very considerably within a short time after the application was removed. The tissue to which it was directly applied was perfectly anesthetized, and to a considerable depth. Just at the circumference of the application there was considerable tenderness. There was much swelling, which latter seemed to be more like that of oedema than of true inflammation. In about two or three days some color began to return to the parts, except the part to which the agent was directly applied, which latter never regained its color. In about two days more a line, purple in color, began forming at the circumference of the point of application—a line of demarkation—and it became apparent there was to be a break in the tissue, and that more or less tissue was to be lost. This break occurred and sloughing took place; more or less tissue was lost all over the surface of the inflamed area. The tissue in the center raised about the edges, but was very obstinate about coming away. It was only yesterday morning that it did come away, and then only after having been severely persuaded. From the time the agent was thoroughly absorbed in the tissues, physically I was not up to the standard; the appetite being more or less impaired, the digestive and eliminative organs being somewhat interfered with. These conditions continued to grow worse until the climax was reached a week ago last Friday, in the form of quite a severe case of systemic poisoning, the poison-
ous matter being thrown off through the medium of a severe diarrhea, and also much vomiting—the former continuing for a period of three days, the latter for one day, since which time my physical condition has rapidly improved. The sore itself, however, is still a very ugly looking affair.

Having seen a number of cases that have been treated by physicians with various per cent solutions of formalin in which more or less sloughing of the soft parts has resulted—one which I saw only the other day in which as low as a two per cent solution was used, in connection with which considerable sloughing resulted—and also because of the very vivid recollections of my own personal experience with it, I have about come to the conclusion that we can get along very nicely without it in the treatment of diseased conditions about the mouth.—Dental Review, May, 1898.

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POINTS. By H. D. Weller, D.D.S., Indianapolis. A sharp pointed penknife is very useful for trimming around plain teeth. * * * Broken pieces of glass are sometimes preferable to a rubber scraper in finishing vulcanite work. * * * If a small wooden handle be attached to the soldering pliers many a slight burn and by-word may be avoided. * * * It is always a good plan to have a solution of bicarbonate of soda on the laboratory work-bench to neutralize the sulphuric acid after pickling any kind of metal work. * * * The first essential point in putting in a good amalgam filling is a carefully prepared cavity, the next is absolute dryness of the amalgam while under manipulation. * * * Felt wheels such as are used on the dental engine are very useful on the laboratory lathe for polishing parts difficult to get at with the regular laboratory cones and wheels. * * * jewelers' files are very useful in crown and bridge work. Much more can be accomplished with small files, especially around the crowns where bridge teeth have been anchored. * * * Before going to the chair to operate, wash the hands well with hot water and spray with good toilet water. The hot water will soften the hands and the touch will be more delicate. * * * Instead of decorating the floor and cuspidor about the operating chair with waste cotton, sandpaper disks and strips, have a small waste-basket handy at your right to receive the same. It will look more refined to your next patient. * * * A good matrix retainer for amalgam work if the filling be an approxi-
mal: First fit a very thin band of German silver around the tooth, making an overlap on the lingual surface, then adjust a tight-fitting rubber-dam clamp over the middle part of band. * * * A good local anesthetic which will not cause sloughing or any other ill results: Cocain, 12 grains; Atropia, 1-6 grain; Carbolic acid, 8 drops; Aqua dis. ad. 1 oz. Sig. Inject from five to ten drops and immediately operate.—Indiana Dental Journal, May, 1898.

EROSION. By Frank Acker, D.D.S., Cleveland. Read before Cleveland Dental Society, Feb., 1898. The term "erosion" as used in dental pathology is the name given to a peculiar destructive process of tooth substance. The phenomena in respect to location, shape, color, hardness and smoothness of the part affected differ sufficiently from ordinary forms of decay to permit the use of a distinctive appellation. Erosive cavities are most frequently found on the labial and buccal surfaces of teeth, especially the right anterior teeth, though there are instances of their occurrence in proximal positions or even extending across the incisive edge and on the lingual surface toward the gums.

According to Black, the incisors are most frequently the seat of this affection, and next in frequency the cuspids. Bödecker would give the cuspids the first place. One tooth is rarely affected alone, but similar lesions appear within a few months on adjacent teeth. Yet there is no law of steady progress and symmetrical extension on both sides of the tooth first attacked. Often the destruction is greatest at this point, diminishing gradually with the distance from that point—seeming to indicate dependence on time, but there are many exceptions to this rule also. The cavities vary in extent from a simple groove, generally running mesio-distally to an expansive area almost covering the face of the crown. Grooves running lengthwise on the labial and those running from labial to lingual on approximal surfaces are rare. Generally a portion of the enamel, about half line in breadth, next to the free margin of the gum, retains its integrity. Bödecker believes the gum is always somewhat inflamed and retracted.

The shape of the cavities also varies greatly. A common form consists in an abrupt descent of the cavity wall nearest the incisive edge, with the floor of the cavity gradually slanting toward the surface, making the angle at the gum margin much more acute. This
condition has been observed reversed. Or from all sides the slope may be the same, making a saucerlike depression. The position of the tooth in the arch, as to prominence, or if twisted on its axis, has been noted to affect the shape and extent of the cavity. Black had a case of shortening of the incisors that could not be explained by abrasion, as the occlusion was such that these teeth could not meet.

Discoloration is slight if it exists at all, except when complicated with decay. The pulp is rarely exposed. A formation of secondary dentin takes the place of this pulp and its outline is distinctly visible in deep erosions. The eroded surface is hard, smooth and shining. In ordinary decay the brokendown remains of the mineral and the soft animal matter furnish clues for investigation. The presence of bacteria in the dentinal tubules can be demonstrated microscopically, and by chemical analysis the presence of acids. But erosion when found uncomplicated with decay presents a much more difficult problem of etiology. This imp of Satan takes special pleasure in climbing mountains of difficulty—the perpendicular icy walls of enamel being unable to trip him. Bearing a banner with a strange device "Erosion" he marches on, leaving no traces of his implements behind him, only the accomplishment of his awful purpose.

That the cause is merely mechanical, as of a tooth-brush, is improbable, because the discontinuance of a tooth-brush was noted to have hastened, if anything, progress in at least one case. That it is simply chemical action is equally untenable, or the process would not be localized as it is. In an experiment on two bicuspidos out of the mouth an artificially produced constant current of an acid fluid was directed at an angle toward the interproximal space and resulted in cavities similar to approximal erosion; but this does not prove that this is the method in which erosion accomplishes its work in the mouth, because such constant currents have not been demonstrated. In some cases the mucous membrane of the lip has presented elevations fitting into the cavities, and giving some grounds for the absorption theory, but such approximity of tissue capable of absorption is not always demonstrable. That electrolysis may have some part is admitted, but that it wholly explains is denied by such men as Black and Swain, of Chicago, who have experimented in this direction.

How ordinary cavities of decay occur in similar positions, as on smooth surfaces habitually unclean from any cause, for instance
mouth-breathing, also at or near the junction of enamel and dentin, due to acid mucus or absorptive processes. Class III. and IV. Black. By a simple experiment—painting the labial surfaces with a mixture of lamp-black and alcohol and then, when dry, permitting the normal action of the lips, I find the prominent points most quickly cleaned and the pits and grooves retain the lamp-black longest. The prominence of the gum also protects a little strip near the margin on the neck of the tooth. Then bring the tongue into play and it will be found that the longitudinal grooves are much more readily cleared than the mesio-distal. In the lower teeth I also observe that the lamp-black finds its way to the lingual through the approximal spaces and is soon apparent to the taste. This would indicate a current in that direction. I was unable to get a similar effect on the upper teeth. So then along the necks and in the mesio-distal grooves acid secretions would find the most propitious field for action. The comparatively easy access of tongue and lips to these parts might mechanically rub away the broken-down tissues at frequent intervals, leaving a smooth surface. Currents may be the mechanical cause in approximal spaces of the lower teeth. Since the question of etiology is still far from settled the treatment must be comprehensive and wide in range on this account. There are cases on record where the arrest of the process has come without operative interference—others where the ravages would most certainly have led to the destruction of the tooth if left alone. The past treatment appears to me to be as follows: When seen in the initial stages, prescribe the painting of teeth and gums with antacids, as magnesia, prepared chalk or talcum, before retiring; leave on over night. During the day frequent washes of antacid solutions, alternating with a simple pleasant antiseptic wash, such as 15 per cent boracic acid. Look after the general health or have the physician examine for cause of abnormal secretions. Watch closely, asking patient to call twice a month.

If the case has progressed further, so that the dentin is exposed and sensitive, touch with a solution of silver nitrate, freshly made by dissolving a crystal in a drop of water. This overcomes sensitiveness but may leave a dark stain. After a few minutes, if the stain is objected to, a slight undercut sufficient to hold a cement filling in place can be made with little pain. When at a later date the permanent operation is undertaken the kindly effect of the
cement will be apparent in reduced sensibility. But I see no good reason for putting off indefinitely the proper filling of such cavities with gold, for I do not find that anyone has proven the recurrence or continuance of destructive processes in this condition more frequent than in ordinary cervical decay.

Of eight cases which I had diagnosed as erosion, after more careful consideration I ruled out one as coming under the third head of Black's division of decay, and four under Class II. Three cases I am willing to give the benefit of the doubt and call erosion. No. 1. Man 55 years of age. Inferior left cusp and superior first bicuspid smooth shallow labial cavities, with no discoloration or overhanging margins, but extremely sensitive. Have touched with Ag. NO₃ three times since July, 1895—process is arrested and no more pain; prescribed mouth-wash but did not use. No. 2. Young man, 19 years old. Smooth deep cavities in inferior left cusp and first bicuspid and right first bicuspid; filled with gold before Feb. 17, 1897; are in good condition now. He uses tooth-brush without regularity. No. 3. Lady between 35 and 40, had typhoid fever three years ago, after which she noticed sensitive points on the molar buccal surfaces near the gum, but it passed away. Within one month it has begun to annoy her again, which brought her to me. Inferior left second and right first and second molars present shallow sensitive grooves but slightly discolored; no soft decay, hard and smooth; touched these with Ag. NO₃. At the next visit said greatly relieved, but found anterior teeth, especially cuspid and bicuspids, a fine white line near gum sensitive to instruments. Prescribed magnesia, local treatment, and will watch case.—Ohio Dental Journal, May, 1898.

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IS DENTAL CARIES ACCOMPANIED BY INFLAMMATORY ACTION? By Dr. C. S. Beck, Wilkesbarre, Pa. Read before Union Meeting at Buffalo, Oct. 27, 1897. The idea of life in its simplest acceptation is that of vital activity, and obviously, therefore, involves that of change. We do not consider any being as alive which is not undergoing some continual alteration, however slow and obscure, that may be rendered perceptible to the senses. This alteration may be evidenced by growth of the organic structure, or by molecular changes in its substance which do not produce any ostensible increase; or it may be most obviously manifested in movements such as cannot be attributed to any physical cause.
The life of any complex organism, such as that of man, is in the fact the aggregate of vital activity of all its component parts, and no fact has been more clearly ascertained by modern physiological research than this. In every living structure of a complex nature, while we witness a great variety of actions resulting from the exercise of the different powers of its several component parts, we at the same time perceive that there is a certain harmony or coordination among them all, whereby they are all made to concur in the maintenance of the life of the organism as a whole; and if we take a general survey of them with reference to their mutual relation we shall perceive that they may be associated into groups each consisting of a set of actions which, though differing among themselves, concur in effecting some positive and determinate purpose. These groups of actions are termed functions.

In the present advanced state of anatomy, physiology, and histology every shadow of doubt as to the human teeth being living organs has passed away. We see nature very early in uterine life making provision for the development and growth of the teeth. We see too that they are connected to the general system, and derive their nutritive supply, like all other organs of the body, from the circulation of the blood. If these physiological facts be true, may not the teeth be subjected alike to some of the diseases which other organs are heir to? From the material supplied in the food there is prepared by the digestive and assimilative process the blood. Upon the circulation of the blood through all parts of the fabric depends the nutrition of the tissue.

Disease is a state opposite to that of health, consisting in a change either in the position and structure of parts or in the exercise of one or more of their functions, or in both. If any one of the organs or tissues of the human body be irritated, it is occasioned by some stimulus, which stimulus causes an increased flow of blood into the capillary vessels; these vessels become overdilated and enfeebled, the results of which are pain, redness, heat, tenderness, and swelling. These symptoms will appear in greater or less severity, according to the structure, vital properties, and function of the parts affected and their connection with other parts, as well as according to the constitution of the individual; this we call inflammation.

The predisposing causes of inflammation are the same as those arranged under the head of predisposing causes of disease—viz.,
debilitation, influence, excitement, previous disease, present disease, hereditary constitution, temperament, age, sex, and occupation. Local causes of inflammation comprehend irritants, whether mechanical, chemical or vital. A grain of sand in the eye, a thorn in the skin, or a wound in the flesh, are some of the mechanical irritants; chemical irritants are such agents as operate on living matter by strong chemical affinity and tend to alter or decompose it. Heat, strong acids and alkalies, various salts, etc., such act in like manner on dead texture. Vital irritants are various agents which produce no effect on dead animal tissue, and whose irritating operations are not referable to any known chemical property; of this kind are cantharides, mustard, capsicum, and the essential oils.

If the web of a frog's foot be placed under the field of the microscope so as to bring to view the circulation, and one of the essential oils be applied, the following phenomena present themselves: The red corpuscles of the blood lose their circular form and adhere together; the white corpuscles remain apart, and are often more abundant than usual. This is inflammatory action. If the cellular or serous membrane be affected, the inflammation is more active than when the mucous membrane or skin is affected. Inflammation may end by resolution, suppuration, gangrene, adhesion, effusion, or induration. For instance, when the effusion takes place between the bones and periosteum it may terminate by absorption, or be converted into pus, or become organized into fibrin and the fibrin into true bone.

Caries of the bone is an inflammatory process called osteitis, and has its origin in the soft parts of the bone and erodes its hard tissue; but in the tooth the carious process has its beginning in the hard tissue and spreads to the more vascular, the dental pulp. The human tooth has entering into its formation the following tissues: the pulp, dentin, enamel, and cementum. The pulp occupies the center of the tooth, and consists of a rich plexus of blood-vessels and nerves, held together by connective tissue. Covering the periphery of the pulp is a layer of cells called odontoblasts; passing from these are processes, some of which enter the canaliculi of the dentin, and some pass laterally to connect with other odontoblasts, while others connect with cells which lie more deeply and are called pulp processes.

The dentin is an organized matrix highly impregnated with cal-
calcium salts; traversing it are innumerable canaliculi which have their origin in the pulp-chamber and ramify in every direction toward the enamel and cementum. Each of these tubes is occupied by living fibers; these ramify and pass through the walls of the canaliculus into the basis-substance, forming a net-work of living matter and anastomosing freely through the dentinal tissue.

The cementum is traversed by cavities which contain nucleated bodies similar to the Haversian canals found in bone; from these nutritive cells are sent off delicate branches which anastomose freely in the basis-substance with those sent off by the dentinal canaliculus. In the enamel we also find living matter in the form of very delicate fibers; these send offshoots into the cementum. We have a complete plexus of living fibers in all the tissue of the teeth, and they ramify freely one with the other; then the tooth, as a whole, is connected with the jaws by the periosteum which invests its roots.

We must then admit the tooth to be a living body, and that it is subject to any morbid process which will react upon the living matter of the tooth, just as on any other tissue of the body.

Dental caries has been the subject of much thought and study among some of the talented and ablest physiologists and pathologists both of this country and Europe. From the days of Hippocrates up to the present time several theories have been advanced as to the cause of dental caries. Hippocrates and his pupils were humoral pathologists, and hence they referred caries to a bad condition of the humors. These views were held for over a thousand years. Fau-chart took a great deal of pains to discover the worms supposed to be in most cases of decay, but never succeeded. Hunter, with his false physiological views, regarded the teeth as foreign substances in a certain degree, and they only received nourishment when sound and fit for use. Fox considered the proximate cause of dental caries to be an inflammation in the bone of the crown of the tooth which, on account of its peculiar structure, terminated in mortification.

The present theories are the vital-chemical, the electro-chemical, and the parasitical. To enter into a discussion of these several theories would be foreign to this paper; suffice it to say that to-day, in spite of all the researches which have been made, we are not clear upon this subject. One thing we do know, that death of the dental tissue is preceded by their decomposition. We know that one condition has occurred by the presence of the other. We also know that
the human tooth is a living organism, that its connection with the
general economy is similar to that of other organs. It is supplied
from the circulation with blood. Its pulp-tissue is a rich mass of
blood-vessels and nerves. From its protoplasmic bodies pass fibers
which traverse its entire structure. That these are facts favorable
to inflammation, when subjected to irritating causes, I think cannot
be denied. We have seen that the degree of inflammatory action
depends on the condition of tissue affected. How do these living
fibers which pass into tooth-tissue induce the flow of blood, or some
other fluid which carries the calcifying material and deposits it at
the line of demarkation, which is to be found in all teeth affected by
dental caries? This barrier is situated between the pulps and devi-
talized dentin. We are told that it is produced by the consolidation
of the canaliculi of the first line, which being destroyed by the
advancing disease, a second is thrown up, and one after the other
until the pulp-tissue is reached, and it in turn becomes subjected to
irritation and inflammation which induces it to renew its formative
function; this is what we hope to bring about when we cap an
exposed pulp. This vital act, this self-protective principle, does
seem to be accompanied by more or less inflammatory action. May
it not be possible that this line of separation between the dead and
living is a fact similar to that which takes place in other tissues of
the body, and which the surgeon sometimes waits for before operat-
ing? May it not also be analogous to that which occurs in the soft
tissue when inflammation advances toward abscess?

When the devitalizing of an exposed pulp was a common practice,
we frequently saw the dentin colored red. The view then enter-
tained was that the blood-corpuscles were broken up, and hemoglo-
bin or coloring matter of the blood was liberated and passed into the
tubes of the dentin. In former years I have frequently met with
teeth colored in this way. In some instances the discoloration would
pass off in from twenty-four to twenty-eight hours, but in many
cases become permanently fixed. We have merely a hypothesis as
to the true cause of discoloration. Those of you who have seen the
circulation of the blood in the web of a frog's foot noticed that the
blood-corpuscles do not always retain the spherical form as they pass
along the vessels; their figures sometimes become elongated or con-
tracted in the center as they pass around the corners, so to speak, or
pass from one vessel to the other.
At what point in the capillary system the arterial blood is converted into serous, or the arterial blood gives off its nutritive properties, is not known. We know the pulp is abundantly supplied with blood-vessels and nerves. Now if the line of demarkation found in the teeth affected by caries be the product of a deposit of lime-salts in the canaliculi, how and by what means are these salts carried to the line of demarkation? Is there any other vehicle but the blood to convey them?

Histology is only in its infancy, as connected with dental anatomy. To-day we admit of living matter in the dentin, cement and enamel. With these truths in view, may it not be reasonable to suppose that dental caries, in part at least, is accompanied by inflammatory action?

Every dental operator knows that there is such a thing as sensitive dentin; if he doesn't, his patients are not long in informing him of the fact. What is the pathology of sensitive dentin? When our patients ask, What is it that hurts so? the reply is, Sensitive dentin. And pray tell me what is sensitive dentin? Some authors tell us that it depends upon its connection with the pulp, and others that there is a possibility of actual nerve-fibers. If you admit one of these theories there is a possibility of an artery, for nerve and arteries accompany each other. If you admit the one I do not see how you can omit the other. If you acknowledge both, you must admit of inflammation. We sometimes meet with cases in which caries has been arrested, and the parts, though dark, have become hard, consolidated, and highly polished. We might ask how this change is brought about. Is it that the vital parts have overcome the destructive agent? If so, has it not been preceded by an inflammatory action? A more common occurrence in practice is to meet with cases in which the teeth are worn down quite to the margin of the gums, and without any pulp exposed. The pulps in these cases have resumed their formative power and deposited new dentin. This, I think, is due to more or less inflammatory action.

In teeth of delicate structure, and particularly those in which the tubuli are large, a considerable amount of pain is felt upon the removal of the disorganized tissue. Teeth that have been excavated and their tissue left exposed to the action of the secretions of the mouth, in a short time become painful and highly sensitive to the slightest touch. These are conditions common to inflammation. Pain is frequently felt in the progress of dental caries long before
the pulp is exposed. A number of patients are able to tell when their living teeth are decayed, from the unpleasant sensation which they feel. In these, then, do we not have nearly if not quite all the symptoms accompanying inflammation? The severity of its action depends upon the quality of the tissue and the state of the system, whether it be above or below the standard of health. These are some of the causes which lead me to believe that dental caries is accompanied by inflammatory action.—Dental Cosmos, May, 1898.

Mouth Washes and Eczema.—Neisser reports several cases of obstinate eczema of the lips which at first defied all treatment. In the end it was found that after the use of certain mouth waters and tooth powders containing oil of peppermint and oil of cloves had been discontinued, a rapid improvement and even complete healing ensued. The worst effects are said to be produced by the use of odol, which has the following composition: Salol, 3.5; alcohol, 90.0; distilled water, 4.0; saccharin, 0.2; ol. menth. pip., ol. anisi, ol. foeniculi, ol. caryophylli, or ol. cinnamoni to flavor.—Therap. Monatsch., xii., 79.

Determination of Iron, Calcium and Aluminum in the Presence of Phosphates.—In order to curtail the very tedious and not too exact process generally employed in the determination of these metals, by oxidizing the solution of ammonium citrate after the phosphoric radical has been precipitated as the magnesium salt, the filtrate from the phosphate is concentrated and then oxidized, as suggested by Villiers, by the addition of a trace of manganese salt, or better still, of vanadium oxychlorid, in the presence of nitric acid. If a solution of vanadium salt of known strength be used, there is no need to separate this from the iron precipitate, as both are collected and weighed together, the known weight of the vanadium oxid being deducted from the total. According to Lindet, the separation of iron, alumina and calcium in the liquids in which the citric acid has been oxidized in this manner is easily effected in the ordinary way. This is a great improvement on the old method of calcining the mixed ammonia-citrates.—Comptes Rendus, cxxv., 246.

Foreign Body in the Nose.—Breitung, of Coburg, reports a case of a boy five years old who had suffered for three months from loss of appetite, disturbed sleep, and a bloody purulent discharge from the nose. The skin over the nose and neighboring part of the cheek was swollen, slightly reddened and sensitive. The upper lip was ulcerated by the bloody, bad-smelling discharge. Nostril was completely blocked. Examination revealed a mass covered with pus, which was removed with forceps. It proved to be a piece of meat, which the author thinks must have been forced into the nose by coughing. He points out the danger of forcing pus into the ears in these cases by either inflation or syringing through the other nostril.—Deutsche Med. Woch.
To the Editor of the Digest, New York, June 18, 1898.

Mr. Editor:—We much enjoyed reading the illustrated interview with Dr. J. Leon Williams of London; a new interest was added by being able to see how he looks. There are undoubtedly many men in other countries whom it would be a pleasure to hear from and to see.

We wish to take issue, however, with Dr. Williams' remark, that it matters very little what a dentist’s personal surroundings are, for we do not believe he really meant it. If they are not congenial, that atmosphere will surely follow him into his office.

What he says about ethics cannot be Improved upon. The quicker much of this bosh is done away with, the sooner societies will become more attractive. We would again call attention to what Dr. Roosa stated at a recent meeting of the New York Institute of Stomatology: "In New York State we have abolished the code of ethics and are now counseling with all kinds of doctors, not because we think alike in all respects, but because they are intelligent. Because of this we are tabooed by the regulars, but we have never advanced so rapidly in the true professional spirit." Legislation is in the same tangle, and the way it is conducted is a damper on all real progress.

If you want something exciting don't read the thirty-page article on cataphoresis in the Items which follows Dr. Williams' interview. Brooklyn has been in a trance ever since the article was read there; probably due to association of ideas.

Dr. Lenox Curtis has recently had an operation for appendicitis, but is now back in his office. What is the matter with the dentists and physicians? We have heard of so many who have been afflicted in this way.

We have questioned Dr. Curtis concerning the use of volasem as an antidote to cocain, and he emphasizes its value, stating that its action prevents the depressing effect which so frequently follows the use of cocain. It neutralizes the general effect, but does not alter the local action, and it sustains a cardiac and respiratory function. The dose is one to three drops in a teaspoon of water taken immedi-
ately before the injection or application of cocain, and a second dose can be given if necessary.

Dr. Arthur R. Gage died June 4th of consumption in Liberty, N. Y. He was forty-seven years old, and a son of Richard M. Gage, also a dentist, and was born in Boston. He graduated from the Philadelphia Dental College, and had practiced in New York since 1878. Dr. Gage was an unassuming gentleman, but always attentive to the interests of his calling. We remember his father, whom he was much like. His uncle, a wealthy practitioner in Paris, during the Franco-Prussian war had his chateau burned by the Prussians.

We see by the New York press that Dr. Evans' estate is to be contested in Philadelphia by his relatives. How little wisdom is manifested in this matter of bequests. How much better it would be to carry out one's wishes while alive. Dr Evans was urged to do this but neglected it. We trust the project will not now fail, for we know that he had some radical views regarding the training of dentists which were far more practical than any now in vogue. His ideas were strongly emphasized by the late Dr. Atkinson, for when Dr. Evans was here in 1876 they spent nearly one whole night in consultation over this matter, and for a time Dr. Atkinson lived in hope that he might see an institution suitably endowed in this country for the education of dentists, on the plan so successfully carried out in a limited way in his own office, viz., educating the student at the chair over the patient, and further by conversational teaching. Could this method be carried out by men chosen for their fitness to teach in this way, we should soon see practitioners who would show a grade of work far ahead of anything that has yet been done. Such a method would give a prestige to teaching that never has and never will be given by the present run-wild system of infirmaries.

We see in the Herald of the 8th instant that the Register of Wills in Philadelphia has dismissed the caveat filed by the eight nieces of Dr. Evans, and the certified copy of the original will was admitted to probate. Let us hope that Dr. Evans' wishes will be fulfilled.

From private sources we learn that the Massachusetts State Dental Association meeting, held in Boston the first of the month, was unusually successful. The program showed a purpose to exhibit
what practitioners can do with the mouths of their patients, and the clinics were a source of much pleasure to those who witnessed the skill and display. We understand that the papers and report of the meeting are to be published in the Digest.

On all sides we heard the complaint that times are decidedly hard and that the only place where the practice of dentistry is lively is in the dental colleges. It is remarkable how business depression acts on the mind. We remember being at the meeting in 1877 in Baltimore, and Dr. Atkinson was so down in the mouth after he had returned home that he contemplated leaving New York and locating in Baltimore. Before long, however, he found that times picked up and were not really so bad as he imagined.

You can't teach old dogs new tricks. Dr. Farrar has taught us a little something new, however. Force will put teeth where you want them, and so comfortably. Think of the patient getting up in the morning, and after winding up his watch, he then winds up his teeth. Patients well past middle age, with a congenital separation at the symphysis, find it a pleasure to see it close up day by day. We tried it with rubber bands, but life is too short.

We have read Dr. Bonwill's recent article on "Cataphoresis vs. Direct Application of the Galvanic Current for Obtunding Sensitive Dentin, and how to Exclude Both." Most of us are familiar with what he has said among these lines, and while all his statements are probably borne out by the facts, we think that he is in error to expect that he can ever bring all men to his own ideas.

Cordially,

NEW JERSEY LETTER.

To the Editor of The Digest,

Mr. Editor:—Another month has rolled around, bringing its share of pain and pleasure (the former to our patients and the latter to us both).

On the 4th instant Dr. Riley, President of the Central Dental Association, tendered the annual dinner to the officers and the executive committee of the society, at the New Continental Hotel of Newark. For the first time outsiders were present at this dinner, among whom were Drs. Dwight L. Hubbard and R. Ottolengui, of New York, and L. Ashley Faught of Philadelphia, who all responded
to toasts. The dinner was a unique affair and much enjoyed by all present. It reflected great credit upon our worthy president as a host and proved that he could preside at the festive board as well as at the regular meetings of the society, with grace, dignity and tact.

Notice was given that the summer meeting of the board of examiners will be held early in July. The new law is now in force, and its character being so definite and strong, it would seem that the board should make an attempt to wipe off that blot upon the profession—illegal practitioners. We know there are many such and they should be stopped, and that quickly. The law is on the side of the board and the future rests with them. New Jersey is not alone in this respect, but a start made here might bear fruit elsewhere, to the good of the profession at large.

Protests are being made in many quarters, we understand, about the meeting of the National Association being held at Omaha, where adequate and comfortable accommodations cannot and will not be given to the many delegates who will attend the convention. The committee in charge should pay heed to these murmurings and not run the great risk of spoiling the whole meeting, especially at its first session under the consolidation.

Notice has been given of a bill introduced in congress for the appointment of dental surgeons in the army, two to each brigade, to hold the rank of major and captain. This is a good measure and should be pushed to passage, and the wisdom of it appeals to the good sense of the community. It is impossible for soldiers to do effectual duty if unable to masticate their food, or when suffering with toothache or alveolar abscess, and in this day of war the necessity of every man in the army being able to do his whole duty is brought prominently forward. No better time could therefore have been chosen for the discussion and passage of such a measure.

Several journals still keep up their fault-finding with the National Association of Dental Examiners. It may be noted, however, that the board is stronger and more united and has a larger representation from the various states than ever before.

The Central Dental Association, although adjourned until autumn, is not inactive. Its executive committee have papers arranged for next year's sessions and are getting up a good list of clinics. Keeping everlastingly at it brings success.

A peek was had at the program of the state meeting in July at
Asbury Park, and the array of clinics is surprising. They should and no doubt will call a great number of the profession from the suburban sections of the state, as they cannot afford to be behind the times in anything. The papers are to be of a high order. Dr. Wm. H. Trueman of Philadelphia will give a paper on Materia Medica, and we need not say it will be most interesting. Anything from the pen of this writer is never of a low order, and in this he is dealing with a subject he is eminently qualified to write upon.

Cordially yours,

HORNET

PHILADELPHIA LETTER.

Dear Digest: Philadelphia, June 20, 1898.

That is an interesting question your editor asks in the May number: "What causes the lack of sociability in our profession?" It could no doubt be answered something like this: First, the commercial spirit; then politics—the desire many men have to fill petty offices, the wire-pulling and other work of uncertain character which this entails; and lastly, cliques. From our observation, and it extends over many years, we have yet to see the dental society where perfect harmony prevails, principally because each one is made up of two or more factions which frequently display feelings not conducive to good fellowship. It is very unfortunate that this is the case, and the youngest men in the ranks are not always to blame. Even here in Quakerdom it is too often seen, and sometimes we get it in doses that cannot well be called homeopathic. The condition of affairs in our state society during the past two years is an example. A selfish spirit seems to control the hearts and pocket-books of many of our best known men. Even when asked to do very small things, such as to assist the Protective Association, they ask "What is there in it for me?"

Hence it seems to us that the whole matter can be summed up in the one word selfishness. It has been said, "the world is full of kindness that never has been spoken." This to our mind is not much better than no kindness at all. If one has any generous or brotherly feelings, and keeps them a profound secret as though it were a crime, he is no better than the man who is void of many of the finer sentiments of life.

The members of the Academy of Stomatology let down the bars and were sociable one day recently. Thirty-five or forty of them
met at Essington on the Delaware River and partook of a planked shad dinner. A very pleasant time was had, professional matters and interests seemed to be dropped for the occasion, and they were all boys again, with Drs. Robert Huey and John Thomas as umpires.

The dental colleges as well as the local societies are through with their work until another season, so professional matters seem very quiet at present. The colleges of Philadelphia sent about three hundred and fifty new recruits into the ranks this spring. If this be kept up year after year, and other cities furnish a proportionate number, the question arises, what shall we do with the new graduates? Uncle Sam may make a bid for them, now that he is enlarging his possessions and increasing his standing army. However, this is a problem for the future, and the new graduates take our best wishes with them.

We were glad to have a glimpse of Dr. Crouse on the streets of Philadelphia the other day. He is so full of professional enthusiasm and Western push that he proves a stimulus to us easy-going Quakers. Cordially, The Spectator.

TEXAS LETTER.

SHERMAN, TEXAS, JUNE 21, 1898.

To the Editor of the Dental Digest,

DEAR DOCTOR:—Well, I guess that you must think I have deserted the Digest, and gone to the war. Anyway I feel as if I had been through the war. You remember I told you in my last that we had a new dental law in Texas, and that the board of examiners had met and gotten through the business with less trouble than expected. We only thought we had gotten through, for we have since found out that we have hardly commenced. Believing that we had crossed the Rubicon, the board appointed a time for the second meeting at Waco, May 16th, just one day before our state association was to meet. We hoped to transact all necessary business in one day and then put in the rest of the time with the association, but it took us until 12 o'clock the night of the fourth day. If you have ever been so unfortunate as to have helped organize a new dental board you can appreciate the situation.

I had hoped to be able to report some of the proceedings of the association, but cannot do so for the reason above given. I understand however that they had a splendid meeting, nearly a hundred
being in attendance and more interest manifested than ever before. Come down some time and meet with us and we will promise to give you some Chili Conconi hot tamales and a hot time generally.

Yours fraternally, Texas.

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Baltimore Letter.

Dear Digest: Baltimore, June 20, 1898.

A promise is a wonderful stimulus, and the more formal the more exacting. I suppose this is why one's name must be signed to business papers to make them valuable, for behind that signature the business world recognizes not only the personality of the signer, but the size of his bank account and his property resources.

When I promised in my last letter to tell you in the next issue of our meeting, I confidently expected a more opportune occasion than the present, but the fulfillment of the promise is due and I can't afford to go bankrupt so I must borrow from other accounts to settle with you. Our Baltimore dentists have been looking forward to the Tri-Union Meeting for some time, so it was no surprise to find that many of the former stay-at-homes were promptly on hand at the opening session. The eloquence of the first address and the prayer for the eternal welfare of the universe were not unappreciated. Many of our Washington brethren came in later, and Virginia made up in regularity of attendance and attention to business for its sparse representation. Taking the attendance as a whole, however, the knell of Tri-Union Meetings has been sounded. No more showy and attractive program could have been furnished; the officers were on hand, but many of the representative men were missed. Southern courtesy prompted the sending of excuses, but they were much the same as those recorded in the parable of the feast and were probably entitled to as much credit. I am of the opinion that the Virginia dentists are the nicest fellows in the world if you can catch them, but they are hard to meet with. Much of the professional interest in the states seems to center in the examining boards, and if you want a collection of dentists you must reckon with the examiners.

If I could read the signs of the times in the papers and discussions at our meeting, this was an appropriate occasion for fencing on the part of the examiners, for impatience with dental legislation was
everywhere expressed, and the muttered of discontent, strange to
say, were not sounded principally by the college men.

Dentistry is a young profession, yet dentistry has led medicine and
law into some extravagance and foolishness and much good. Den-
tistry organized its association of Dental Faculties and enacted its
dental laws; medicine and law have tardily followed. The Associa-
tion of Dental Faculties extended its course of study to three years;
medicine went one better. The National Association of Dental Examiners in future years no doubt will find its counterpart in a
similar medical organization, but as yet the medicos have not cared
to follow this ambitious youngster. I predict that dentists will be
the first to teach the wisdom of modifying and abolishing much of
the foolish legislation that has been enacted. Proper sentiment
points that way and you would as well try to check a stampede. To
throw up one's hands and cry "shoo" is useless, the thing is doomed.

The enthusiasm and energy of our executive committee led them
into some extravagance in procuring material for the meeting. Some
of the papers seemed prepared solely with the view of satisfying a
supposed obligation to the committee, instead of fully and fairly rep-
resenting the writer's views. Many excellent papers were sacrificed
by not being read by their authors. I believe it to be unfair and
imprudent to send a paper to a dental meeting. If the paper presents
views peculiar to the author, advocates novel ideas or theories, it is
not apt to be understood, and the writer is unjust to his own child
to thus thrust it among strangers. If a paper be so commonplace as
to meet with no opposition, in the absence of the contributor it
should not be allowed to take up the time. Again, papers pre-
sented to such a meeting should receive something more than a pass-
ing comment of those present; they should be previously submitted
to sensible thinking men with a view to their intelligent discussion.
This should be done not alone from courtesy to the contributor, but
to save the reputation of those called upon to speak on the subject.
On the whole the publishers of the proceedings of this meeting are
to be congratulated that so much good reading is to be presented.
The material was mostly devoid of the nauseous descriptions of
venders of merchandise, and was clean, practicable and scientific.

The clinics were very successful, a few bordering just a little on
the "pocket" character, but most of them novel and exceedingly
interesting. You Western fellows must get Shumway of Massachu-
setts to come out and teach you how to use tin and gold. He can make it stick.

The exhibitors with novelties and staples crowded the building from pit to dome, and the humiliating scene of sample collection was not lacking. Many of the papers were read to a scattering few, while the exhibitors never lacked an audience. It can be truthfully said that an exhibition of the aids to the practice of dentistry is not in any way to be looked down upon, and where such a large number go to the expense of attending a meeting they deserve some consideration. The day before the meeting and perhaps one afternoon during the same should be given up to them and so announced on the program, but they should be closed up tight during the reading of the papers.

The visitors—but, oh! let me get my feathers smooth and borrow some of the liquid sweetness of your New York correspondent. I know you will think I am a common scold after all of this fault-finding. The visitors were to me the charm of the meeting. Home folks are all right, but everyone likes visitors once in a while. What is more interesting than to circulate around among one's visitors, finding something to admire, uncovering the charm of personality, strengthening the ties of friendship, swapping stories and experiences and having a good time. This truly makes us feel that life is worth while.

The banquet was successful, although the season was not propitious for good things to eat. The music and toasts were fine, and the mirth, the sentiment, and the good hard common sense drew us closer together and we were happier for the occasion.

I would like to tell you more of the meeting, but you must not publish an extra volume, so good-by.

Cordially,  

ORIOLE.

RAPIDITY OF THOUGHT.—To illustrate the rapidity of thought, a distinguished scientist says that if the skin be touched repeatedly with light blows from a small hammer, the brain will distinguish the fact that the blows are separate and not continuous pressure, even when they follow one another as rapidly as 1,000 in a second.

ANESTHESIA BY COMPRESSION OF CAROTIDS.—A French physician, M. Jabony, has obtained successful anesthesia without total loss of consciousness by compression of the carotids for a few moments. The anesthetic effects endure several minutes, which may suffice for the reduction of a dislocation, a simple incision, or setting of a fracture.
Editorial.

NATIONAL DENTAL ASSOCIATION.

There has been a great deal of discussion and some doubt expressed as to whether Omaha was the most favorable place in which to hold the initial meeting of the new organization. The general sentiment seems to be that the lack of proper hotel accommodations, which will be augmented by the crowds in attendance upon the exposition, will not prove conducive to a successful meeting. As this feature has been strongly urged by various members of the profession who have been there, we shall go to Omaha in a few days to investigate the matter carefully, and we will inform the members of the National in a short time of our judgment in the matter.

THIS MONTH'S MEETINGS.

It has been our pleasure and profit during the past month to attend the Massachusetts State Meeting at Boston, the Tri-Union Meeting at Baltimore, and the Tri-State Meeting at Put-In-Bay, O., and we have come away from each with a feeling of pride at the interest and ability shown.

We were especially impressed by some features of the Tri-Union and Tri-State meetings which do not obtain in ordinary meetings. For some reason they are more harmonious; politics are excluded and the social feature predominates. Each state finds it possible to transact all the necessary business in a very short period, and the greater part of the time is thus left for the program, for social commingling and the promotion of more extended acquaintance.

The programs presented an attractive array of subjects and speakers, and were open to but one criticism—length, a mistake more frequently made than any other by all societies in their arrangements. The clinics were not, perhaps cannot be made so pleasant and profitable as in smaller gatherings, but on the whole we believe there is a decided gain in this convening of the states.
EXAMINERS AND FACULTIES.

The National Association of Dental Examiners and the National Association of Dental Faculties will soon hold their annual meetings, and it seems a good time to discuss what is needed to reform or improve the standing of the dental profession. When it is remembered that these are the two governing bodies, and as matters now stand all improvement must come through them, the question of what they will do at this year's meetings is all important.

Arising in part from a disagreement between the two organizations, what was done last year was a hindrance rather than a help to the advancement of the profession. There is much criticism from various quarters about the methods of the state examining boards, and the universal opinion is that the Faculties' Association lost caste and did the profession a great wrong by lowering the standard previously adopted.

It is not our intention to discuss past mistakes or attempt to show who or what was to blame, but rather to urge the importance of wise action at the next meetings. The two bodies should work harmoniously and in unison, and the accomplishment of much needed reform will then be hastened, and much more successfully than is now possible with the two opposing each other.

Each state examining board should send its ablest representatives to meet with the National Association of Examiners, and thus aid in the great work needed of this body. Of all organizations the Examiners' Association have the greatest opportunity to improve the status of our profession. Clothed with the authority of the law, it is within their power to decide what the requirements shall be before granting a license. In order to fill such an important mission they should have every state board with them in the work.

There should be a uniform law for all the states, instead of as now with all the laws differing in many important respects. Out of all the array it should not be difficult to select one which is accomplishing its purpose, namely, to protect the community from incompetent and dishonest practitioners. If a uniform law could be adopted it would remove the necessity of examination whenever a dentist moves from one state into another. There is no limit to the amount of good the Examiners' Association can accomplish if properly managed.

In such a work every honest college should cooperate and thereby
effect a reform in the educational system, which we think is sadly needed. With about forty colleges in the Faculties' Association, and many outside of it, what is more needed than a legalized controlling board?

There are at present more practitioners of dentistry than can make an honest living, yet the number of colleges is on the increase, larger classes than ever have been graduated this year, and that means that more young men have been turned into an already overcrowded field. This wrong will be increased in proportion to the number of schools and the laxity of the requirements.

Therefore, there is plenty of honest work for the Examiners' and Faculties' Associations to do, and all who have the best interests of the profession at heart will watch their proceedings earnestly.

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**NOTICES.**

**CALIFORNIA BOARD OF DENTAL EXAMINERS.**

The next meeting of the California State Board of Dental Examiners for examination will be held in San Francisco, the second Tuesday in August, 1898. All applicants should notify the secretary of their intention to take the examination.

W. A. Moore, Sec'y, Benicia, Cal.

**WESTERN RESERVE UNIVERSITY DENTAL COLLEGE.**

The annual commencement of the Dental Department of Western Reserve University was held Tuesday, May 17, 1898, in Association Hall. Rev. Dr. Louis Albert Banks delivered the graduating address, entitled "The Romance of Labor." Pres. Charles F. Thwing, D.D., of the University, conferred the degrees upon the graduates.

**CHANGE OF PLACE OF MEETING FOR THE MISSOURI STATE DENTAL ASSOCIATION.**

The 34th annual meeting of this association will be held at the Planter's House, St. Louis, July 5-8, 1898. All dentists practicing in the state, who are not members of the association and wish to become such, and dentists of other states, are cordially invited to attend. When purchasing the railroad ticket, remember to secure certificate from agent, so that rebate can be secured on return ticket. A large attendance is anticipated, and we are assured a profitable meeting. All dealers who desire to make exhibits can secure space by writing to the Planter's House. The change of place of meeting from Merrimac Highlands to the Planter's is caused by the failure of the Highlands to open this season. The papers will be published in the Digest.

H. H. Sullivan, Secretary.
LATEST DENTAL PATENTS.

603,803. Dental impression material, Louis L. White, San Francisco, Cal.
604,692. Fountain spittoon, Theodore N. Clark, Toronto, Canada.
605,403. Disinfecting apparatus, James Evetts, assignor to Red Cross Hygienic Company, Chicago, Ill.
605,255. Dental engine, Arthur J. McDonald, Kansas City, Mo.
605,403. Dental bridgework, Charles A. Davis, Pasadena, and E. L. Townsend, Los Angeles, Cal., said Townsend assignor to said Davis.

(List furnished by John A. Saul, patent attorney, Washington, D. C.)

NATIONAL DENTAL ASSOCIATION, SOUTHERN BRANCH.

Judging from the letters received, it is evident that there should be a wider diffusion of information in the south regarding the National Dental Association and its branches. In many of the states the law does not require a diploma as a prerequisite for license. These state societies which admit to membership all licensed practitioners, regardless of diploma, should therefore bear in mind that only their graduate members are entitled to election as delegates to the National Association and its branches. It should be made very clear that according to the constitution these bodies accept as new members only delegates elected by ballot at a regular meeting of the state societies, and also that delegates must be graduates in dentistry, or have acquired the degree of M.D., or have entered the profession prior to September, 1875. The American and the Southern Dental Associations did also, it is true, require graduation as a prerequisite for membership, but as they did not restrict their eligible applicants for membership to elected delegates from state societies, this feature should therefore be emphasized. The requirements for membership in a branch of the National must necessarily be the same as in the National itself, as membership in the former confers membership in the latter. The above applies both to qualifications and to dues, which are $5.00 in either case, but it should be borne in mind that if the dues are paid directly to the treasurer of the National this does not pay dues in the branch, but the payment of $5.00 to the treasurer of the branch cancels all financial obligations to the National for the ensuing meeting, because the branch forwards to the National three-fifths of the dues received. Payment of dues to the branch therefore insures for a single fee double membership, with all the rights, privileges and benefits of both bodies, including
NOTICES.

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cases. By request of the president of the southern branch.

C. L. ALEXANDER,
Cor. Sec'y Southern Branch National Dental Association.

WASHINGTON STATE DENTAL SOCIETY.

The eleventh annual session of the Washington State Dental Society convened at Tacoma, Wash., May 16-18, 1898, in the rooms of the Tacoma College of Dental Surgery, with the president, Dr. R. B. Gentle, in the chair. The different sections of the state were well represented and a fair attendance was present. The report of the executive committee showed much effort, and great credit is due Dr. B. F. Eshelman for the well arranged program.

After routine business had been transacted the president read his annual address. He called attention to the increase of business since the Klondike gold-fields had been opened up and the encouraging outlook for the dentists of the far northwest. The Washington State Board of Dental Examiners was urged to become a member of the National Association, and to cooperate with it in formulating a plan whereby a more uniform system of examinations could be put in operation, as this would not only benefit the dental profession but also the people for whom they work. The state dental law as a whole was commended, but an amendment was needed whereby an applicant could obtain a temporary license and not have to wait six months for the board to meet.

The general discussion which followed resulted in the appointment of a special committee to investigate the subject of enforcing the dental law relating to bona fide students and illegal practitioners, and devise plans for dealing with transgressors, as follows: Drs. C. L. Erwin, P. H. Carlyon and W. E. Burkhart.

On the suggestion of Dr. B. S. Scott the president appointed individuals as special committees to report on the several clinics to be given during the day, and it proved to be a time-saving plan, for no time was lost, as is often the case in opening the discussions of the clinics.

The morning of May 17 was devoted to a number of interesting clinics; Dr. C. A. Darling illustrated the application of the rubber-dam, showing the use of the clamp in its various forms, together with silk ligature, and the advantage of moistening with soap the holes made for the teeth. Dr. W. E. Burkhart inserted a cohesive gold filling with the electric mallet, demonstrating rapid and perfect condensation without injury to the enamel margins. Dr. C. A. Holmes constructed a jacket crown for use on anterior teeth where the pulp had not been devitalized, using a porcelain facing and a gold cap. Dr. B. F. Eshelman showed an interesting method of making a banded Logan crown without investing it, and its peculiar adaptation to superior lateral incisor roots.

At the afternoon session the following new members were elected: Drs. D. I. Burkhart, J. D. White, E. E. Gleason, F. W. Reese, M. D. Thurston; and the following papers were read: "The Physician and the Dentist," by
Dr. A. B. Bailey, of Oregon, who was made an honorary member. He urged that since dentistry was coming more and more into the domain of medicine and surgery, a better feeling and understanding should exist between the two professions. The dentist should be able to detect certain diagnostic signs and refer all patients needing treatment to a physician. As most physicians are deplorably ignorant concerning dental disorders and their sequellae, general articles on dentistry should be sent to the medical journals for publication. "Soft Gold Foil Lining for Amalgam Fillings," by Dr. O. M. Graves. "Our Obligations to Our Patients," by Dr. J. E. Banks. This paper was a plea for more conscientious work and a fuller recognition of the skill due our patients. In the evening the society listened to a paper on enamel formation by Dr. B. S. Scott, illustrated with a stereoptican exhibition of the slides of Dr. J. Leon Williams of London, showing the extraneous causes of caries; at the conclusion of which a vote of thanks was given Drs. E. C. Kirk and M. H. Cryer, through whom the society was enabled to get the slides.

The morning session of May 18 was devoted to clinics, among which were the clinics of Dr. P. H. O'Connor, who extracted a tooth without pain from a patient under hypnotic suggestion; and of Dr. B. S. Scott, who demonstrated the use of silk ligatures for regulating purposes and binding teeth loosened by pyorrhea. The president named Drs. C. A. Holmes, B. F. Eshelman, W. E. Burkhart, P. H. Carlyon, E. D. Andrus and B. S. Scott as delegates to the National Association at Omaha.

The officers elected for the ensuing year are: Dr. P. H. Carlyon, Olympia, Pres.; Dr. W. E. Burkhart, Tacoma, First Vice Pres.; Dr. J. N. Prather, Seattle, Second Vice Pres.; Dr. J. E. Banks, Treasurer, and Dr. D. I. Burk hart, Seattle, Sec'y.

The meeting was attended throughout by a feeling of good-fellowship and the discussions were animated. It was a good sign to see the younger members of the profession present and taking an active part in the meetings, showing that as the old guard drop away there will be new blood in the ranks to carry on the work with renewed vigor.

B. S. Scott.

__News Summary.__

**The occasional soaking of rubber articles in a 3 per cent solution of carbolic acid will prevent the rubber from becoming rotten.—Ev.**

**Dentists for the Army.**—Representative Otey of Virginia has introduced a bill into Congress providing for the appointment of a brigade dentist for each brigade, with the rank of major, and for each regiment, with the rank of captain.

**Time for Administering Medicines.**—Alkalins, before meals; acids, between meals; irritating toxic substances, immediately after meals. Phosphates and malt extracts should be taken with the meals, and sublimate, tannin and alcohol only when the stomach is completely at rest.—*Tribuna Med*, Feb. 28.
OBJECT OF ALL QUESTIONS TO EXPERTS.—The object of all questions to experts, the supreme court of appeals of West Virginia says, in the late case of State vs. Musgrave, should be to obtain their opinion as to matters of skill or science which are in controversy, and at the same time to exclude their opinions as to the effect of the evidence in establishing controverted facts. Although an expert may have heard all the testimony in the case, he can not, continues the court, be asked to give his opinion, based merely upon his having heard such testimony in the case, whenever there is a conflict therein, unless the same is hypothetically propounded to him. An expert can not be asked to give his opinion on doubtful facts in the case on trial, which remain to be found by the jury, but a similar case may be hypothetically put to him, based upon the evidence in such case. Where the inquiry relates to a subject which does not require peculiar habits of study in order to enable a man to understand it, the opinion of skilled or scientific witnesses is not admissible.

RESPONSIBILITY FOR MALPRACTICE.—A French court at Valence has decided that, as a physician is not infallible and does not profess to be so, an error on his part as to the dose of a remedy, even when proved, does not necessarily involve responsibility for malpractice. A lady of Valence, before submitting to the treatment advised in her case by a local physician, consulted Dr. Z— of Lyons, who in a note addressed to the local practitioner suggested injections of cyanid of mercury of a strength of 0.75 to 1000. The local physician considered the dose too weak and prescribed a solution of a strength of three-fifths of a grain of cyanid of potassium to one hundred and fifty grains of distilled water. The doctor gave two injections. The patient suffered severe pain, but after several weeks the affected parts returned to their condition before the treatment without any amelioration. When the doctor sent in his bill, the lady’s husband not only refused to pay, but brought suit against the physician for damages for injury done to his wife. The court having ordered damages to be paid, the doctor appealed to the civil tribunal of Valence, which reversed the verdict, with the above-named result.—Medical Age.

NEW PERIODICALS: A PROTEST.—Nine new German medical periodicals were announced in the last months of 1897, and medical literature in other countries is almost equally prolific. Von Durang writes to the Deutsche Medicinische Wochenschrift, protesting against this multiplication of professional organs as a waste of energy, time, and money, rendering it impossible for any one to keep an intelligent oversight of medical literature. “Each new journal,” he says, “contains possibly one or two important articles during the year, but these might just as well have been contributed to some established journal. The rest of the contents—news, abstracts, etc.—are found almost simultaneously in all the leading established journals.” He therefore appeals to his conferees not to allow themselves to be cajoled into lending their name and prestige or contributing to these sprouting journals. If they will take Punch’s advice to those about to marry, “Don’t?” they will save the rest of the profession much time and money, while maintaining the
THE DENTAL DIGEST.

dignity of science, which will inevitably be impaired by the "Vielschreiberi" necessitated by a host of new periodicals. And the new publications, refused the name and support of prominent members of the profession, would "die a-borning."—Jour. of Am. Medical Assn.

The Pathology (Shang-han) of the Chinese is very incomplete. All diseases, especially epidemic diseases, are ascribed to spirits and winds, and cold and warm humors, etc., are assigned in accordance with their benign or malign character to Yo (the good principle) or Yu (the evil principle). To Yo belongs acute inflammatory fever; to Yu, hectic fever, etc. There are, according to Chinese pathology, 10,000 varieties of fever. They imagine there is a distinct and different pulse in every part of the body. They "play upon" the pulses as is done in playing the piano, where we feel it. In this practice the changes of the moon and the season of the year are considered. The performance often lasts several hours in the "heavenly spot" (the upper part of the carotid artery), or on the "earthly spot" (near the ankle), or the "human spot" (at the wrist), with three fingers—sometimes on the right arm, sometimes on the left, now higher up, now lower down, now on one side, again on both sides, etc. The three fingers used are the index, the middle and the little finger. Deyuse, the index finger, indicates the spirits of the liver; Quan, the middle finger, the spleen; and Shaker, the little finger, the heart. In diseases of the heart the left pulse is investigated, in those of the liver the right. Each speck of the tongue and every discoloration of the organ points to special diseases and viscera. Thus a red tongue indicates warmth of the heart, and the south; a white tongue, the lungs, and the west, etc.—Medical Age.

Power of Resistance in the Rabbit Sober and the Rabbit Drunk.—Dr. Thomas of Strasburg published some years ago the results of giving rabbits alcohol and then inoculating them with comma bacilli. He found that the quantity required to kill an alcoholic rabbit was one-sixth of that necessary to finish a sober rabbit. In what manner the bactericidal resistance of the blood was lessened naturally led Dr. Thomas to undertake some experiments to determine the action of narcotics upon the constituents of the blood. These he has lately published in the Archiv fur Experimentelle Pathologie of March 17, 1898, as follows: In acute alcoholic intoxication the alkalescence of the blood was reduced in some cases one-half. It seems therefore that during alcohol narcosis there is an acid which supplants to a greater or lesser extent the CO₂. The author believes it to be a volatile fatty acid; its exact nature he could not determine. In some cases the red blood-corpuscles were diminished, but this was not a constant factor. After subcutaneous injections of ether, morphin and chloroform the amount of oxygen in the blood was lessened, but the CO₂ and alkalescence remained very little unchanged. After inhalation of ether the CO₂ was increased, the oxygen lessened, and the alkalescence not changed; while the number of red blood corpuscles was apparently doubled. The explanation is that the supply of air was shut off by the inhalation mask and the arterial blood became venous and thickened in character.
THE IDEAL LOWER DENTURE IN DIFFICULT CASES.

By J. D. Patterson, D.D.S., Kansas City, Mo. Read before the Missouri State Dental Association, at St. Louis, July 5-8, 1898.

It is often crudely estimated that when the various operations in dentistry are performed faultlessly their success is assured. While this may be largely true and a good rule to work by, it is not entirely correct, and this is especially so in regard to obtaining a satisfactory result while fitting lower plates to the edentulous jaw.

In the work of plate-making there are certain broad principles to be observed in all cases. First, the plate must rest with even pressure upon the mucous membrane it covers, and if such surfaces present areas of soft and hard resistance, then the plate in relation to those tissues must exert a compensating pressure. The soft tissue must give until an even plane of resistance is established, without which the plate will not adhere, will rock and will unduly press and irritate at points. I will not describe here the various methods of securing success in this cardinal principle, but merely mention it.

The second important feature is that of properly placing the teeth to secure natural and anatomical articulation. These two broad principles observed, as well as many other minor and less difficult problems solved, we may expect the best results in a large majority of cases.

To this statement there are exceptions, and it is one of these classes of difficult cases I now direct your attention—the edentulous lower jaw, where the once prominent ridge has been resorbed through disease, through natural senile recession, through absence of plates, or by the wearing of ill-fitting or non-aseptic plates. Here we are confronted with a situation in which, although we observe all basal principles in plate construction and every minor point usually taught, we find the denture so unstable and easily movable that it is anything but a pride to the operator or a comfort to the wearer.

A variety of contrivances to obviate this difficulty, spiral springs,
and a variety of suction chambers or channels, patented and unpatented, have been devised to meet the demand and delude the hopeful, as they certainly have the writer in past years. The springs, in my opinion, are hardly worth considering; they are ineffective and also intolerable because of the continual pressure and difficulty in cleansing. The numerous little suction points or deeper channels are sure to produce irritation at last, accompanied by greater absorption. On account of such irritation they are usually inapplicable because of the surface on which the plate must rest being so narrow, on account of the encroachment of muscular tissue, that they cannot be placed.

A solution of the difficulty in these cases is to supply, as well as a perfectly fitting plate, a heavy one, and the object of this paper is to recommend to you the very heaviest material made for that purpose, namely, Watts' "Metal." The use of heavy plates to utilize the force of gravity in the retention of lower dentures is nothing new, but in practice—save by employing weighted rubber—it is very little used. In conversation with the managers of dental depots I find that a fusible alloy is used in probably less than 1 per cent of cases where my experience proves it to be indicated.

The chief objection which is urged against the use of this material is that the muscles of the lower jaw soon tire of the superimposed weight. This, however, has not been my experience. To settle the question for myself I found in a patient an opportunity to test this matter and proceeded to experiment, with the result that in no case did I find the weight an objection, if the plate did not weigh over fifty dwt. The ordinary plate made of Watts' metal weighs about thirty-four dwt.; the same of Weston's metal weighs twenty-six dwt.; of weighted rubber, twenty dwt., and of ordinary rubber, ten dwt. I found that the additional weight of Watts' metal gave a decided advantage in the retention of the plate, and the experiments all went to show that a plate weighing between 35 and 40 dwt. never tires the jaw, and affords a comfort and satisfaction not attained by materials of less weight in difficult cases.

Another objection to the fusible plate is that the metal will not retain its color and will produce a disagreeable taste. These features I have found in fusible alloy made by the dentist himself, but have not observed them in Watts' metal (the formula is not known precisely, but is principally of tin, lead and bismuth, as are all alloys of this class). In the dentures I have made of Watts' metal there
has been no oxidation after fifteen years' use, and other dentists have confirmed this.

The most frequent objection is the difficulty in obtaining a good result, the claim being made that the metal will not flow in every point of the mould. I have gone through this experience but now find no difficulty in securing a perfect cast from the mould. I use for model and investment the usual plaster, sand and asbestos of soldering investment, with the addition of a small amount of whiting to render the surface smooth, following the directions accompanying the metal, with the addition of pure beeswax as a flux. Before I used the beeswax as a flux failures were common, and I therefore give you this plan, which has not been before recommended, and am confident that it will insure good results. The flux must not be used indiscriminately or unevenly, but as follows: After carefully removing every particle of base plate, heat the case and apply pure melted beeswax with a hot pencil brush wherever there is doubt of the alloy following; just a smear of the wax will do the work, too much of a coating will result in failure.

When this is done and the case is clamped, joints luted, heated and dried until moisture will not condense on a mirror held before the pouring gates, the case is ready for pouring: Do not pour while the flask is very hot, but allow it to partially cool; do not overheat the metal, but pour rapidly just so soon as thoroughly melted.

I shall be pleased to give any practical instruction to those who have had difficulty in doing this work, and I can cordially recommend this style of denture because it is strong, stays in place, does not tarnish, is easily constructed, and reasonable in cost.

I quite agree that reinforced gold plates with rubber attachment will give the necessary weight, and a more acceptable and handsomer result is obtained; but the great majority of patients wearing full lower dentures are unable to pay the fees necessary for gold.

Discussion. Dr. W. M. Bartlett: This is a very good class of work in cases with flat ridges, but it is always liable to have bubbles. I cannot approve of any work not easily repaired, and this cannot be; the only way we can repair it is by the use of easy flowing solders or by a vulcanized joint, and all such work tarnishes. I much prefer a gold base or a continuous-gum plate in cases of this kind, and the work can be done with both.

Dr. J. H. Kennerly: During the last few years I have made
many of these plates and they give entire satisfaction. If care is taken in polishing the plate in the first place it may be worn for years without tarnishing.

Dr. Wm. Conrad: Make the repairs on these plates with rubber, and it is just as easy to do as with rubber plates. The only objection which I have to the use of any heavy plate is that there seems to be an enormous amount of resorption of bone process and considerable softening of the tissues themselves.

Dr. H. Prinz: Some time ago I made a number of analyses of the various metals that are used for lower plates with the following results: Watts' and Weston's metals are alloys largely composed of tin and silver, to which a small amount of bismuth is added to reduce the melting point. The saline fluids in the mouth when acting on the plates may form chlorid of tin, as tin is very easily attacked by chlorin. This chlorid of tin is a strong antiseptic agent, which will exert its good influence upon the mucous linings of the oral cavity. No toxic salts are formed for this reason, and because of its weight and adaptation a cast plate is preferable for lower dentures. Furthermore, it is easily kept clean by the patient. Broken plates are repaired by using the same metal as solder with the soldering-iron and employing a solution of chlorid of zinc as a flux. For strengthening partial lower dentures a piece of German silver or tinners' steel wire should be used. Have the cast as dry as possible and nearly the same temperature as the molten metal.

Dr. Patterson, closing the discussion: I know that this method has been discarded, but I think unwisely, as it has great possibilities in these particular cases. Some require weight to hold the plate in place so that the patient can properly masticate food. These plates can be easily repaired with a blow-pipe and a flux of beeswax; the latter article should be pure and have no paraffin in it. Tissues do very well under these plates, and in many cases the absorption has extended to the bone proper before plate is put in.

PRESIDENT'S ADDRESS.
BY FRANK SLATER, D.D.S., RICH HILL, MO. DELIVERED BEFORE THE MISSOURI STATE DENTAL ASSOCIATION, AT ST. LOUIS, JULY 5-8, 1898.

Our association is again in session with the same motive in the hearts of its members which prompted its organization a third of a century ago—the advancement of dentistry. The interchange of
ideas and the illustration of individual methods of practice, as exemplified at our meetings, have been the means of keeping the active practitioner ever alert to give his patrons the advantage of the best methods.

Dental associations have been the means of placing dentistry on a firm foundation among the learned professions, by compelling the recognition of the rights and privileges of dentists by the state governments, causing them to enact wholesome laws regulating the practice of dentistry, by protecting the unsuspecting public, and, through our state examining board, by requiring proper technical knowledge on the part of the practitioner. Last but not least is the recognition by our government, a bill having been introduced for the increase of the medical corps of the United States army by a dental adjunct.

We must not rest on our laurels, however, but seek others. The dental colleges have been largely the children of the various associations and are now relieving them to a great extent of the work heretofore done by these bodies, and it will be necessary for us to adopt new lines of work, perhaps look more to the social features and towards increasing our membership.

This fact is worthy our serious consideration—with over a thousand dentists in the state, only one hundred and fifty are members of our association. There is undoubtedly a cause for this indifference on the part of the large majority, and perhaps many object to our code. There are many present who would not approve of any modification of it as it now stands, and there are always two sides to every question, but the advantages gained by a liberal revision of it would counterbalance any evil which might follow. It is seldom that a meeting of this association is not marred by the trial of one of its members for violation of the code. Professionally this is a reflection on the integrity of the accused, but such is not shared by the public and often excites indignation among his friends and neighbors, for they cannot see that any moral law has been violated.

The education of the public along the lines of dentistry requires our serious consideration, for the sublime ignorance of all pertaining to it on the part of many otherwise well-informed people is simply appalling. The code as it now stands is a barrier to any effort in this direction, prohibiting the discussion or reporting of a case,
even of unusual interest, in any of our newspapers, although we may spread it abroad by word of mouth. I feel that there should be more liberty allowed the profession and that it would be a step in the right direction and would redound to the credit of the fraternity and be a lasting benefit to mankind. I invite discussion on this point.

Discussion. Dr. A. J. Prosser: I believe that the men now coming into the profession will give us better material than we have had in years past, and the code can be raised instead of lowered.

Dr. S. C. A. Rubey: Professionally, ethics are nothing more than personal honesty, integrity and self-respect. More liberality might be shown, but my idea would be to make that change in the interpretation rather than in the literal wording itself. Attention can and should be called to special cases and there is nothing in the code to prevent it.

Dr. J. R. Megraw: More attention should be paid to the social feature of our meetings, which is too often neglected. The new men should be made welcome and invited to participate.

Dr. J. A. Price: The present code should not be disturbed, and if it is amended we cannot expect to have any membership in the National Association.

Dr. J. N. Crouse: The general code of ethics is very similar in all societies and is copied from the old American Association. The code, in my opinion, should not be changed; but it must be remembered that a set of rules will never make a professional man. If the man is right at heart he does not need any code of ethics, for he will neither disparage his practitioners nor cheat the community.

Dr. Frank Slater: I do not think it is unprofessional to state that we do a special line of work, or, after we have cured a case of unusual interest, to let it be known that these difficulties can be overcome.

Dr. A. J. Prosser: I cannot agree with what our president has just said, for many might make specialties of the most trivial things, and you would soon have every man in the profession advertising.

Dr. H. H. Sullivan: We are trying to educate the public that the better class of men in the profession do not advertise in any way whatever, and if we advertise specialties, how will laymen distinguish between the two classes?
TOBACCO AND ITS EFFECT ON THE CONTENTS OF THE ORAL CAVITY.

BY JOHN G. HARPER, D.D.S., ST. LOUIS. READ BEFORE THE MISSOURI STATE DENTAL ASSOCIATION, AT ST. LOUIS, JULY 5-8, 1898.

One of the first questions propounded to a dentist by a tobacco-user is, "Does tobacco injure the teeth?" It was the presentation of this question that led me to observe the mouths of tobacco-users and note the condition found in the oral cavity.

Let us go back a few hundred years and see what can be found regarding the beginning of the use of the weed and some of the literature regarding the same. "Tobacco consists of the leaves of several species of Nicotiana (nat. ord. Solanacea), variously prepared for use as a narcotic. While it is principally prepared for smoking, a large amount is also prepared for chewing, and to a more limited extent it is taken in the form of snuff. Under one or other of these forms the use of tobacco is more widely spread than any other narcotic or stimulant."

History: Although the fact has been controverted, there cannot be a doubt that the knowledge of tobacco and its uses came to the rest of the world from America. In November, 1492, a party sent out by Columbus from the vessels of his first expedition to explore the island of Cuba, brought back the information that they had seen people who carried a lighted firebrand to kindle fire, and perfumed themselves with certain herbs which they carried along with them. The habit of snuff-taking was observed and described by Ramon Pane, a Franciscan who accompanied Columbus on his second voyage (1494–6), and the practice of tobacco-chewing was first seen by the Spaniards on the coast of South America in 1502. As the continent of America was opened up and explored it became evident that the consumption of tobacco, especially by smoking, was an universal and immemorial usage, in many cases bound up with the most significant and solemn tribal ceremonies.

The term "tobacco" appears not to have been a commonly used original name for the plant; and it has come to us from a peculiar instrument used for inhaling its smoke by the inhabitants of Hispaniola (San Domingo). This instrument, described by Oviedo (Historia de las Indias Occidentales, Salamanca, 1535), consisted of a small hollow tube shaped like a Y, the two points of which
being inserted in the nose of the smoker, the other end was held in the smoke of burning tobacco, and thus the fumes were inhaled. This apparatus the natives called "tabaco;" but it must be said that the smoking pipe of the continental tribes was entirely different from the imperfect tabaco of the Caribees. Benzoni, on the other hand, whose travels in America (1542–56) were published in 1565, says that the Mexican name of the herb was "tobacco."

The tobacco plant itself was first brought to Europe in 1558 by Francisco Fernandes, a physician who had been sent by Philip II. of Spain to investigate the products of Mexico. By the French ambassador to Portugal, Jean Nicot, seeds were sent from the peninsula to the queen, Catherine de Medici. The services rendered by Nicot in spreading a knowledge of the plant have been commemorated in the scientific name of Nicotiana. At first the plant was supposed to possess almost miraculous healing powers and was designated "herba panacea," "herba santa," "sana sancta Indorum;" "divine tobacco" it is called by Spencer, and "our holy herb nicotian" by William Lilly. While the plant came to Europe through Spain, the habit of smoking it was initiated and spread through English example. Ralph Lane, the first governor of Virginia, and Sir Francis Drake brought with them in 1586 from the first American possession of the English crown the implements and materials of tobacco smoking, which they handed over to Sir Walter Raleigh. Lane is credited with being the first English smoker, and through the influence and example of the illustrious Raleigh, who "took a pipe of tobacco a little before he went to the scaffold," the habit became rooted among Elizabethan courtiers.

During the seventeenth century the indulgence in tobacco spread with marvellous rapidity through all nations, and that in the face of the most resolute opposition of statesmen and priests, the "counter-blaste" of a great monarch, penal enactments of the most severe description, the knout, excommunication and capital punishment.

Physiological Effects: The influence of tobacco on health and morals has ever since its introduction into Europe been a fruitful subject of controversy. On all grounds except medicine it met the most uncompromising opposition when it first became known; but it was precisely the expectations entertained regarding its medicinal virtues which were completely disappointed. Burton, in the "Anatomy of Melancholy," gives strong impression to the two views:
“Tobacco, divine, rare, superexcellent tobacco, which goes far beyond all the panaceas, potable gold and philosopher's stones, is a sovereign remedy in all diseases. A good vomit I confess, a virtuous herb, if it be well qualified, opportunely taken, and medicinally used; but it is commonly abused by most men, which take it as tinkers do ale; 'tis a plague, a mischief, a violent purge of goods, lands, health, hellish, devilish, and damned tobacco, the ruin and overthrow of body and soul.” Burton's meaning that tobacco in moderation is a good thing, while its excessive use causes many physical and other evils, has many sympathizers, but the difficulty is to define moderation and excess.

Among modern authorities, Dr. Jonathan Pereira says, “I am not acquainted with any well-ascertained ill effects resulting from the habitual practice of smoking.” Similarly Sir Robert Christison concludes, “In many individuals who use it habitually the smoke has an extraordinary power in removing exhaustion, listlessness and restlessness, especially when brought on by bodily or mental fatigue, and this property is the basis of its general use as an article of luxury.” Dr. E. A. Parkes sums up his observation thus: “I confess myself quite uncertain. I can find nothing like good evidence in books; too often a foregone conclusion, without any evidence to back it, is given. I think we must decidedly admit injury from excess; from moderate use I can see no harm, except it be in youth.”

On the other hand it is asserted by opponents of tobacco, and by the anti-tobacco societies, that the habitual use of this narcotic leads, especially in the young, to decrease of bodily and mental vigor, and especially produces symptoms of anemia, palpitation, intermittent pulse, and other affections of the heart and circulation.

It is an admitted fact that a disease of the vision—tobacco amblyopia—is contracted by smokers, and it is not uncommon among those using strong heavy preparations, such as black twist. Allowing that such incidental evils may arise from comparatively moderate indulgence in tobacco, they are all as nothing compared to the vast aggregate of gentle exhilaration, soothing and social comfort extracted from the Virginia weed.—(Encyclopedia Brit.)

The Use of Tobacco by Boys: “The use of tobacco by growing boys is so generally recognized as pernicious that it is extraordinary that more energetic measures are not urged upon those having the
care of youth to prevent the habit. Already it has been prohibited in the U. S. Naval Academy at Annapolis, in the U. S. Military Academy at West Point, in the Phillips Exeter Academy, New Hampshire, in the Lawrenceville School, New Jersey, and in various other enlightened educational institutions. This was not the result of prejudice or hobbyism. If any set of men are free from these vices of learning it is the naval surgeons; and it was especially from them, and particularly from Dr. A. L. Gihon, U.S.N., that this attack on the weed began. The indictment laid against it charged:

1. That it leads to impaired nutrition of the nerve centers. 2. That it is a fertile cause of neuralgia, vertigo and indigestion. 3. That it irritates the mouth and throat and thus destroys the purity of the voice. 4. That by excitation of the optic nerve it produces amaurosis and other defects of the vision. 5. That it causes a tremulous hand and an intermittent pulse. 6. That one of its conspicuous effects is to develop irritability of the heart. 7. That it retards the cell change on which the development of the adolescent depends. This is a formidable bill of particulars, and yet each of these charges is preferred by the best modern authority, and what is more, each is substantiated by an abundance of clinical evidence.

Testimony is also adduced from the class records of schools and colleges, which indicate very positively that the effect of tobacco on the mental faculties is deteriorating. The best scholars are not tobacco users; non-smokers take the highest rank in every grade; and whether we look at the exceptionally brilliant students, or compare the average of those who refrain from tobacco, the result shows the same.—(Medical and Surgical Reporter, 1882.)

"Nicotin and Its Action Upon the Teeth," by David Hepburn. Read before the Odontological Society of Great Britain, 1882. "From the slight observation I have given to this subject I am led to believe that the direct action of nicotin upon the teeth is decidedly beneficial. The alkilinity of the smoke must necessarily neutralize any acid secretion which may be present in the oral cavity, and the antiseptic property of the nicotin tends to arrest any putrefactive changes which may be going on in carious cavities. But in addition to these we have another agent at work in the carbon with which the tobacco-smoke is impregnated, and I am inclined to believe that the dark deposit which we find on the teeth of some habitual smokers is largely composed of this ingredient. It is this
carbon which is deposited upon the back part of the throat and lining membrane of the bronchial tubes, and with whatever disastrous effects it may act in these situations, from what we know of its wonderful antiseptic properties I think we are justified in concluding that its action upon the teeth must be of a beneficial nature. Moreover we find this deposit takes place exactly in those positions where caries is most likely to arise, and on those surfaces of the teeth which escape the ordinary cleansing action of the brush.

We find it interstitially, in all minute depressions, and filling the fissures on coronal surfaces. It may be removed with scaling instruments from the surface of the enamel, but where it is deposited on dentin this structure becomes impregnated and stained. Indeed it is only where the enamel is faulty and there is access to the dentin that any true discoloration of the tooth takes place; but it is remarkable how the stain will penetrate through even minute cracks, provided that the necessary attention to cleanliness be not exercised. The staining power of tobacco oil may be seen when a deposit has taken place on the porous surface of tartar collected on the posterior surface of inferior incisors. In this situation a shiny ebony appearance is occasionally produced.

That tobacco is capable of allaying to some extent the pain of toothache is, I think, true; its effect being due not only to its narcotizing power but also to its direct action upon the exposed pulp, and I am inclined to attribute in great measure the fact of the comparatively rare occurrence of toothache amongst sailors to their habit of chewing. I have been struck, in the case of one or two confirmed smokers of an exaggerated type who have come under my notice, by the apparent tendency which exists towards the gradual production of complete necrosis of carious teeth, and the various stages of the death of the pulp and death of the periosteum taking place without pain or discomfort to the patient. This condition may of course be brought about by a variety of influences; but in these special cases I am inclined to think that the presence of nicotin in the mouth has acted powerfully. Hoping to hear your experiences on this subject of nicotin and its effects on the teeth, I leave it in your hands."

The following paper was written and published in 1882: "The Teeth Injured by the Use of Tobacco." By John G. Harper, D.D.S., St. Louis, Mo. "I was taught that the use of tobacco in
any form was not injurious to the teeth, and in all of the literature of the profession I have found nothing alluding to what I desire to present to the profession, namely, the evil effects upon the teeth caused by the constant use of tobacco. My attention was first drawn to this evil just one year ago this month, when I was filling the teeth of a patient who has for years been in the habit of smoking and chewing a great deal of tobacco.

The injurious effects are not very noticeable until the person has been using the weed for about fifteen years, but the use of the pipe to excess will show its injurious effects in less time. Tobacco-chewing is the most injurious, as the tobacco acts as an irritant in two ways, mechanically and by its properties. Mechanically, by particles of the tobacco being forced between the gums and teeth.

We have proofs of the irritable effects of tobacco in snuff. The direct effect of using tobacco is the recession of the gums of all the teeth, but more especially those on the side of the mouth used mostly in chewing the tobacco. The sequel to this recession may cause the loss of one or more teeth by a diseased condition of the pulp, resulting from its being irritated by having the neck of the tooth and root exposed to thermal changes in food and in the air we breathe. Exostosis and calcification may result.

Tobacco-chewers' teeth wear away on the grinding surface rapidly, caused by the gritty substance naturally entering into the tobacco. The gums recede and are red and congested, and underneath the gum a narrow line of dark tartar is nearly always present, and particles may be found still further towards the apex of the tooth. I have given these few thoughts, hoping that others may observe and point out this evil to the tobacco user."

Clinical observation since writing the above has confirmed what is set forth therein, and I am now convinced that tobacco chewing does cause decay of the teeth, especially at the gingival portion of the teeth in the locality in which the cud is held; this is due to the formation of acids produced by the sugar or liquorice used to flavor the tobacco.

I hope members of the profession will give this problem attention, so that they may give a correct answer to the question, "Does the use of tobacco injure the teeth?"

Discussion.—A Member: As a rule the teeth of tobacco-users are in better condition than those of non-users, since the former have an
abundant flow of saliva in the mouth and generally brush their teeth after smoking or chewing. I do not believe that it causes the gums to recede, but even so, the teeth are generally sound.

Dr. J. F. McWilliams: Granting that the use of tobacco has a bad effect on the entire nervous system, I do not believe that it causes decay and mechanical abrasion of the teeth, for these latter are just as bad in non-users as in users.

Dr. J. N. Crouse: While I am opposed to the habit, from careful observation I think there are evidences that the use of tobacco preserves the teeth. Tobacco-users are more apt to brush their teeth than non-users; the flow of saliva is increased and the teeth are kept in use.

Dr. F. M. Fulkerson: I believe you will find more cases of arrested decay in the months of tobacco-users than in non-users.

Dr. H. H. Sullivan: When I stopped chewing tobacco in 1890 I had eight or ten very small cavities in the molars and bicuspids. Since that time every one of them has eaten through the enamel. Is that caused by the non-use of tobacco, or would the same have resulted anyway?

Dr. J. F. McWilliams: I have a patient now who has a set of teeth which are worn perfectly square. On the side on which he has chewed tobacco they have receded way below the gums and all his teeth are very loose.

Dr. J. G. Harper, closing discussion: When asked some years ago, I replied that the use of tobacco did not injure the teeth themselves, but that by driving back the gums the teeth were loosened. However, my observation has convinced me that it does cause decay in many cases. If a person smokes a very strong pipe the gums will gradually recede up to the apex, but on the buccal and labial surfaces there will be but little recession. Perhaps incipient decay may be arrested by tobacco, but not to any great extent. Toothache and neglect of teeth is one reason why people use tobacco.

PYORRHEA ALVEOLARIS AND ITS TREATMENT.

By R. L. Ready, D.D.S., Liberty. Read before the Missouri State Dental Association, at St. Louis, July 5-8, 1898.

Pyorrhea is a disease which is usually treated carelessly, for the simple reason that the fee for treatment is small; and as a cure is doubtful the dentist is backward about charging what the treatment
is worth. However, as professional men we should not shun such cases because there is no money in them, for there is knowledge to be gained, and where a cure is effected, the everlasting good-will of our patient.

Since I have been interested in this common disease I have made a study of each case, and have always found there were some traces of uric acid where there was an abundance of tartar on the teeth. Either the patient had kidney trouble or rheumatism, and I have come to believe that this uric condition (or uric acid in the blood) acts with the saliva and causes a greater formation of salivary calculus. We know the saliva to be alkaline, and tartar is of the same chemical composition as the deposit found in a tea-kettle which has boiled well-water. A clean tooth kept in a kettle for months will not have any lime rock on it when taken out. Is it therefore not unreasonable to believe tartar is due to other conditions than alkaline?

For the last year I have adopted a constitutional treatment and a mouth-wash as well for effecting a complete cure in each case within three or four weeks. Some cases were so bad that when the tartar was removed the teeth had to be laced with silk ligatures to hold them in position, and the gums and process were entirely destroyed.

My treatment is to clean the affected teeth thoroughly with a sharp scaler and tartar hooks, then polish the roots with moose-hide disks. After the tartar has been thoroughly removed I syringe out the pockets with a warm 50 per cent solution of listerine. I repeat the syringing under the gums every day if possible and give the patient a bottle of 50 per cent listerine to wash out the mouth three or four times daily. For the elimination of uric acid I give a tablet of lithia in a glass of water three times each day, and when I have given it to patients from ten days to two weeks the tartar does not form on the teeth perceptibly afterwards. Whether uric acid has anything to do with the formation of tartar or not the lithia treatment is beneficial. I have never failed to cure a case of pyorrhea with this treatment, and while you may not agree with my ideas, I hope that you will give the method a trial.

Discussion. Dr. Wm. Conrad: The reason that so many prominent men say there is no cure for pyorrhea is because it does not
pay. I believe this disease capable of cure in many cases and of radical improvement in all. Formerly such a statement might have been considered a vain boast, but things now common practice were a short time ago considered impossible. Pyorrhea is a constitutional disease with a local manifestation; remove the teeth and the local manifestation will disappear. I consider it a constitutional disease because it is primarily a nervous disorder, having its origin in the brain or some nervous center acting upon the vaso-motor nervous system, which controls the nutrition of the teeth in their formation. The local side you see every day; the gums become diseased, the teeth loosen, pus forms, and the teeth are lost. Relieve the local manifestations, have the patient harden the gums by brushing, occasionally using precipitated chalk, but principally a 2 per cent solution of carbolic acid. My order is to brush every surface of the teeth and gums at least once every day with powder and carbolic acid solution. The dentist should apply a 10 per cent solution of nitrate of silver two or three times a week; and cocain, camphophenique and iodin are good where there is much pain. The pulps of all affected teeth should be devitalized, for they are always more or less calcified, causing irritation. Do not be in too much of a hurry to fill the canals, for rest is often good. When the pulps are devitalized the teeth will settle back in the process almost immediately. Remove all deposits thoroughly, but not until after the pulps are devitalized. Leave the process alone, for burring, cutting and scraping are seldom required. While Dr. Ready has evidently confused the formation of tartar with pyorrhea, I consider his treatment good.

THE IDEAL BRIDGE OF TO-DAY AND THE NEXT STEP TO IMPROVE IT—SECOND PAPER.

BY F. F. FLETCHER, D.D.S., ST. LOUIS. READ BEFORE THE MISSOURI STATE DENTAL ASSOCIATION, AT ST. LOUIS, JULY 5-8, 1898.

A year ago I read a paper before this society on "The Ideal Bridge of To-day and the Next Step to Improve It," which when crystallized presents these few thoughts for your consideration: For bridge showing but little or none, especially on the inferior maxilla, the all-gold or all-porcelain, having a contact point on the top of the ridge, and covering as little soft tissue as possible, seemed to be nearest the ideal, while porcelain would hold full sway where
visible. The improvement was not to be in the superstructure, but in the foundation. The claim was made that the only ideal bridge rested on parallel piers, and as this class of cases was the exception, our attention must be directed to this point. It was argued that the average bridge-worker of to-day has by careful attention and close application become proficient and even expert in the use of all materials used in bridge-work. He will fit difficult bands, secure almost perfect articulation in all cases, and so unite the various pieces with high-grade solders that when he steps from the laboratory with the case ready for insertion, it is, from an artisan's standpoint, a beautiful, strong and perfect piece of work. Thus his education on the superstructure has been superb, but the mechanical principles involved in the construction of the piers to support the handsome and useful partial denture have been most sorrowfully neglected and ignored. System after system has been devised for making the bridge, securing articulation, etc., until perfection seems to be almost reached in this part of the work; but whoever heard of a system to place the abutments in proper position to receive and permanently support these beautiful and useful structures? It seems to me we have scarcely gained a new idea on this subject since the first bridge was placed in position, and what has been the result? A very large per cent of the bridges inserted are removed in less than two years in good condition, simply because the foundation was rotten. It was suggested that we turn our attention to orthodontia, restore these piers to their original positions, thus bringing them back to a normal occlusion and parallel, in which position it is easy to make a bridge that will slip into place when finished without changing the forms of the bands, and consequently their fit; acting at the same time in the two-fold capacity of restoring the lost teeth and furnishing a permanent retaining appliance for the piers.

This in brief is the essence of Paper No. 1. Since then a year has flown—one full of the cares incident to a professional life. Most of us, I trust, have had an expanding practice. Our former patrons who still cling to us have had their confidence strengthened by our continued success with them. Thus by our integrity and ability have we not only retained them but attracted their associates and friends to us, thereby unconsciously gaining friends and practice, making us welcome and respected in our various communities.
Are we entitled to the growing confidence reposed in us? Have we in the past year added to our stock of professional knowledge in proportion to the demands upon us? Let us by careful work, study and personal investigation always be able to answer that we have advanced, be it ever so little. For when once a man rests upon his oars the time is indeed short until he commences to drift, slowly at first, but soon more rapidly adown the stream he struggled so hard to ascend. Some one says, "I have never advanced so rapidly as during the past year. I have been so busy I could not find time to read the journals or attend my society properly, and my cash balance is the largest during my entire practice." This brother may be lulling himself into false security. It is often the busiest man who is retrograding the most rapidly. He has not the time to prepare cavities, finish fillings, etc., according to the most approved methods; they are too slow for him. Why, the veriest charlatan in our midst is often one of the busiest men, so this argument falls of its own weight. His other deductions are equally fallacious. Neglecting one's society, failure to read the literature of our profession and to mingle with its members are to my mind some of the surest symptoms that a man has reached his zenith and is now drifting. No matter how hard one may work in seclusion, his labors will not be crowned by the success he would have obtained had he called to his aid the forces already mentioned, for we must admit that the resources contained within the individual are not equal to those of his brethren combined.

The recluse is soon confined to a narrow rut, while his antipode expands and grows, ever reaching for a higher plane nor resting till life's fitful struggle ends. Many of the new inventions, methods and theories have not the merit when put to the practical test that their enthusiastic originators claim for them, but on account of this being true, we are not justified in condemning every new idea. To us, the rank and file, is left the work of testing all, and after careful investigation the duty of separating the wheat from the chaff.

When the first paper was presented, the chief arguments against the proposed improvement seemed to be that it was impracticable; that malposed molars could not be placed in their original positions; that our orthodontia specialists gave us no methods for accomplishing this seeming impossible task, and if we attempted this radical departure, the fees obtained would not be commensurate with the...
time, trouble and expense incurred. Not a word was said in opposition to the principle involved. This is the only point to be decided—is the principle right or not? There seems to be but one answer. Were a civil engineer to attempt to erect a bridge on abutments that were not perpendicular and parallel with each other, he would be considered non componis mentis, promptly discharged and a competent man selected to build that foundation on correct mechanical principles, no matter how difficult or expensive the task might prove.

We as a profession are proud of our attainments in the field of letters and science, and justly so; while in mechanics we are even boastful, and our orthodontia specialists in their careful study of the subject have invented appliances that are marvels of ingenuity and wonders in exerting force against force for common good; proving by the simplicity of their appliances, coupled with their wonderful power and grand results, that they are mechanically correct. But in looking through the wreckage and ruin of bridge-work in the past ten years, searching for the mechanical principle whose violation caused the downfall of so many beautiful and artistic superstructures, we dig down among the mass of debris, corruption, misfits and ruins until the abutments are discovered. By clearing away the barnacles and refuse always found in and about such catchbasins, the piers at last come into full view, and standing at different angles as they do, loom up before us as the most woeful caricature ever perpetrated upon a mechanical principle.

Let it be decided that the principle of parallel piers is correct, and I am willing to trust the inventive genius of our profession with doing the work. For more than a year have I noted the beautiful results of this system, under the guidance of our eminent specialist, Dr. Edward H. Angle, to whom I am so much indebted for assistance and encouragement along these lines. I have seen bicuspid and molars standing at all angles gradually assume their normal position in the arch, thus restoring normal occlusion, while the bridge permanently retained them. The anterior teeth are of course much less trouble and the irregularity can be corrected by anyone. There can now be no excuse for anyone inserting a bridge on anterior teeth that are not parallel, and when the first case is completed you will congratulate yourself on the artistic effect, as well as on the more accurate fit and consequent longevity and usefulness of the case. This will stimulate you to undertake putting posterior piers
in proper position. Do not attempt the most difficult at first, and failing, condemn the theory, but remember the adage "Nulla exellentia sine labore," and with full determination to conscientiously accomplish this work, pursue it intelligently and patiently. As a well-earned reward you will soon have the supreme satisfaction of seeing in your own office a beautiful piece of bridge-work, not only artistically and properly constructed, but one which will slip into place on these parallel piers without changing shape in the least, leaving the completed case fitting as accurately as did the bands when the impression was taken. Then can you proudly say, there rests a structure, similar to many I have made before, but the first one to fit and rest upon a reconstructed foundation, the original of which would have jeopardized any structure erected upon it.

Discussion. Dr. C. L. Hungerford: In cases of very frail roots, you will find that when they are well cleansed mechanically of the accretions which have collected on them they will be held together by bridge-work. All roots not parallel should be ground and every bit of enamel carved off at the cervical margin, so that the crown, instead of hugging the body of the tooth, will be cone-shaped, and then the harder you drive it the tighter it clings. Ordinary teeth have a more offensive odor than a well-adapted bridge, for there is more secretion and more foreign particles work into the interstices.

Dr. J. N. Crouse: I believe we put in more bridges than we should, because of the good fees incident thereto, and this is especially true of patients from forty-five years up, whose teeth are a little shaky. Applications for bridge-work come mostly from those who have had pyorrhea, and are the least permanent cases.

Dr. C. H. Darby: I can understand why a tooth should be devitalized before crowning when the piers are not parallel, but for a single crown I fail to see why it should be the universal practice to devitalize the tooth. I believe that many crowns will do better service and last longer with the pulp in the tooth than out.

THE INDIVIDUAL AND THE SOCIETY.

BY J. R. MEGRAW, D.D.S., FAYETTE. READ BEFORE THE MISSOURI STATE DENTAL ASSOCIATION, AT ST. LOUIS, JULY 5-8, 1898.

I shall consider the object of the dental society under four heads. First, Its use in the development of the science of dentistry. During the second century, Galen, a physician, wrote to some
extent upon the teeth, but from that time to the sixteenth century we find very little literature on the subject. At the latter date Rhazes, Albuscasis and others made some mention of the human teeth, but to Eustachius we are indebted for the first correct description of their number, growth, different forms and varieties. In 1771 and 1778 John Hunter wrote his "Treatise on the Teeth," which laid the foundation of dentistry in England. In Germany and France dentistry had progressed equally with England. In 1636 was the first advent of dentistry in the United States, when three barber surgeons came to Boston with the Plymouth company. From that date until the beginning of the nineteenth century dentistry progressed rather slowly, but in 1839 The American Journal of Dental Surgery was first published; in February, 1840, the Maryland Legislature chartered the Baltimore College of Dental Surgery, the first in the world, and the following July the American Society of Dental Surgeons was organized through the untiring efforts of Dr. Horace H. Hayden, and from this began the true life of associated dental effort in America. So great has been the progress of the society movement that there exists to-day one or more in almost every state in the union, and the society has done more to advance the profession than all other agencies combined.

Second, Its use in regulating the practice of dentistry, legally and otherwise. Through the efforts of the Alabama State Dental Society the first law in the United States legalizing the practice of dentistry was enacted by the Alabama Legislature in 1841, and for twenty-seven years it stood alone. In 1868 the New York State Legislature passed the second dental law, which result was due to the efforts of the state society. After many years of hard work by members of the American and Southern Associations, a national dental library and museum have been established.

Third, Its personal benefits to its members. The dental society is and should be considered a post-graduate school, and in no way can a dentist better keep abreast of the times than by attending its meetings. Those who take the most interest are the ones who derive the greatest benefit. There are members who attend each year, yet never take an active part. The loss is not only theirs but ours, as many of them might be possessed of ideas which would bring forth other useful ideas from the rest of us. If upon receiving the program of the meeting each member would take time to read
up on the subjects to be discussed, the benefit to all would be much greater and the meetings of our society more instructive than they now are.

Fourth, Its maintenance of a code of professional ethics. The importance of a high standard of professional ethics is too well known to admit of discussion, and I will therefore say on the subject only that the dental society is the chief factor in establishing and maintaining the code.

**Buccal Eruptions of Measles.**—Measles can often be detected by an examination of the buccal mucous membrane.

**Stature Statistics.**—The different countries of Europe vary greatly in the average stature of their people. The Scotch are the tallest, averaging 5 feet 10 inches on a level with the Polynesians and Armenians. At the other extreme are the southern Italians, French and Spaniards, all the shortest people, except the dwarf tribes of Africa. The average height in Ireland is 5 feet 9 inches; in England and Scandinavia, 5 feet 7 inches, in Wales, Germany and Denmark, 5 feet 6 inches; eastern France, 5 feet 5 inches; in Spain, Switzerland, northern and central Italy, 5 feet 4 inches; in Portugal and southern Italy, 5 feet 3 inches.—*Medical Record.*

**Abscess Evacuator.**—Here is a simple little cupping arrangement suggested by Dr. T. H. Hunter, years ago: Take one of Wood's patented polishing cups and plug the mandrel-hole with a piece of gutta-percha, which must not project on the inside of the cup. Then wet the inside of the cup and place it over the gum so as to cover the opening into the abscess. Gently press the cup flat upon the gum, and upon removing the finger the elasticity of the cup will cause sufficient suction to fill the cup with the contents of the abscess; repeated action will evacuate it. Medicaments placed in the tooth cavity may likewise be drawn through the sinus.—*Am. Dent. Weekly.*

**New Method for Operating in Chronic Antral Empyema.**—Dr. Luc has proposed and described this method, which is in the main a combination of the Desault and Mikulicz operations. A wide opening is made into the sinus from the canine fossa, and the cavity curetted and cauterized with strong chlorid of zinc solution. An opening is then made from the sinus into the nasal cavity and a gauze drain introduced with a curved stilette. This makes it possible to disinfect the sinus from the nose and flush out the secretion. Afterward the mucous membrane over the opening of the canine fossa is sewed together, completely cutting off communication between the sinus and the mouth. After fourteen days the drain may be discontinued, but if necessary further washing out of the sinus from the nose can be carried out by means of a curved cannula. In three cases in which Luc had done this operation the opening from the canine fossa was closed in three days, and at the end of six weeks a complete cure had been effected.—*Monnats-schrift fur Ohrenheilkunde.*
THE DIGNITY OF ADVERTISING. By H. C. Smith, Business Manager New Orleans Medical and Surgical Journal. There can be no dignity in any calling where payment is not demanded from those able to pay. A doctor who accepts an apology in payment of a first visit and makes another, when the patient is able to pay, lowers the dignity of his calling. He puts a cheap price on his services, and in a few years complains of lack of appreciation from the public. There must be a charge to those able to pay, and payment insisted upon, or else medicine and misery will die together.

There are doctors living in towns of five thousand, surrounded by rich agricultural lands, who do not collect 50 per cent of their bills, and dare not send a second one for fear of offending. It is the lack of dignity which produces this sad condition, and the doctor has only himself to blame. It may also be caused by the narrowing influence on a mind by continuing in only one line of thought, and no business ability. Too many physicians know a little medicine and nothing else. When a man of this class finds himself outstripped by a well educated, broadminded, successful medical brother, he oftentimes stoops to undignified methods and lowers his calling in the eyes of the public.

The most undignified and harmful thing a doctor of this class can do is to start a medical journal, not to disseminate medical knowledge but to down some one. He surrounds himself with a clique on a par with himself, and never stops to think of the vengeance of his confreres. This bombastic clique, whose editor is a Cook’s tourist specialist, does not know the difference between a paid write-up and a scientific article, but that makes no difference—they have failed as practitioners of medicine—so start a journal, God save the mark! to fill a long-felt want and an early grave. Journals of this class are started every month, and some publishers extend the “glad hand,” but it is with a sad heart I view their “maiden efforts,” well knowing that Volume II will never appear.

This set have departments in their publication presided over by assumed specialists, who can diagnose a tumor a thousand miles away, and are ready to go night or day and remove it. Such an organ has no weight or influence among intelligent people. The
business management of this journal is turned over to the youngest man in the clique, because he has more time. The first thing he does is to trade his best space for a set of dishes (108 pieces, I believe, was the offer), because he needs them. This management does not pay the printer, so the long-felt want and the early grave are both filled after a few issues.

The most undignified, but still ethical, is the set who own a publication and run a sausage-mill medical college attachment, which grinds out graduates. The dean in one of these in a small city has over fifty operations for appendicitis in one year, and his neighbor, a very young man, over one hundred laparotomies. Where is the dignity of advertising such? If his more favored brother in larger cities operated in proportion, the human race would soon be devoid of much of its anatomy.

If publishers would only recognize the fact that all journals cannot be great, but might at least be honest, they would, in time, build a local support which would pay the printer and give their subscribers some value for their money. A journal that is not paid for can have no value, dignity, or influence.

In making a trip through Florida I saw in most of the doctors' offices a journal that has the largest circulation in America, and was told many times they never thought of paying for it. This is the journal that must be referred to in the Bible—Numbers xxiv: 14—which says: 'I will advertise what these people will do to thy people in the latter days.' This wonderful publication can diagnose cases by mail, and always recommends what the editor owns stock in or is advertised in his journal. Is it not a serious question, a vital one, what this journal will do to the people?

The journal that sells the top of its title-page, in my opinion has sold its birthright, and the one that accepts three dollars per month for the lower half of the front cover never had any. Some journals are so hard up for pap that they give from five to twenty journals for an article, and tell the writer he can send in the names of friends and it will be sent free for a year. They publish their postoffice receipts, which look large to the uninitiated. On the strength of this they get advertising, but the advertiser soon finds he gets no returns, because a journal that is not paid for has no value and is not read. An advertiser in one of the large cities recently showed me a number of requests for samples of his preparation that had
come in from an ad. in one of these journals, and when I told him that most of the doctors requesting samples sold them to patients and beat him out of just that much money, he seemed surprised. When it is remembered that a postal card will bring samples of almost everything made, a sample request cannot be taken as a criterion of value, for many physicians not only get a great deal of medicine in that way but their literature as well.

A journal that accepts anything but cash soon finds its office looking like a second-hand store, and its pages are devoted to advertising these articles at bargain-counter prices. Is there any dignity in this? Where is the dignity of a colored insert in the body of the journal. Does it embellish a good article? Never. I am glad to notice a growing disposition on the part of the best doctors to turn down a journal of this kind.

There are only a few pharmaceutical houses in America, and nearly every product put out by them has been counterfeited. There are constantly springing up in all sections unscrupulous parties who are putting on the market, with no capital but cheek, substitutes of every remedy in the pharmacopeia. The number of journals and the number of houses is entirely out of proportion, and so, as in all things, it is a survival of the fittest; the weak ones go down, doing some damage to legitimate publications and lowering the dignity of a sacred calling.

The religious press will be damned forever, and should by the medical, for their undignified advertising to diseased minds and bodies of "sure cures free" by returned missionaries. These human hyenas sometimes have offices in the Bible-houses, and prey upon human misfortune. Their prescription, given free, calls for an ingredient no one has but themselves, and they take what they can get for it, according to the need and pocket-book of the unfortunate; and they go on robbing from year to year.

It is said there are necessary evils in this world; the medical advertising agent seems to be one of them. But allow me to ask, what has he done to elevate the dignity of advertising in medical journals? There are a few agencies that handle legitimate business in a dignified way, but most of them cause dissentious and separate business relations between houses and journals which should be close, by making all sorts of promises that cannot be fulfilled; contracts done with all kinds of conditions that the self-respecting jour-
nals cannot comply with. I had occasion to call on an agent recently in New York in regard to a contract he had sent three times, and it had been as often returned. When I explained to him the necessity of the full formula being given, he said he had written the formula and it was enough for anybody, and many journals had accepted it. Unfortunately the last statement was true, and some had surrendered all dignity and allowed him to run their business.

I had a page ad. from an old established house for years, but through the interference of one of these agents shortly after he came into the field I had none. The advertiser asked, why? My answer was, too much agent. He handed me a new contract and we are now good friends. This proves that a house will drop an agent when they learn that he is detrimental to their interests. Agents never know when they have enough, never stop taking, and to use a trite expression, play both ends against the middle and laugh at the journals for allowing the business to run. On the other hand, they never lose a chance to cast reflections at a journal with a ratecard which is strictly adhered to. Where is the dignity of allowing some one else to run your business, at your loss and their profit? One man who handles the business of a large firm told me he cared nothing for simply an ad., what he paid for was what the journal published in its reading pages. He was much surprised when I refused to contract because I would not let him dictate the terms. This man was not wholly to blame for this, as some publications had surrendered all dignity and accepted his offers.

In my opinion, a dead publisher who knew his space was worth so much, and got it, is worth a hundred live ones who will allow the agent to jolly them along and get their best space for a song, and he does the singing. The publisher who has surrendered to the agent is at his mercy for any new business.

Some agents get from 30 to 50 per cent on all business for a number of years. They hire a good solicitor for a few days, pay him a few dollars, let him go as soon as he brings in enough contracts, then sit in their office and live off the journals that were weak enough to agree to allow them so much commission. If weak publications would only learn that it is impossible for any agent, firm, or house to kill an established publication that has maintained a high standard, it would save much of the unfortunate, undignified bickering that goes on.
There is no dignity in running a dead ad. No dignity in not collecting promptly. None in accepting stock in payment. And none in taking ads. with strings to them. Low rates and liberal discounts invariably denote small and valueless circulation. I believe that the time will come when the subscription list and legitimate houses will support the dignified, ethical journal.

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SERRATION AN ERROR IN PRACTICE. By J. W. Worcester, M.D., Middletown, N. Y. I came to the conclusion some years ago that serrated instruments were a great mistake, except with the most careful and painstaking operator, and therefore gave up their use. My reasons for so doing were principally confined to the fact that the serrations were the cause of so many leaky fillings, through the abrasion or chipping off of the tooth-substance from the walls of the cavity during the operation, and which became more or less incorporated and condensed with the gold, despite the use of the chip-blower. This bone-dust being a perishable substance, and continuing to the edges of the cavity in the filling operation, as it invariably does with these instruments, without doubt was, and is yet, the principal cause of leaky fillings, especially with the beginners and also with many of the elders. The acid condition so often present around the teeth furnishes means for making a solution of this confined bone-dust, with the result familiar to all.

To overcome the difficulty and make an absolutely tight plug, I adopted the method of using the smooth point—not a burnished smooth point, but one that is rubbed over frequently with a spun-glass burnisher or a medium-grit emery disk, although I use both constantly. These keep the steel point clean and bright, and with the electric mallet, which I use and which should be preferably used with these instruments, I can weld the gold perfectly solid and intact, and not injure or abrade the walls of the cavity in the least. You can mallet around at the junction of the gold and the tooth with these instruments, and the result is a tight joint with no bone-dust intermixed.

The instruments I use are round, either straight or curved, with rounded points, and will be found perfectly practicable in all cases for gold work, using several sizes. I invariably use crystal gold cubes, which can be welded perfectly with these instruments without annealing, until I get near the surface, when with the use of
annealed foil pellets of a very light form (smallest size) I bring the filling to a finish and polish off.

My method of preparing the cavities is to first grind or disk away all frail walls around the cavity to a self-cleansing surface and polish. Then I proceed to excavate the cavity with just enough undercut to hold the filling, leaving no sharp angles therein, square across at the cervical walls, and round off the edges of the cavity (as it joins the previously polished surface) with a fine finishing bur or fine office-made emery points. The rubber-dam is applied and ligated to the teeth and the moisture removed with absorbent paper, then wiped out with sulphuric ether, and lastly with a solution of bichlorid of mercury in chloroform, 1:1000. The cavity is now in excellent condition to fill, and I carry this out in the preparation of all cavities for whatever kind of filling. After the cavities are filled with a slight overhang, I disk down to the original polished surface previous to filling and continue to polish until impossible to do so more.

These fillings I find give good service. I would like to see the profession generally take as much pains and do better dental work, and abolish the pernicious habit of using serrated instruments, as I consider them an abomination and a curse in the hands of most operators.—International Dental Journal, June, 1898.

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CONSUMPTION CURE. By Dr. Murphy, Chicago. It is to but one feature of it that we are now going to call attention, namely, the part relating to the treatment of tuberculous disease of the lung by compression of the organ. As we understand the matter, Dr. Murphy proceeds upon the assumption that a tuberculous lesion of the lung, like one of a joint, for example, may ordinarily be healed quite readily by securing immobility, functional rest, of the affected part. In pursuance of this idea he immobilizes the lung by compressing it, crowding it back upon its hilum, establishing a sort of artificial atelectasis. This he accomplishes by injecting a quantity of nitrogen into the pleural sac. Nitrogen, he finds, neither exerts any untoward effect upon the pleura nor is absorbed to any appreciable extent; it simply keeps the pleura distended and the pulmonary tissue compressed. It is said that during the continuance of this compression the patient feels remarkably free from the symptoms that had previously preyed upon him.
The gas is allowed to remain in the pleura for a period of several weeks, and then it is withdrawn. In a goodly number of instances the symptoms do not return, and the inference is drawn that the disease has been overcome. The lung again becomes aerated and expands almost if not quite to its normal size. If, on the removal of the nitrogen, the morbid symptoms return, more of the gas is thrown into the pleura and kept imprisoned there for another term of weeks. It is said that this second injection is by no means always found necessary, and that when it is called for it almost invariably suffices for the cure of the disease in that lung. Then the other lung is treated in the same way.

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CARE OF THE FINGER-NAILS. One consideration that makes the care of the finger-nails of great importance is that every person, regardless of vocation, is liable to gather under the free margins matter which may be very poisonous. There are on record innumerable cases where slight scratches of the skin by the nail have resulted in malignant and even fatal inflammation.

If from any cause the nail becomes thick and inelastic, it soon becomes rough and assumes the appearance of an excrescence rather than an ornament. In this condition it is much more difficult to keep clean. To avoid this thickening of the nail the hand should not be subjected to the action of strong alkalies or acids; and plaster-of-paris when brought in contact with the hands is especially conducive of ill-shaped finger-nails. Never remove foreign substances from under the nail by means of a penknife or any other instrument which will scrape or scratch the under surface of the nail, as this practice causes the nail to chip, crack and grow thick.

To cleanse the surface and wash away all irritating matter there is no better method than the use of the brush when rubbed into a mild fluid disinfectant. Soap will answer admirably for this purpose, and when employed with regularity will restore the elasticity of the nail, a quality most essential to usefulness and esthesia.

The paring should be done while the nail is yet wet from the soap bath, and the trimming should be effected with an instrument which will make a perfect edge; sandpapering or scraping the nail is barbarous to say the least. Never cut the nail to the quick, but permit a free or extended portion, about one-twelfth of an inch.

The corners should not be cut close, as the trouble known as
ingrowing finger-nail will be the consequence; and this frequently causes untold pains and eventually becomes the seat of foreign matter which causes sufficient disturbance to necessitate the removal of the finger-nail. Few people should give more attention to this subject than the dental surgeon, for the dual reason that it will be safer for both himself and his patient.—Translated by Dr. B. J. Cigrand from *Journal der Heilkunde*, May, 1898.

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**PRESENCE OF ARSENIC IN CEMENTS.** By A. B. Howatt, D.D.S., Chicago. Read before the Odontographic Society, April 11, 1898. At a recent meeting of a local society during the discussion of a paper by Dr. H. J. Goslee on “The Advisability of Devitalization in Crowning Teeth,” several theories were advanced as to the probable cause of frequent death of pulps under metal caps, the chief one of which was presented by Dr. J. H. Prothero, who called attention to the fact that arsenic in some form or other was present in most all of the zinc oxid powders prepared by the manufacturers of cements.

This assertion seemed to offer food for thought and opened up a channel through which it is not impossible to attribute the probable cause of the death of many pulps under crowns in capping operations, and even from ordinary cement fillings, and has induced me to make a series of experiments along this line, the fruit of which will no doubt be as surprising to many of you as it was to me. Procuring some twelve or fifteen samples of various makes and subjecting each very carefully to “Marsh’s test,” it was found that not one of them withstood the reaction for arsenic; that none showed the entire absence of it, while many showed it in large and varying proportions.

However, as only a limited time could be given to these experiments, it was not possible to make a thorough quantitative analysis; yet the deductions reached are based upon the results of a plan which was adopted and carefully carried out, and while perhaps to some slight extent inaccurate, yet sufficiently convincing in general, and will serve to give some conception of the quantities involved.

The test referred to, “Marsh’s test,” was used exclusively in the experiments, which on account of the difficulties encountered and for the reason that many perhaps may not be now familiar with it, will be briefly explained in detail. Into a large-mouthed bottle is
inserted a double perforated rubber cork through which passes two glass tubes, one of which is a funnel tube, the other a shorter one, and the end of which is tapered to a fine point. In the ordinary experiments hydrogen gas is generated in the bottle by the action of hydrochloric or sulphuric acid upon metallic zinc, but as it is almost impossible to obtain a specimen of zinc which does not contain traces of arsenic, after repeated trials metallic magnesium was used in its stead. When it was found that all of the air had been driven from the bottle, the hydrogen escaping from the fine pointed tube was ignited and the flame tested for arsenic. If the flame was found free the measured quantity of zinc oxid (one gram) was suspended in dilute hydrochloric acid and poured into the bottle through the funnel tube, and the resultant flame in each case was allowed to play upon the porcelain for five minutes.

On the porcelain plates which are exhibited will be seen a comparison of the arsenic spot, the one made by the zinc oxid powder, and a spot made by what some of the wholesale chemical houses sell as chemically pure zinc. It will be observed that the gray powders give a less reaction for arsenic than the yellow, owing probably to the higher heat to which they are exposed in fusing, arsenic being volatile at 400° F. It was also found that different specimens of the same make of cements gave varied results.

Acknowledging these deductions to be conclusive then, in the evidence of the presence of arsenic in cements, it is comparatively easy to ascertain the ultimate injurious effects which must be attributed to the placing of cement in contact with any surface of a tooth not protected by enamel; and to trace perhaps the cause, or at least one cause, of the death of pulps under crowns or cement fillings. If, then, cement in proximity to or in contact with the pulp is an irritant, which is conceded, is it due to the presence of arsenic?

Discussion. Dr. W. V-B. Ames: Dr. Howatt spoke of cement being recognized as an irritant, but I do not know upon what grounds he bases that opinion. I have not so regarded it, except in its fresh state, and properly crystallized it is no longer an irritant. From experiments I am led to believe that the danger of pulp devitalization from the presence of arsenic in cement is dependent upon two conditions—first, the quantity present, and second, the porosity of the cement mass after crystallization. If a cement with a given proportion of arsenic should crystallize with very little porosity,
the only arsenic that could act upon the dentin or near-by pulp tissue would be that upon the free surface of the cement nearest it. If it was not porous the amount of arsenic would be so infinitesimal as to be inert, but if a cement contains much arsenic and is also very porous there would be nothing to prevent the most of that arsenic from working on the vitality of the tooth.

Dr. E. M. S. Fernandez: Bichlorid of mercury is used very successfully in the treatment of skin diseases, and its absorption is prevented by the use of collodion in the mixture. The diseased parts are painted with it and the collodion holds the bichlorid in place and prevents it from absorbing. This is I think a good comparison to cement filling. Since crystallization has taken place the infinitesimal amount of arsenious acid present in the oxid of zinc is rendered inert, as well as the phosphoric acid. When using cement as a filling I saturate the cavity with a 95 per cent solution of carbolic acid, dry it again and put in the filling. The carbolic acid coagulates the surface of the cavity sufficiently to prevent any trouble from the irritating effects of the phosphoric acid, and probably also prevents whatever little damage may be done by the arsenious acid. In regard to the porosity of cement, I find that mixing it thick and using pressure makes it solid; but mixing it thin and smearing it in the cavity leaves it porous and useless. The pain which is sometimes caused when a crown is cemented is not due to the arsenic present, but to the phosphoric acid coming in contact with the uncovered and irritated tissue. The proof of this is that the application of bicarbonate of soda with a few drops of water to the parts will greatly relieve the pain, counteracting the acid by its alkaline power.—Dental Review, June, 1898.

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OUR INSTRUMENTS. By B. C. Boeseke, D.D.S., San Francisco. Read before S. F. Dental Assn., March 14, 1898. The subject of "Our Instruments" is one that is not taught to any extent in colleges, nor is it often spoken of or written upon by the profession, so that what little knowledge we acquire of it is through our own experience. I believe it to be of such importance that it should find a place in the curriculum of every college, for it gives a mechanical training which cannot be acquired in any other way. In college they teach us how gold, silver, platinum, etc., are refined and prepared for our use, either pure or as alloys, but what do they tell us
of steel, which we use more than any of the other metals? We are simply told that steel becomes hard and brittle when heated to redness and suddenly cooled by plunging it into cold water; and becomes soft again by reheating; but they do not tell us what degree of heat is most conducive to the best results.

Steel is manufactured by heating bars of wrought iron to redness in contact with charcoal, which causes it to become fine-grained, instead of fibrous, and more malleable and fusible; this is then melted and cast into bars or rods. The best steel we have for instrument-making is Stubbs.

A good rule to follow in working this metal, either in bending or forging, is to work it at as low heat as possible, annealing often, and never heating above a cherry red. Be careful not to do as I once saw an instructor do at a clinic, heat the instrument which you are making to almost a white heat, and then let it cool and try to bend it, for you will break it almost every time.

After filing your steel down to the required thickness, polish it, then decide where and how you want to bend it. Heat and bend while it is still hot, using a copper or brass hammer, which will not dent the steel as much as a steel one. Now after you have it in the required shape, polish out any hammer marks that might be on it, and you are ready to temper. To do this you first coat the instrument with a layer of wet salt and dry it on; this will prevent any scaling; bring your oil or water near to your gas flame. If the instrument is small it is best to hold the burner so that the flame is just over the water, for, if you have the flame away from your cooling fluid, in bringing the instrument to it it loses some of the heat, and your temper will not be so good. Having everything in readiness, heat to a cherry red and suddenly plunge into water. Then polish, being careful not to break the point, which is very brittle; draw the temper by heating quite a distance from the point, using a small flame and watch the colors carefully, so that you will have a straw color at the cutting edge and blue color at the point where the greatest strain comes; this being a spring temper will lessen the liability of breakage.

When the temper is drawn sufficiently, plunge into cold water and give a final polish, which is easily done by having leather wheels or buffs five or six inches in diameter mounted on the lathe, using on them a combination of paraffin and emery powder; finish
with crocus or rouge. A great deal depends upon this polish, for the finer it is the easier it will be to keep the instrument clean and in an aseptic condition. This should not be overlooked, for after every operation each instrument we have used should be cleaned and sterilized. There are many ways of doing this, either by dry heat or antiseptic solutions. I find a solution of lysol, which is a good antiseptic, works well and does not rust.

At every clinic which I have witnessed there has been one very essential thing lacking—an oilstone, on which to sharpen excavators, chisels, etc.; this may have been due to the cavities having been partly prepared before the clinic. In mentioning this I wish to emphasize the importance of keeping your instruments sharp, as it will enable you to do better and quicker work, and with less pain to your patient.—Pacific Medico-Dental Gazette, June, 1898.

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ELECTROLYTIC PRODUCTS OF DENTAL MEDICINES. By Weston A. Price, D.D.S., Cleveland, O. There has been a demand from the profession and a request from Dr. Bethel for some data as to the actual ions and their direction of movement, produced by passing an electric current through various dental medicines. The discussions upon the theoretical phases of the question have, on account of the breadth of that subject, not gone into a discussion of the practical application of the known laws to the uses of the common medicaments.

In passing the electric current through any medicine capable of conducting the current, there will be a movement of a part of some of the molecules in each direction. For example, in passing a current through a solution of sodium chlorid, some of the molecules will divide, the sodium ion going to the negative pole and the chlorin ion going to the positive pole. If platinum electrodes be used, the amount of sodium liberated at the negative pole will be equal to the chlorin liberated at the positive pole. And each, in any solution, will be an exact expression of the amount of current that has passed. These may react upon the electrode or upon the solution about the electrodes, as would happen with the chlorin in this case should we use copper or silver, or in fact almost any metal except platinum or iridium. Or as occurs with the sodium in this case, which reacts with the water, forming sodium hydrate, NaOH, with the liberation of hydrogen. It is, in fact, very seldom that the ions themselves
are liberated; they usually react with the electrode or with the fluid, with the liberation of a gas or a metal. All processes of electroplating are a simple electrolysis.

Space will not permit of any suggestions as to what electrodes or reagents would be indicated in the treatment of the various pathological conditions, as pyorrhea alveolaris and bleaching teeth. We will restrict ourselves to the manner in which the molecules will divide and direction these parts will move in, giving in some cases the rapidity of migration. This latter quality is expressed by stating in centimeters the distance the ion travels in one second under a current of a potential fall of one volt per centimeter of solution, temperature at 18° centigrade. For convenience the one-hundred-thousandth of a centimeter is used instead of decimals; thus hydrogen travels 0.0032 centimeters per second, which is usually written 320, meaning 320 one-hundred-thousandths. This will be the meaning of these terms throughout this paper.

The more dilute a solution the greater per cent of the molecules will be ready to take part in the carrying of the current up to a certain point of dilution, and this point is known as the point of complete dissociation. This point varies greatly with different substances, but with sodium chlorid is at about one in one thousand, at which concentration approximately all the sodium and all the chlorin would be taking part in the carrying of the current. This matter of concentration or per cent of dissociation will not enter materially into the results of our practical work except at the extremes, and we need not consider it ordinarily. The reason for this is very simple, since in any solution capable of carrying the current there are always lots of free ions. When any compound substance, capable of conduction, is held in solution it does not maintain its molecular form, but some of the molecules, or all at sufficient dilution, will divide into two or more parts, called ions, usually two, but sometimes three or four or more, each carrying an electric charge, some positive and some negative, but always an equal amount of the two kinds of electricity. This takes place without the passage of an electric current, and, indeed, no solution will conduct a current that does not contain free ions, for it can only do so by their movement and giving up their electric charges to their opposite electrodes. When a current passes through any solution the positively charged ions move toward the negative pole and
the negatively charged toward the positive pole. By no other means can a current pass through any liquid, except a metal. Very many substances do not dissociate in solution, as sugar. Some others do so, but to a very slight extent. The former are perfect non-conductors or insulators to the current, while the latter conduct but slightly. These latter include many of our dental medicines.

In electrolysing hydrochloric acid, HCl, in water, H will go to the negative pole and Cl. to the positive pole, where it will react with the electrode unless it be a very noble metal, and even then to a slight extent. If the current have a potential gradient of one volt per centimeter and the temperature about 18° centigrade, the H ions will travel with a velocity of 320 one-hundred-thousandths of a centimeter per second, or approximately three inches in an hour, and the Cl. will travel to the positive pole with a velocity of 69, always carrying equal electric charges. With sulphuric acid, H₂SO₄, two H ions will go to the negative pole and SO₄ to the positive pole, where it will react with the electrode or with the water, according to the following equation: 2SO₄ + H₂O = 2H₂SO₄ + O₂. If a copper electrode were used it would unite with it, forming copper sulphate CuSO₄, which would immediately dissociate and begin to assist in carrying the current, the copper forming a new ion and going to the negative pole and SO₄ to the positive pole. — With nitric acid, HNO₃, the H will go to the negative pole and NO₃ to the positive pole, with a velocity of 64. — With silver nitrate, Ag NO₃, Ag will go to the negative pole with a velocity of 57 and NO₃ to the positive pole. — With potassium iodid KI, K will go to the negative pole with a velocity of 66, and I to the positive with a velocity of 69. — With sodium hydrat, NaOH, Na will go the negative pole with a velocity of 45 and OH to the positive pole with a velocity of 182. — With lithium iodid, LiI, Li will go to the negative pole with a velocity of 36 and I to the positive with a velocity of 69. — With ammonium hydrat, NH₄OH, NH₄ will go to the negative pole with a velocity of 66 and OH to the positive pole with a velocity of 182. — With hydrochlorat of cocain, C₁₉H₂₇NO₄HCl, all investigations so far indicate that C₁₉H₂₇NO₄H goes to the negative pole with a velocity of about 7 and Cl. to the positive with a velocity of 69.

These determinations on cocain were completed too late to appear in their proper connection in a recent paper published in May Items. We are indebted to Professor Morley, of the Western Reserve Uni-
versity, for these determinations on cocain hydrochlorat, which mean a tremendous amount of tedious experimentation. This means that the negative ion of cocain hydrochlorat will migrate about one inch into a tooth in one hour at a potential gradient of 25 volts.

I would like to call attention to the behavior of the Cl. ion which goes to the positive pole. If that electrode be anything but the noblest metals, as platinum or iridium, it will react with it, forming the chlorid. It will even do this to some extent with gold, not enough to positively exclude it as an electrode in cataphoresis, though it is not nearly so good as platinum, with which the chlorin reacts, but very slightly. Copper or silver, or German silver, or any metals of their class, would almost produce a failure if used for the positive pole in cataphoresis, because they would form a chlorid with the Cl. and this would immediately dissociate, the metal forming the positive ion and go to the negative pole and the Cl. to the positive again. Thus in a short time this new compound would be carrying the current instead of the cocain hydrochlorat.

Almost any solution we may get hold of, unless prepared with the utmost care, will contain enough impurities to prevent us from determining by its conductivity whether it is an electrolyte or not, as for example, ordinary water, which is a splendid conductor, while absolutely pure water is almost as good an insulator as gutta-percha. Such purity cannot be had, however, by ordinary means. For this reason we should expect the best results in cataphoresis, and in my experience we do, from freshly prepared solutions of as pure as possible a quality of cocain salt in distilled water, the purer the better, and never should we use anything but a very noble metal for the positive electrode, preferably platinum.

Under the head of this paper should properly come a discussion of the various agents used for bleaching teeth, in connection with the electric current. These would take too much space and may be made the subject of a special article. I will say, however, neither sodium peroxid or hydrogen peroxid, or even chlorid of lime, are found in qualitative tests of electrolysis to behave as has been suggested.

It has been quite generally taught by some writers and quite generally believed, that in electrolysis, certain medicines move unchanged towards the negative pole, and certain others move toward
the positive pole. This is not so, and every effort should be made to correct this terribly misleading impression. A part of the molecular contents of some of the molecules of that medicine go in each direction and electro-equivalent parts in each direction. Electrolysis must not be confounded with osmosis, which is the movement of a substance held in solution as it diffuses to equalize the concentration.—Ohio Dental Journal, June, 1898.

SURGICAL TREATMENT OF ALVEOLAR ABSCESS. By L. Meisburger, D.D.S., Buffalo, N. Y. Read before Eighth District Dental Society, Buffalo, N.Y., April 26, 1898. I think I can say without fear of contradiction that as a rule dentists in the past have been somewhat fearful of undertaking any operation which was not of daily occurrence in their practice.

There are several factors which enter into the prognosis of a tooth and its surroundings which are affected by alveolar abscess. First. The severity and character of the inflammatory action and septic invasion. In cases in which inflammatory action is localized and presenting none or but little febrile disturbance, the prognosis is as a rule favorable, but a slight amount of tissue necrosis occurs. Second. Should, on the other hand, the inflammatory action proceed with marked violence, it is possible that not only may the pericementum suffer extensively, but a considerable portion of the periosteum over the process may be raised from the bone during the escape of the pus. Should this separation of the periosteum be maintained for more than a few hours the underlying bone may suffer to the extent of necrosis. In case of marked lymphatic involvement, the neighboring glands being swollen and tender, or even the skin over them exhibiting evidences of glandular inflammation beneath, more or less septic intoxication will probably occur, and unless the focus of infection be promptly sterilized, septicemia is to be feared.

Treatment.—The general treatment of alveolar abscess is that for the treatment of abscess in any part. The details are of course modified in accordance with the anatomical peculiarities of the part to be acted upon. The principles are the removal of all dead matter, together with the active causes of the inflammation and suppuration—that is, microorganisms and their products—and the induction of tissue regeneration, which shall restore parts lost through the form-
ation of the abscess. The instrumental means are the instruments employed to gain access to the focus of disease-action and those employed in the mechanical removal of dead parts. First. The mechanical measures include the agents employed to wash out the abscess tract. Second. Those applied to destroy the active causes of the suppuration. Third. The remedies applied to induce new tissue-growth, and next, those employed to maintain asepsis until the healing process is complete.

In opening an abscess the surface should first be carefully cleansed, and other antiseptic precautions observed. By this I mean that all instruments should be antiseptically treated. The first step then in our operation would be the cleansing of the surface with hydrogen dioxid, followed by a small injection of a five per cent solution of eucain B; an incision is then made at a point on the gum immediately overlying the apex of the affected root, with a pointed bistoury thrust down to the bone—a good-sized incision should be made. The bleeding is then encouraged by the use of hot water for a few minutes, when a pellet of cotton which has been dipped in a solution containing one or two per cent of cocain and antipyrin four per cent is then laid against the periosteum at the bottom of the cut. In a few minutes bleeding will cease, when a spear-drill driven by the engine is passed through the bone into the tissue of the apical space.

Any bleeding which may occur is encouraged as above mentioned. For washing incisions and the abscess in such cases there is no agent more acceptable than a twenty per cent solution of phenol sodique, it being both sedative and antiseptic. A fair-sized round bur is then used to cut away necrosed bone if any be found. If it is found necessary to excise the end of a root, a small fissure-bar is used and the root rounded, leaving no rough edges.

The wound is now cauterized with a fifty per cent solution of zinc chlorid and the cavity loosely filled with boracic acid gauze, your patient being seen every day, and less gauze inserted at each dressing as granulation progresses. The time required for healing is from four to ten days, according to existing conditions. An antiseptic mouth-wash should be recommended in addition to the above treatment.

Let me cite the case of a patient who was sent to me who had had an upper central incisor crowned some six or seven years previ-
ously; shortly after it had developed an abscess, which having remained all these years had become chronic. The patient would not think of being without a tooth. What could be done? One of two things: the taking off of the crown and insertion of an artificial denture, and consequent treatment along old lines with doubtful results; or the removal of the crown, canal antiseptically treated, end of root carefully filled, and another crown immediately put on, and abscess treated as advocated by this paper. I report this case, as it shows where this method can be applied with gratifying results to both patient and operator. I have taken it for granted that the canals of teeth treated in this manner have previously been treated and thoroughly filled.

In conclusion let me say, then, that this operation is a very simple one, remembering that cleanliness is one of the first principles to be observed, a little care when operating on the anterior teeth so as not to penetrate the floor of the nose nor the antrum of Highmore over cuspid or back teeth. This you can avoid by measuring your root approximately. If by accident you do penetrate these spaces, keep them antiseptically clean by using boracic gauze, and you need apprehend no further trouble. I have spoken of thoroughly filling and treating the canals of teeth operated upon in this way, for, if this is not done, and your operation fails, you will consider your operation a failure, when in fact your preparatory work was carelessly done instead.—Dental Cosmos, June, 1898.

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METHOD OF USING SOFT FOIL. By Benjamin Lord, D.D.S., New York. Read before the N. Y. Institute of Stomatology, March 1, 1898. For instruments I depend largely upon what is known as the hatchet excavator. The blades, of course, must be of different lengths and widths and curved at different angles, some having also a slight bend in the shank. Some are wider at the cutting edge than at the angle of the curve, others have the sides or edges parallel, and some of both these classes should have one or both corners ground off so that the cutting edge would be rounded. Then I use a cutting instrument of a peculiar shape, which is most effective on the labial and buccal surfaces, and on the approximate surfaces where the spaces are considerable. This instrument is specially adapted for preparing and shaping the walls or sides of the cavity and is not intended to be used on the floor of the cavity.
I use burs very little except to open crown cavities and dress margins, the proper preparation of which I consider of the greatest importance to the accuracy and success of the fillings. I have instruments cut much as burs are, for dressing away the edges of the cavity after the removal of the decay, and for giving the cavity a proper shape, including a slight undercut. These instruments if properly used take away all decomposed structure and very thin edges, leaving margins of a thickness not likely to be crushed or powdered in any part of the operation of filling. Then I use a suitable instrument to give the edge of the cervical wall a slight bevel outward, so as to bring the filling slightly over the margin of the cavity. I would also thus bevel other margins that are thin.

I feel that the dental engine is used very often to the destruction of healthy tooth-structure and the marring and notching of the margins of cavities. It is unquestionably a very useful appliance, and it is also a very harmful one when used improperly or where it ought not to be.

I prefer soft foil because of its easy adaptation to the walls of the cavity and the greater ease and certainty with which it can be placed and packed without danger of tipping from becoming hard too soon, which is often true of cohesive gold. Cohesive foils and other preparations of cohesive gold have their uses, such as the restoration of broken corners or the sides of the teeth, where it is desirable to make such restorations, but I may say I think it is done quite too frequently, particularly with the front teeth, thereby giving them a more unsightly appearance than the marred or broken corners would present. My experience and observation lead me to believe that cohesive gold is not so well adapted for general use as soft gold.

In my judgment the best form in which to use gold is in sheets, parts of the sheet being folded in strips of suitable widths for the cavity in which they are to be used. I consider that strips or folds can be handled with more ease and certainty in the process of filling than can rolls, pellets, or blocks. It is my belief that too many forms of gold are prepared for our use, often leading to confusion and embarrassment, particularly on the part of the inexperienced. If my memory serves me correctly, the late Mr. R. S. Williams advertised that he prepared and had for sale one hundred and fifty different varieties of gold for dentists' use. Filling teeth has so many difficulties to be overcome, and so much accuracy and fidelity
are required, that we must follow certain lines for a long while and in the use of particular forms of gold, to arrive at a good degree of excellence.

By using suitable points all cavities having three walls can be filled and the fillings contoured by the use of soft foil; this may be done with equal certainty and success with tin-foil or with a combination of gold and tin. I depend mostly upon a single form of instrument for placing the gold and for condensing it towards the walls of the cavity. Occasionally I use a point somewhat more curved to carry the gold already placed with more force against the wall or into a corner of the cavity (always guarding against too much pressure), so that each additional layer may not only be placed against that which is already in position, but will be carried into it, thereby uniting the whole mass.

Then I come to the surface condensing, which I begin with a small four-sided instrument, curved to an angle of forty-five degrees and pointed, the sides grooved, and the edges of the grooves serrated. I assume, as must be the case to insure the best results, that the foil has been accurately placed, the layers added in regular order and condensed as solidly as possible by lateral condensing, and that the gold is raised sufficiently above the margins of the cavity, so that after the surface is made solid by using the point of the instrument and the edges of the groove, the filling will still have a contour or oval surface, if an approximate filling. I wish to attach great value to this surface condensation with small points, as it more or less spreads the filling to some extent towards the walls of the cavity and ties the whole mass together more securely. I speak of leaving the surface of the filling contoured or oval, which is certainly most natural, and if so, highly desirable, but there is interest in the old style of the flat or even the concave surface, as there is much more certainty that the gold will be made solid against the walls of the cavity with less care, when the surface is thus worked down. We find that fillings so finished have done most excellent service. But by using points and making the pressure near the margin of the filling, so as to condense against the walls, and also using the edge of the groove of the instrument I have alluded to, full success may be secured when the surface is left contoured.

I now come to the use of the broad instrument with one side flat and the other somewhat oval, both for further condensing and bur-
nishing. The oval side will not be so likely to come in contact with the margins, and can be used to greater advantage to condense the surface; the flat side also possesses advantages over the oval for a part of the work. I am now ready to give the margins their finish, and my instruments are well adapted for the purpose. They have one side flat and the other oval, are cut like burs, and are used much as a file of the same shape would be. For the final finishing I use a small instrument, the same as I use for the removal of tartar or any roughness about the teeth, and if there should still be any surplus gold at the margins this instrument will be sure to detect and remove it. I attach little if any value to the mere burnishing of the surface of fillings, only so far as it gives greater solidity to the surface. The great point in the finishing of fillings is the smoothness and solidity of the margins, so that no surplus material be left overhanging.

I do not think that any kind of a disk, sand-paper or corundum, should be used on the approximate surfaces for finishing fillings, as they are liable to cut away tooth-material or filling that ought not to be removed, and I do not like the use of the polishing strips for the same reason. I also think that a bur or burnisher in the engine should never be used to reduce or polish fillings in the grinding surfaces of the teeth, as there is too much danger of reducing the cusps or injuring the margins of the cavity. The grinding surfaces should be finished to correspond in irregularity to the natural surface of the tooth, and instruments may be used for that purpose. The burnishing is really of no importance except to give solidity.

I will now give my manner of preparing and handling the gold. I cut a sheet of No. 5 foil generally into four pieces; if the cavity is small I would cut the sheet into six pieces. I fold each piece into strips, for the larger cavities about an eighth of an inch wide, and for the smaller ones a sixteenth of an inch. For the folding I use one side of my shears, instead of a table-knife or a paper-cutter, and I fold on a small cushion made of soft leather and filled with wool. I prefer this to anything harder. The strips are placed on a folded napkin, and I use the point of the instrument with which I am working to pick up the strip and carry it to the cavity. I usually cut the strips into two pieces, sometimes three. The instrument that I use and depend upon mostly for placing, uniting and condensing the folds is properly curved at the end, and an absolute point made by a very short bevel on three sides with a sharp file, and the fourth
side touched at the point very slightly with the file, so that the line of the curve may not be changed. I do not, as would be understood, condense with the point of the instrument, but with the side and edge of the bevel, and unite the folds with the point. I strive as far as possible, in placing the foil in the cavity, to fold the strip in so as to form a loop and bring the loop to the surface. I prepare and use tin-foil the same as I do gold, and also gold and tin in combination. I use three parts gold and one of tin when combining the two metals, folding them together with the gold outside.—International Dental Journal, May, 1898.

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SOME SUGGESTIONS IN PROSTHETIC DENTISTRY. By Dr. John T. Usher, New York. Read before First District Dental Society, Feb. 8, 1898. The suggestions embodied in this paper are really a description of some methods introduced and employed in my own practice, and as such they have passed beyond the suggestive stage and assumed the practical.

Vulcanizing on Silver.—The use of silver as a base-plate material is very limited, especially as a base with rubber attachments. The principal objection to its employment is generally imputed to the fact that it tarnishes in the mouth. But I think we can reasonably infer that in those cases where rubber attachments are to be made, the real and only objection lies in the difficulty of vulcanizing rubber in contact with silver. There are two ways of accomplishing this in common practice. The first is by thinning the silver base where the rubber is to be attached. This necessitates the sending of the silver to the tinsmith to be tinned. The second method is by introducing tin-foil between the silver base and the rubber. The rubber will vulcanize on the tin-foil perfectly, but I have never been able to discover either a chemical or a mechanical union between the rubber and the silver, although it is claimed that there is such an union. The explanation of this phenomenon is that silver has an intense affinity for sulfur, and also for all the known vulcanizing agents, such as chlorin, iodin, bromin, etc.; so that instead of the sulfur forming a chemical combination with the rubber it combines with the silver, forming a metallic sulfid. To overcome this we must interpose some non-affinitive substance between the silver and the rubber before we can vulcanize the latter, or if we do interpose an affinitive substance between the rubber and the silver, its
affinity must be confined to the silver alone. According to the latter theory, it seemed to me that we should not be limited to the employment of tin or tin-foil for this purpose, and so I tried gold-foil. This proved successful, but there appeared to be no definite union. The next trial was with a silver plate coated with mercury. The rubber vulcanized upon this thoroughly, but on separating it from the silver the amalgamated surface of the silver appeared to be somewhat oxidized, though not to an objectionable extent. The third experiment was on a silver plate coated with mercury and covered with gold-foil, to absorb some of the mercury. The results were entirely satisfactory, and the materials are such as are available in every dental office. I think it quite possible that other affinitive agents, such as metallic chlorids, could be employed for the same purpose, but have not tried them.

Another System of Making Gold Crowns.—In making gold shell crowns for capping the incisor and cuspid teeth we aim to produce a crown that shall be the exact counterpart of the natural tooth in each particular case. If we possess a set of good dies or forms and facings, we can usually find something that will suit our purpose. But many of us are not provided with any system of dies or facings, and so must resort to other methods of forming our crowns. The method employed by fully seventy-five per cent of crown and bridgeworkers is the ferrule system; that is, a ferrule is made to fit the neck of the tooth to be crowned a little longer than the finished crown is to be. The face and cutting edge are contoured with pliers, and the lingual portion cut or filed to approximate the shape desired, then placed on a flat piece of gold and soldered. I have seldom seen a good crown made by this method.

The above method not satisfying me, I finally hit upon a system which is highly commended by some of the best crown and bridgeworkers. For cheapness, simplicity and perfection of contour it can scarcely be equalled, and is not excelled by any other method I know of. An incisor or cuspid crown can be made in from ten to twenty minutes, and the average cost per crown for the gold in the rough is about sixty-five cents for all sizes. The method is as follows: A model is first secured of the tooth to be crowned, and of the adjoining tooth or teeth we wish to match. A plain porcelain tooth, either plate or rubber, is then selected, of the exact width and contour desired, but somewhat longer than the tooth to be crowned.
This porcelain tooth is now used as a facing to produce an intaglio die of zinc, fusible, Babbitt, or type metal in precisely the same manner as with a Hollingsworth facing. But in using the porcelain facing we must proceed as follows: Take a small wooden pill-box about one and one-quarter inches inside diameter, fill it with Chase’s or other molding sand, and level it off even with the top of the box. Into this press the porcelain tooth, pins downward, stopping off any unnecessary undercuts with sand. If the die is to be made of fusible metal, a rubber ring can be used to form the walls, as in the Hollingsworth system, but if zinc, type, or Babbitt metal is to be used, the ring should be of sheet asbestos, fastened with a wire. The porcelain facing should be heated before the hot metal is poured upon it, or bubbles will form on the face of the die. This may be done by heating the head of a flask-bolt, holding it in contact with the porcelain facing with one hand while the other holds the ladle in which the metal is being melted. The metal is then poured and a good die obtained. A pattern to cut the gold by is made from a thin paper card, of such shape that when bent around the tooth it will form one continuous piece with a slight margin for bending over the cutting-edge. The gold, gauge 31, is then cut to pattern. The face of the crown is then swaged up in the die, and the wings extending from each side of the face are bent around with pliers on the model to form the lingual surface, cutting away any surplus gold until proper conformity is obtained. The seam is then soldered, the cutting-edge formed and contoured by bending over the surplus at that point upon the lingual surface. The point of the crown is then soldered and stiffened at the same time by putting sufficient solder inside the crown and flowing it in such a manner as to form a solid strip or body across the cutting-edge about one-thirty-second of an inch in thickness. I use porcelain teeth in molding dies as described, not only for the incisor and cuspid teeth, but also for the bicuspids and molars; and it will be readily seen that this system can be applied to every case where the Hollingsworth or any other system can be used, with the advantage in its favor that the facings and forms that can be selected from it are almost unlimited. In general practice, however, it will be found that a variety of dies, consisting of about six forms of each of the incisor and cuspid teeth, will enable us to cover the usual requirements in crownwork. I would suggest that some of the dental supply houses make a die plate similar to the Starr die
plate, with say six right and six left central incisors and the same number of right and left lateral and cuspid face dies, and place the same on the market. It would then be unnecessary to make our own dies except in special cases.

In soldering gold crowns I use a saturated aqueous solution of borax, made by filling a bottle with water and dropping into it a lump of borax. This is allowed to boil on top of my vulcanizer or elsewhere, and the water will take up a certain amount of the borax, leaving the residue undissolved. An ounce of this solution will last a busy man about a year. In using it the piece to be soldered is simply moistened where the solder is wanted to flow, and the solder will run like a flash, much easier than when the borax powder is used. A very useful help in protecting portions of gold-work from oxidizing while soldering will be found in the use of a solution of yellow ochre of a creamy consistence, painting the parts to be protected. This will be useful also in limiting the area upon which solder is to flow in crown and bridgework. An idea prevails among gold-plate and bridgeworkers that the approximal surfaces of teeth to be soldered should be somewhat separated. In my own practice I fit these surfaces closely together, and also the backings, using not less than a 28 gauge gold, so that in soldering shrinkage of solder is resisted by backing. I commence with a high-flowing solder, using just sufficient to connect the backings and plate or crowns together, following with an easy-flowing solder of the same carat for flushing or finishing.—Dental Cosmos, May, 1898.

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CARBONIZED COTTON METHOD. By Dr. Elof Förberg, Stockholm, Sweden. I have to report on a material which has been in use by me the last twelve years as a vehicle for medical applications for the treatment of exposed pulps, as tampon for wounds after extractions, and last but not least, for filling root-canals. The difficulties of finding an ideal root-canal filling are proven by the many different materials which have been recommended for that purpose. It is a variegated medley of the most heterogeneous constituents, from gold "solid to the apex of the root," as the term is, to the aqueous solutions and—the mere nothing!

A material suitable for the filling of root-canals ought to have the following properties: 1. Must be easy to handle, in order to be sure of a perfect filling. 2. Must be a non-irritant. 3. Must be per-
fectly aseptic and easily to be united with antiseptics. 4. Must absorb gases, which in spite of all treatment will develop in the canals. 5. Must be insoluble and not decompose. 6. Must form so solid a filling that filling of cavity can be done right upon it.

The materials commonly used and recommended for the purpose do not, in my opinion, fulfill all these requirements. Gold may certainly be made aseptic, but it is impossible to introduce it into curved and flattened canals. Wood and gutta-percha are not aseptic and they decompose. The cements are irritating and soon dissolve. They are not aseptic any longer than the antiseptics which are added remain there. Cotton is not always easy to be introduced. It is aseptic as long as the antiseptic holds forth, but afterwards decomposes and becomes an irritant.

After years of experimentation to modify cotton in a way to make it insoluble and non-decomposing, I finally obtained in the carbonized cotton the material which I was searching for. Carbonized cotton differs in many respects from the hitherto known modifications of carbon. It seems to be a modification between the diamond and the graphite. Like the former it is a non-conductor of electricity and heat: like the latter it hardly burns. Like the charcoal it is a good absorber of gaseous bodies, and excels it on account of its higher porosity. This porous, soft and flexible carbon, by itself a disinfectant, is also an excellent antiseptic, owing to the addition of anhydrous boracic acid, with which every fiber of it is impregnated.

The carbonized cotton was used by me first in the filling of root-canals. All difficulties arising on account of its brittleness and black color were reduced to a minimum after a short time, so that I can say it is excellent for various purposes. The property of carbon to absorb gases and liquids is of importance in the filling of root-canals. All septic masses which may appear in spite of careful treatment are readily taken up by it and made harmless. Carbonized cotton is entirely aseptic and can be brought to a red heat before use. It may be introduced in the canals as such, or combined with any good antiseptic. No irritation ever results within the tooth nor on the surrounding parts. People who use powdered carbon as tooth powder have carried little particles of it in the gums for a long time, not being harmed by it. I myself have filled the abscess sacs at the apex of teeth through the apical foramen with the cotton,
giving no pain whatever, and in only one case it was gradually pushed out through the fistula without inconvenience to the patient.

Carbonized cotton does not decompose nor is it soluble; this is an important quality. It often happens that teeth whose root-canals have been filled with certain cements or pastes cause trouble again, because these materials were washed out after a time. It also can be easily handled. One objection is its black color. The same is disagreeable, but it does not cause any discoloration of the teeth; on the contrary the latter retain their color well, and if the fillings are not extended beyond the gum-line, especially in the front teeth, nothing can be said against it. Discoloration of pulpless teeth is in my opinion caused only by defective treatment. The usual care has to be observed in treatment of the canals before act of filling. My method differs from others in that (1) I make it a point to wash out the canals thoroughly with a fine syringe, alternately pumping and sucking the liquid, and (2) that I use sulphuric ether.

Dr. Callahan proposed to make the finest canals accessible with a 25-30 per cent solution of sulphuric acid, but for the last fifteen years I have used the ether, which was recommended by Dr. Herbst as an obtundent for sensitive dentin. This is prepared in the following way: Some drops of concentrated sulphuric acid are put in a clean bottle, then the ether is added, stirring constantly with a glass rod until the acid is saturated. Any surplus of the ether is evaporated by the chip-blower. This chemical compound is very useful in the opening of narrow canals; it is a good obtundent and an excellent antiseptic. A fine-pointed syringe brings it up in the canals, or long-beaked tweezers can be used. Dip the latter in the ether, push up as far as possible and open a little; the ether will adhere to the walls by capillary attraction. With a nerve broach the canals are then well cleaned, the treatment is repeated and the ether evaporated by hot air. There is no danger whatever in the use of the sulphuric ether; if too concentrated its action can be controlled by a solution of bicarbonate. I may state here that I even used it in cases of pyorrhea alveolaris until I found better results in the silver salts, itrol and actol. In almost all cases the canals can be filled immediately after the application of the ether, but in blind abscesses a temporary filling (for instance Dr. Forssman’s formalin cement) is advisable.

After the thorough preparation of the canals the carbonized cotton
is introduced. To facilitate the work the cotton may be moistened with alcohol or 5 per cent solution of carbolic acid; in cases of periodontitis or gangrenous pulps a 10-20 per cent solution of formalin, with or without eugenol, is better.

My method of introduction is the following: A piece of the cotton is taken up with long-beaked tweezers and brought to a glow over an alcohol flame, then dipped in above named solutions and carried up in the canals with a root-canal filler, with a zigzag side movement, which prevents the cotton from slipping. The instrument must be blunt and as large in size as the canal allows. Every piece is to be condensed, and larger instruments can be used farther from the apex. With a piece of spunk the whole mass is pressed in as soon as the canals are flush.

The carbonized cotton does not roll together or stop up the canals as readily as the common cotton often does. Should that happen, however, it can be remedied with a probe. In piercing the cotton with the latter it is pulverized and carried up to the apex. It can be pressed in the narrowest fissures and canals, even in such where one's finest instruments do not go. Any surplus is taken off and the cavity well syringed or washed out with cotton saturated in alcohol. The filling is again condensed with cotton or bibulous paper and any moisture taken out with hot air. Perfect dryness makes the cotton much more valuable. The cavity is now to be excavated and any filling can be inserted directly on the cotton. It is of the greatest importance to close root-canal fillings as well as pulp cappings absolutely hermetically. Our cements are all porous and do not give any satisfaction. Gold and tin, or both together, are the best, but if it is necessary to insert cement or amalgam fillings it is wise to cover the bottom of the cavity with above named materials or with gutta-percha. In front teeth, where the anterior walls are thin, I always line latter with gold to give the tooth a natural appearance.

The carbonized cotton is the best filling material for root-canals of temporary teeth. It can be easily worked in the wide canals, does not irritate, and the saliva cannot change its quality. * * * As a non-conductor it can be used with advantage under metal fillings. * * * As a hemostatic it is excellent. While the common cotton decomposes and often causes secondary hemorrhage in attempting to remove it from the wound, the carbonized cotton does not irritate the tissue in the least. Of course it has to be handled more carefully
to prevent it from pulverizing. But if wound around common cotton
and saturated with an antiseptic it works very well. * * *
It makes an ideal pulp-capper with some antiseptics dissolved in
alcohol.

Together with a solution of 20 per cent formalin and eugenol it is
the best material after pulp amputations. Those particles of the
pulp left after the amputation, the canals being inaccessible or the
patient too nervous to remove everything, do not retain their vitality
long. Above mixture devitalizes them quickly and keeps them
entirely aseptic. In such cases the rubber-dam has to be put on. If
there is any pain it soon passes off. This preparation excels Dr.
Miller's bichlorid thymol paste, which also discolors the teeth.
Formalin, as is well known, is a splendid article to harden anatom-
ical preparations, preserving their natural color at the same time.
This property makes it a splendid mummifying agent. The carbon-
ized cotton being worked in the canals carries the formaldehyd
in the canaliculi and stores it up there as a permanent antiseptic and
coagulant.

In many cases of diseased teeth, especially in blind abscesses which
had been treated by prominent dentists without success, I was able
to bring forth an entire cure in a short time with the carbonized
cotton method. Such cases prove more than all statistics. I believe,
therefore, I can well recommend it as one of the most effective and
surest weapons in our efforts to fight the different diseases of the
teeth.—American Dental Weekly, May, 1898.

*SPECIALISM ESSENTIAL TO SUCCESS. By Allen H.
Suggett, D.D.S., Marysville, Cal. Abstract of address to Class of
'97, College of Dentistry, University of California. Some one has
said that genius is only an infinite capacity for hard work and an
unwearied attention to detail. While some of us may not agree
with this sentiment and may not believe in the divine spark, which
is a gift to the favored few, we all know that it is persevering work
that is the necessary power in the accomplishment of any purpose.
Perhaps in no profession is careful work and exact attention to
detail so important as in ours.

It is a law of nature that all things change. Nothing is the
same to-day as it was yesterday. Nothing will be to-morrow as it
is to-day. So you will find it in your professional life. To-morrow
you may be a better workman than you are to-day, or you may be a
poorer. It depends upon yourself.

Don't be afraid of learning too much. We see gray hairs and
bended heads, but seldom from the strain of study or the weight of
learning.

Keep in step with the highest professional thought. It is placed
easily within the reach of all through our periodicals and by means
of the annual meetings of the local dental associations, where we
have an opportunity for mutual help and interchange of ideas. This
is important. It keeps us out of ruts. It helps us to take a
broader view of our work and often furnishes us with ideas that
may prove to be of the utmost importance in our work.

We are living in the age of the specialist. The day has passed
when you could be a blacksmith and a dentist also. To-day you
must be one thing and that thing well. You have received a careful
special education and a specialist you must always be. But do not
be only a specialist; be something more—be broad in thought. It
is an old and hackneyed saying but one having much of wisdom:
"Know something of everything and everything of something." If
you are an earnest student in your profession you will need to watch
yourself that you pay sufficient attention to this "something of
everything." Don't be narrow. Don't think dentistry all the
time. Be broad in your thoughts, in your interest, in your know-
ledge; for aside from the symmetrical development of your character
it is necessary to your success.

The profession of dentistry has some phases peculiar to itself. It
requires so much more than a mere technical education; it requires
an almost superhuman power of adaptiveness. In the same day
you may be the companion and sole entertainer of doctor, lawyer,
schoolgirl, farmer and housewife. You must interest these people.
You must while away as best you can the hours of tedious opera-
tion. This requires great tact and a close study of human nature.
What would divert or interest one patient would annoy another.
So a dentist who is quick to perceive or anticipate the tastes of his
patients will soon find that this quality attracts patients when better
operators, perhaps, have failed to please. The best of education,
the widest interest will serve you best in this respect. If you have
something worth saying it will serve you better than platitudes con-
cerning the weather. People are attracted by minor things. A
pleasant, attractive office, cleanliness and order are not incidentals—they are essentials.—Pacific Medico-Dental Gazette, June, 1898.

STRENGTH OF VARIOUS MEDICINES. The following table prepared by Dr. A. Gawalowski is of special interest, coming at a time when we are all much interested in the special strength of the several medicines employed in dental practice. Registering sublimate as 100, he chronicles these results:

<table>
<thead>
<tr>
<th>Medicine</th>
<th>Disinfectant</th>
<th>Antiseptic</th>
<th>Deodorant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrosive sublimate</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Carbolic acid</td>
<td>50</td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>Sulfuric acid</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Thymol</td>
<td>50</td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>Creosote</td>
<td>50</td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>Antimony</td>
<td>50</td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>Sulf. iron</td>
<td>40</td>
<td>50</td>
<td>30</td>
</tr>
<tr>
<td>Ferro-zinc-sulf.</td>
<td>40</td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>Iron-oxid</td>
<td>40</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Ferro-zinc-magnesium-sulf.</td>
<td>40</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Cupri-zinc-sulf.</td>
<td>35</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Zinc-phenolate</td>
<td>30</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>Sulfur</td>
<td>15</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Potas.-permang.</td>
<td>25</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Salicylate</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Lysol</td>
<td>25</td>
<td>35</td>
<td>40</td>
</tr>
<tr>
<td>Kreolín</td>
<td>25</td>
<td>25</td>
<td>40</td>
</tr>
<tr>
<td>Chlorin gas</td>
<td>15</td>
<td>30</td>
<td>40</td>
</tr>
</tbody>
</table>

Trans. by Dr. B. J. Cigrand from Zahntechnische Reform, Apr.'98.

TO REMOVE ARTIFICIAL TEETH FROM DENTURES. Immerse the plate in boiling water and allow it to remain until the vulcanite has softened, then take it from the water and with pliers remove the teeth. The advantage of this method will appeal to all who wish to avoid the disagreeable odor which comes from the plate when subjected to the flame.—February.

COTTON AND CHLORO-PERCHA. Dr. Coucher recommends that small cotton pellets be saturated with a thin mixture of chloro-percha and these pellets form a very convenient protection in cavities containing an application of arsenic. It will also serve a good
purpose in holding the matrix, and is useful in many ways where the pliability of the cotton and the plasticity of the percha is desired.—February.

TOOTHACHE REMEDY. The following has been found to be an excellent medication in severe toothache: Menthol, 3–5; ether sul., 7–0: O1 caryophyll 3–5; Extr. fluid aconite 1–5.—March.

TO REMOVE DEBRIS FROM PULP-CANALS. It has been an exceedingly successful operation when a ½ per cent solution of ammonia was used. Ammonia in weak solutions is a most efficient remedy in bleaching teeth (when employed in the pulp-chamber) and it frees the dentinal tubuli from foreign matter.—March.

TO SET CEMENT RAPIDLY. If it is desired to have the cement set quickly and remain very hard, add a sparing amount of finely powdered borax to the cement powder and the effect is obtained. This method will give good results in bridge-work and in fillings which indicate a quick-setting cement.—March.

TO REMOVE IODIN STAINS. Iodin stains can be removed from the fingers by applying ammonia. If the stain be on the lips of the patient, bathe the spot with a weak solution of ammonia. Lunar caustic stains may be removed by painting the spot with iodin and then bathing same with ammonia.—April. Translated by Dr. B. J. Cigrand, from Zahnarztliches Wochenblatt, 1898.

Is a Violent Death Painful?—Severe injuries to the body are seldom very painful at first. The severity of the nervous shock seems to paralyze the nerve center where consciousness of pain is situated, and in fatal cases there is often no sense of pain, even when death is delayed a day or two. In such cases it may be supposed that the shock not only paralyzes but even destroys the nerve center. It may be compared to a lightning flash along the telegraph wires, which, although of the same nature as the electric telegraph current, yet is so intense as to destroy the receiving instrument, so that no subsequent messages can be received. In some fatal injuries the nerve that would carry the pain to the brain is destroyed, and such accidents are almost painless. Our sense of pain is greatest in the skin, and deep wounds are therefore not more painful than shallow ones. In surgical operations the skin incision is often the most painful part, and those who have been run through the body say they were conscious only of something cold passing through them, with just a prick at the points of entry and exit of the weapon. On the other hand, some fatal injuries are very painful, especially those that interfere with breathing, such as injuries to the chest and throat.—New York Advertiser.
Letters.

WHAT IS IT?

To the Editor of the Digest, Streator, Ill., July 20, 1898.

Dear Doctor:—In the Cosmos for July is a paper entitled "What Is It?" by Dr. J. Foster Flagg. Since reading the article it is still a conundrum. The spirit shown is Spanish, for the author makes a wholesale condemnation of everything, and the words must be Latin, for so many are in italics.

I am surprised that the Cosmos, "a scientific journal," would print such stuff, and the writer of the paper must be in his dotage, or else he thinks the readers of the Cosmos are nincompoops. Denmark is all right. The trouble is in Swarthmore or Philadelphia. That's "What Is It."

Yours truly,

C. R. Taylor.

QUERY ABOUT ALLOY.

Dear Dr. Crouse: New York, July 22, 1898.

I am very much impressed with the value of "Fellowship" alloy, though I am wondering if I have even yet learned to prepare it in such a manner as to get the best possible results.

With such means as you have for testing the material, you should be able to give very reliable directions for its use. It seems to me that all the care you may take in its careful manufacture will count for little if it is improperly prepared by the operator.

Will you kindly write me, stating in detail the method you find gives the best results, or better still, publish same in the Digest, so that others may have the advantage of it.

Yours very truly,

S. G. Perry.

REPLY TO QUERY.

Dear Doctor Perry: Chicago, July 25, 1898.

I have decided to answer your letter in the Digest, as several men have made inquiries similar to yours, and I found while attending various dental meetings during the last two months that while a large number were using "Fellowship" alloy, they were not getting the best results. This was due in almost all cases to two
causes: First, because the dentists were not using sufficient mercury, and the alloy therefore set too quickly for them to properly condense the filling; and second, because the alloy was not thoroughly mixed, that is, was not triturated until the mass was thoroughly plastic. "Fellowship" requires much more kneading together of the alloy and mercury than those in general use, and it also requires a larger amount of mercury than any alloy I have tested. For small fillings the proper proportion is five grains of alloy to seven of mercury, and the same ratio for larger fillings. This amount of mercury will seem large to those not accustomed to using so much, but careful and scientific tests prove the figures given to yield the best results.

How should the alloy be mixed? It does not make much difference whether in a mortar or in the hand, but if the cavity is large a good plan is to first triturate the mass in a mortar and then finish in the hand. It should be rubbed in the palm of the hand and between the thumb and finger until entirely free from granulation. After it is properly mixed a convenient way to handle it is to roll into a rope and cut into suitable pellets, which can readily be picked up and carried to the cavity with pliers. If any of the mix gets too hard before being used, it can, within a reasonable time and without additional mercury, be rekneaded into plasticity between the thumb and finger and then used. This in no way injures its working qualities.

The next important step is to get it well condensed. Where there are not four walls to the cavity the best results will be obtained by employing a matrix. Instruments with as large points as possible, but not too large to carry the material to the remotest corners, should be used; also heavy pressure in condensing each pellet, which should be increased on each succeeding one in proportion to the degree it is set; and the matrix ought to be removed as soon as the amalgam gets well under way of hardening. Then the cervical margins and all remote points not readily reached when the matrix was in place should be condensed with flat or smooth surface instruments and with heavy and persistent pressure; and at this stage of the operation the surplus material should be removed. The quick-setting quality enables you to do all this and to finish the filling at the same sitting.

A word in regard to the micrometer and dynamometer: The first
is invaluable for testing each batch of alloy to make sure that it will not shrink or expand when placed in a cavity. The dynamometer is also very important, as it has enabled me to secure a combination of metals which will yield the least possible flow and the greatest amount of strength. With this instrument I have also been able to prove the proper amount of mercury, and how to pack the mass with the best results. I can now make cubes of "Fellowship" amalgam that will not change their form 1 per cent in an hour under 60 lbs. pressure, and that will require a stress of from 300 to 500 lbs to crush. Before I ascertained the proper way to mix and pack however, the flow was from 3 to 5 per cent, and the blocks would break under stress of 200 lbs.

Next to shrinkage this characteristic of flow is the cause of most of the defects in amalgam fillings. There used to be a theory that amalgam when placed in teeth had a spheroidal tendency, and the bulging and change of position of fillings was accounted for in this way; but as a matter of fact it is the force in ordinary use which changes the form of the fillings. When preparing cavities for amalgam it should therefore be borne in mind that it is not so strong as gold, and this tendency to move out of position makes it very important to anchor the filling more thoroughly than if gold were to be used. All remote recesses should be carefully filled, otherwise these thin points are liable to bulge or break away under ordinary use.

I have made my reply to your letter somewhat longer than I had intended, but this subject is not generally understood, and I hope to secure a full discussion of it.

Yours very truly,

J. N. CROUSE.

PHILADELPHIA LETTER.

Dear Digest: PHILADELPHIA, July 20, 1898.

The Pennsylvania State Dental Society held its meeting this year at Ebensburg, a few miles from Cresson Springs. Philadelphia turned out in goodly numbers, one of our most gifted townsmen, Prof. Wilbur F. Litch, being the president. Dr. Litch's address was most excellent from every standpoint and was no doubt the finest literary production to which the society has ever listened. After speaking of the advance and growth of the profession, of the broadening of the educational systems, of the raising of the stand-
ards for graduation and other matters purely professional, he paid an excellent tribute to the policy of our government in its national trials and noble work. He alluded to the unanimity of feeling and support of the president in his trying office, and recognized the fact that all lovers of peace believed with our worthy president that a vigorous prosecution of the war is the quickest and surest way to end it. The general tenor of the whole address was for peace and a unanimity of feeling in all things whether professional or otherwise. It was voted by the society to have two thousand copies of this address printed and distributed among the dentists of this state and vicinity.

The tendency of the papers and discussions seemed to run to the prophylactic treatment in dentistry; last year we remember everything was cataphoresis. The clinics were of a superior order and were much enjoyed. This was largely through the efforts of the chairman of the clinic committee, Dr. G. L. S. Jameson.

It so happened that the mayor of Ebensburg, Dr. Richards, is a well-known dental practitioner, a graduate of the old Pennsylvania College. The people of the town were very hospitable and seemed pleased to entertain, as they expressed it, such a "gentlemanly body of men."

A valuable move was made by Drs. Jameson and Guilford to have a sum of money appropriated to meet the expenses of clinicians and essayists who might be brought from outside of the members. One hundred and fifty dollars were set aside for that purpose.

The attendance was not so large as usual, which was partially due to the meeting being held at an inaccessible place, and partially because several members were called to other duties. We especially missed the genial presence of Drs. C. N. Pierce and James Truman, both of the salt of the profession.

Many of us expect to go to the National Association to be held in Omaha next month. We anticipate a long journey but hope for a profitable meeting.

Philadelphia for some reason has had the name of being slow and prosy, but we are glad to know that it is gradually growing out of this reputation. In fact in many respects we are now becoming real hustlers, putting even Chicago to shame. For instance, here is one of our medical institutions starting a dental department; said department having been in existence a little over one year, and
in that time it has had the distinction of having had three faculties! Think of it. Two have resigned and now the third is announced as ready to guide the institution through its second year. We say announced, meaning we have been treated to long reading notices in the daily papers of this city of the great ability of each faculty. This institution, by the way, seems to be on very good terms with the press, securing a great deal of "gratuitous" advertising.

Mr. Presley Blakiston, senior member of the well-known scientific publishing firm, P. Blakiston, Son & Co., is dead. The business, which is a very large one, is left entirely to his son, Mr. Kenneth Blakiston, and will be continued under the old firm name. This genial and energetic young man has in fact been the moving spirit in the business for some years and he has our best wishes as he formally takes the reins into his own hands.

Cordially, 

THE SPECTATOR.

BALTIMORE LETTER.

Dear Digest: Baltimore, July 19, 1898.

Local dental affairs are extremely quiet in Baltimore. Our state society has held its business meeting, and the newly elected president, Dr. M. G. Sykes, of Ellicott's City, is worthy of the honor and will ably fill the office. He is appreciated at home, having been mayor of the town and prominent in its social and economic counsels. We are glad to see the country members coming to the front. Dr. Richard Grady, as recording secretary, is a veteran who has been in retirement for some time. No better secretary could be found, and we predict that his department will not lag in the year to come.

We can see since the organization of the union meetings that local dental politics have been on the wane, and this is extremely gratifying. Surely nothing is more humiliating and disgusting in an organization effect for professional and scientific advancement than the injection into its management of men whose ideals and methods are those of the peanut politician and ward-heeler. Such bodies expect their presiding officer to represent all that is best in the association, and not simply the successful tactics of political management in the matter of election. He should be capable and experienced—not as clinician but as a president. Individual preference and ambition should not be considered when the weal of the whole
membership is at stake. Local societies are not the only ones which have suffered in this respect. Presiding officers are not made in a day, and a thousand years would be far too short to make good ones of some we have seen wielding the gavel in high places.

Considerable interest attached to a trial before a magistrate last week, involving the adjustment of a claim for professional service by a prominent dentist against an equally prominent and very bombastic lawyer. The claim of a very moderate fee for some bridge-work was disputed because discomfort followed its introduction; which discomfort the claimant had no opportunity to alleviate, his patient having sought other services. The second dentist appeared on behalf of the defendant. The weight of evidence and the expert testimony satisfied the justice that the claim was equitable and the dentist got a verdict.

Those who attended the trial could but be struck (not pleasantly to be sure) with some features and incidents. The effort to cheapen professional services, to weigh them by mercantile standards, was so persistent as to incite a revolt in the ranks of the experts. The statement on the part of the defendant that he had no regard for dentists socially, that he did not consider them his equals in any sense, must have sunk deep into the little soul of the man who so far forgot himself as to appear against his professional brother, and for what? Possibly the paltry fee collected from the doughty client.

Oh, for a scalpel to lop off some of the warty excrescences, some of the fungus growths that have fastened themselves upon the dental profession, whose protoplasmic elements have developed into giant cells of selfishness and avarice, in whose papillary meshes there is no opportunity for the development of the first growth of brotherly kindness and professional sympathy. Paris-green kills potato bugs; wonder what it would do to these things. I have heard men say that at times they have been ashamed to acknowledge they were dentists. I have never experienced this mortification, but I frequently feel indignant at the thought that my measure may be taken by such a yardstick.

Slowly but surely dentists are growing into the respect and esteem of the general public; slowly but surely dentistry is taking its place among the liberal professions; and what is better, still slowly but surely men are developing in the dental profession who will demand
the respect and command the assistance and cooperation of the scientific and cultured in all the walks of life. Men broad, scientific, cultured enough to brush away the flies and vermin that have collected on the body professional; men sufficiently conscientious to act well their part without respect to personal honor or credit, but whose efforts will bring honor and credit inevitably, not to them alone but to their profession also. Of such is Chas. S. Tomes, whose appointment to the medical council of England has widened his scope of general usefulness and broadened his opportunity to fix upon the people the importance of his specialty. The individual may die and his effort cease, but the impulse which secured his appointment will not be lost. Dentistry has permanently and securely fastened itself upon the counsels of a great city.

The little spurt at legislation to get dentists in the army and navy should teach some lessons. The measure as introduced was very crude and no one seemed to know of it until it had been killed in committee. After this the appeals of the journals to the profession to cooperate were too late. Some were made even after Congress had adjourned. Now, if it is really desirable to have dentists in the army and navy, it is not an impossible thing to accomplish. A little organization, a long pull, a strong pull, and a pull altogether and the task is done. Let the National act, and let those to whom the task is entrusted be those who will do the work, for it will take work.

Cordially, OrioIe.

NEW YORK LETTER.

To the Editor of the Digest, New York, July 16, 1898.

MR. EDITOR:—Independent journalism—England has it in The Dentist. Nothing half so interesting has before come from England. They are having good social times over there in their dental meetings and are giving us fine views of the city of Bath, where the meetings were held.

Mr. Tomes is emphasized by an appointment on the Medical Council, and they seem to think over there that it will elevate dentistry. That used to be the idea here, but it looks as though the profession is beginning to find out that the elevation must come from the dentist pure and simple.
We learn that the English dentists have a benevolent fund. This seems a good idea. What say you, members of the National?

_The Dentist_ tells us that Fouchard, honorably known in France, had in 1700 an appointment as dentist to the marines, but he did not receive much attention from the physicians. How about such appointments in our army and navy? There never has been such an opportune time to present the matter as now.

Is the dentist a surgeon? The following is taken from _The Dentist_, and is part of a report of a meeting of the general Medical Council of London:

Dr. McVail said he had intended to move to remit the report back to the committee, so they might consider and report as to how far the medical and surgical examination of dental students should correspond to the education and examination required in the case of medical students. He thought the time had come to consider what was to be the real position of the dentist in the future. Was the dentist still to be a man of inferior medical and surgical training with a few specialisms, or was he to have knowledge such as the members of the medical profession had, with dental knowledge in addition? His own impression was that the time had now come when the dentist ought to be a surgeon, when he ought to have a knowledge of surgery as complete as the person going into the practice of the profession in the ordinary way. He thought the dental profession ought to be elevated and ought no longer to consist of men who had an imperfect education in medicine and surgery. Although they had a separate register, dentists were, after all, members of their profession, and he was glad to think that other members of this council were beginning to take this position.

Mr. Tomes said that every day in the practice of a dentist the knowledge of general pathology came in. Hardly a day would pass, if the dentist was in a large practice, without his seeing and having to form an opinion upon a case which was on the borderland where he hardly knew whether the trouble was local or constitutional.

_The Review_ has a few things worthy of our notice. First, the report on dental literature. Does Mr. Tomes give sure instruction on retaining pits for fillings? That may be English, but seems American. Second, is amalgam a poor filling anyway? We trust not. Third, Dr. H. S. Nash has not yet published two volumes on
pyorrhea; neither is the title "P. A." He emphasizes "Idiopathic Alveolitis," yet does not know that this will prove the best term. We think many men fail to give attention enough to enable them to make an intelligent criticism or even to do justice. If we had followed our first impressions regarding Dr. Nash's book we should have severely condemned it, but after reading the book several times we began to see light emerging from the great obscurity formerly caused by prolific writers. We know that this book has already put our feet on firmer ground than ever before, so far as getting at the true etiology.

Now here is something that will stir us with pride; one of our American practitioners abroad has at last solved the vexed problem of porcelain inlays. Dr. Jenkins of Dresden has rounded out years of work by a six weeks' sojourn in the Bohemian Mountains among the porcelain bakers, and has built a laboratory on the grounds of his chateau and gone to the root of the matter. His productions are something in art work which can hardly be conceived of. To be sure, it is not cheap work; but the expense will not stand in the way of men of high attainments. This idea will obviate much hard labor for patient and operator, and reduce the number of fillings. We congratulate Dr. Jenkins, and hope he may be richly rewarded for his labors.

Those who are familiar enough with porcelain inlay work to speak intelligently, tell us that the lack of integrity of the cement is what causes failure. This is probably true, for we see the various cements have not proved impregnable to dissolution under all conditions. The absolute success of this work therefore depends partly upon the chemists, and let us hope that they will act in the matter. Great things are being done with amalgam, why not with cement?

We shall be glad to have some reliable information concerning Omaha and its possibilities for a successful meeting of the new National Association, and Dr. Crouse is certainly the man to spy out the land. Already there are signs of "death in the pot," which only the olive branch can neutralize. There will never be a truly representative scientific body until the membership is based upon scientific productions.

We do not often get a respite from our office in June, but this year was an exception. A call came to us, and for the third time we visited Cazenovia, the native town of the late Dr. William
LETTERS.

H. Dwinelle. It is a most beautiful place and we have described it in a previous letter. The venerable Dr. Phelps, successor to Dr. Dwinelle, is still in practice at 83. He showed us around the little office building first occupied by Dr. Dwinelle. Among the curios he showed models of facial deformities corrected by Dr. Dwinelle a half-century ago. Would it not be a graceful thing for about one hundred of us to send one dollar apiece to S. G. Perry, of New York city, so that a becoming slab shall mark Dr. Dwinelle's resting place?

Syracuse has formed a city society and is drawing members from the surrounding towns. The well known and much honored S. B. Palmer is one of the founders. Nothing like the fellowship arising from scientific and social dental meetings in city and town, for men enlarge under its influence.

Dr. George E. Greene in the June Digest takes up the subject of the "Non-graduate Practitioner." Although we have more than once advocated this course, we are inclined to save our energies for something that gives more promise of good results, and this could hardly be accomplished.

We are glad to see that Dr. Cigrand agrees with us that the operation of extracting a tooth belongs to the field of oral surgery. This we claimed in the case of Dr. Riggs, when he removed a tooth from Dr. Wells under an anesthetic, thereby making it the first surgical operation under an anesthetic, and thus giving double glory to our calling.

The death of Dr. Southwick of Buffalo takes away a conspicuous member of our calling, for his association with electrocution gave him no little publicity. It seems that he was the first person who called the attention of the state authorities to the fact that life could be made extinct by electricity, and they then came to adopt the plan of electrocution.

Rumor says that Dr. Davis, a prominent dentist of New York, was lost on the ill-fated French steamer. We have met him in his office and found him to be a gentleman of very pleasing manners and appearance.

New York has enjoyed lovely weather for some time, but just now it is sizzling. The news from Santiago will help us to keep cool, and as for "walking Spanish," let the other fellows do that.

Cordially,

NEW YORK.
NEW JERSEY LETTER.

Asbury Park, N. J., July 23, 1898.

To the Editor of The Digest,

Mr. Editor:—The twenty-eighth annual meeting of the New Jersey State Dental Association has come and gone and its history is recorded. In session from Wednesday the 20th at 10 o’clock until Friday the 22d at 1 o’clock, a mass of business, papers and discussion was gotten through with which, considering the warm and sultry weather we had, was a wonder to the thinking man. Unfortunately several of the essayists could not be present and their papers were read by members of the association. It so happened, however, that these papers all called forth considerable discussion to the profit of the convention.

The paper of W. J. Wallace, M.D., Glens Falls, N. Y., on “A Few Homeopathic Remedies in Dental Practice,” brought forth the old subject of dentistry being a specialty of medicine and the rights of dentists to give systemic treatment.

Dr. A. R. Lawshe of Trenton, N. J., presented “A New Sectional Block Tooth.” This paper advocated making the countersunk tooth to the gum section, and was commended.

Dr. F. N. Gregory of Newark, N. J., in his paper advocated the extraction of the tooth and then replanting it in severe and stubborn cases of alveolar abscess, where other treatment fails, and in molars having exposed pulps difficult to extirpate.

Dr. I. P. Wilson of Burlington, Iowa, whose paper was “A Study of the Physiological and Pathological Conditions of the Apical Portion of the Cementum,” deprecated the use of arsenic for devitalization where the application is made more than once. Dr. J. F. Flagg took issue with him on the arsenic question. The paper was an admirable one and instructive throughout.

Dr. J. A. Waas, Hammonton, N. J., who wrote on “Experience with Pulp Mummification,” presented a number of cases where for three years this method had been entirely successful. The discussion on this paper was extended, and the concensus of opinion seemed to be adverse to the treatment described so long as other and well-tried methods could be employed. It will take longer than three years to demonstrate its success or failure.

H. H. Merrell, M.D., Chicago, wrote on “A Plea for a More Sci-
entific Study of Materia Medica as a Branch of Dental Education," and very ably set forth the necessity of the desirability for more extended study on this subject.

Dr. H. C. Register of Philadelphia presented a very interesting paper on "The Relation of Vegetable and Animal Life, Nutrition, the Influences Mutually Exhibited, and Their Application to the Mouth and Teeth."

Dr. Wm. H. Trueman of Philadelphia read an article on the "Evolution of Dental Materia Medica." This paper was masterly and was presented as only Dr. Trueman can do it, making a very interesting essay out of an ordinarily dry subject. The wish was freely expressed that Dr. Trueman should write a history of dentistry, a task he is so abundantly able to fulfill.

The clinics on Thursday afternoon were numerous and praiseworthy, and showed many novel methods of operating. The attendance at the convention of members and friends was more than the average. Its influence and impression on the profession will be felt when the proceedings are published.

The election of officers resulted as follows: Pres., J. Allen Osmun, Newark; Vice-Pres., Wm. E. Truex, Freehold; Sec'y, C. A. Meeker, Newark; Treas., H. A. Hull, New Brunswick. Ex. Com., Oscar Adelberg, Elizabeth; R. M. Sanger, East Orange; F. E. Riley, Newark; F. E. Gregory, Newark. Membership Committee, F. L. Hindle, New Brunswick; W. L. Fish, Newark; C. S. Hardy, Summit; C. W. Hoblitzell, Jersey City; W. H. Pruden, Patterson. Dr. F. C. Barlow, Jersey City, was recommended to the Governor to succeed himself as a member of the examining board.

Some one inadvertently left in the hotel a circular issued by the National Association of Dental Examiners to its members, calling for a vote of the various states as to their wish to have the annual meeting of the association changed from Omaha to some other place and date. The reasons for such a change were fully set forth, among them being the insufficient accommodations at Omaha and the probability of a small attendance of the examiners at that place.

The committee on colleges also raised the following objections: The probable settlement of the primary education problem; the desirability of meeting after the Faculties have debated this subject that a little of their wisdom and action might be obtained; that the Faculties be first to deal with this matter from their present knowl-
edge; that the possibility of an open conflict between the Faculties and Examiners be avoided; the convenience of Washington and the month of October; the fact that the college announcements will not be issued until August, and the consequent impossibility of the committee to digest and report on them earlier than October; the delay in getting necessary information by the committee, which can be had by October; the necessity of meeting not later than that date, that the Examiners' official list of recognized colleges may be furnished to the various boards for their fall meetings.

The cities of Washington, Chicago and Louisville are named for selection and the time the early part of October.

Cordially yours,

Hornet.

SECTIONAL BRANCHES.

Pass Christian, Miss., July 16, 1898.

To the Editor of the Dental Digest,

Mr Editor:—In the May issue I note an editorial entitled "Sectional Branches," in which you admit "a lack of full comprehension of what is expected to be accomplished," and express a desire to see "a well-defined plan of the workings of these branches." You also question as to the character of the membership of the branches. Having by the good-will of my confreres been placed in a position necessitating a careful study of these among other points, I beg to offer the following as a partial solution of the problem.

First, as to the membership of the branches: When the National Dental Association was formed, it took as a nucleus for its membership the then existing membership of the American Dental Association and of the Southern Dental Association, as seen by the following extract from the constitution, Art. III, Sec. 5:

Special Members. It is hereby specially provided that all persons at present permanent members of the American Dental Association and of the Southern Dental Association are permanent members of this association and entitled to all the privileges of the class to which they belonged without further action, and the treasurer is hereby directed to transcribe their names upon the roll of membership of this association.

The twelfth standing resolution further provides "that all members and officers of the American and Southern Dental Associations hold the same relation to the National Dental Association as they
did to the former associations." As to the nucleus of the Southern Branch, I quote part of a resolution offered by Dr. J. Y. Crawford and adopted at the final session of the Southern Dental Association, August, 1897—"I move that we do now declare ourselves the Southern Branch of the National Dental Association."

Increase of membership is provided for in the National Constitution by Sections 2, 3 and 4 of Art. III, which form the same portions of the constitution of the Southern Branch. It is thus seen that the Branch, as well as the National, makes permanent members only of delegates, and receives delegates only from state societies. The restrictions placed upon delegates and permanent membership in the Branch are identical with those of the National, Art. IV, Sections 1, 2 and 3 having been incorporated unchanged, and with the same numbering, in the constitution of the Branch. In place of Section 4, however, the Branch substituted the following wording—Art. IV, Sec. 4. "This association will receive as delegates only graduates of some reputable dental or medical college, or those who entered the profession prior to September, 1875." In short, the conditions of membership in the Branch are and necessarily must be the same as in the National, because, as I have said elsewhere, election to membership in the Branch confers membership in the National. Art. V. of the Branch constitution is identical with Art. V. of the National, except that in Section 5 "Committee on Grievances" is substituted for "Executive Committee." Section 7 of Art. XIV. of the National Constitution is incorporated as a part of Section 7 of Art. V. of the Branch Constitution on "Duties of Treasurer." Among his other duties, "The Treasurer must pay over to the Treasurer of the National Dental Association three-fifths of the dues paid in by the members, the remaining two-fifths to remain with the Branch to defray its expenses."

The plan of receiving delegates from state societies only, instead of from local societies and colleges also, will probably work all right when it is properly understood, and need not materially "change the character of the membership." It will, however, be necessary for members of college faculties and local societies to join the state societies in order to come into the National and the Branches as delegates, which is exactly what is desired, namely, to build up the state societies. After becoming "permanent members," however, as provided for in Sec. 2 of Art. III of both constitutions, it is not.
obligatory to retain membership in the state society, Sec. 3, Art. IV, providing for methods of dealing with individuals who are members of the National but have no membership in any local body. The number of delegates will unfortunately not be so great this year as in the future, since some state societies had already held their regular annual meeting without electing delegates, before the officials of the National became thoroughly awakened to the fact that the general body of the profession did not understand the elective-delegate system. It is quite a common misapprehension that delegates can be "appointed" at any time. In time, however, they will become familiar with this feature, unless some of the red-tape restrictions should be removed. In this division (the South) five of the state societies had held their annual meetings without any effort whatever having been made by the officials of the National to have delegates elected. And right here I can point out one useful thing that the Southern Branch has done, namely, seeing that full lists of delegates were elected by three of these state societies, not only to the Branch, but also to the National. The other two of the five states referred to had met before the installation of the present officers of the Southern Branch. I think that the above will enlighten you as to the membership of the Branches.

As to whether they will be "a benefit or a hindrance to the National organization," it is difficult for me, individually, to conceive of any way in which a Branch could prove a hindrance. Every member of the Southern Branch is also a member of the National; the Branch contributes three-fifths of its income to the National; the members of the Branch receive the Transactions of the National, thus increasing the audience, and many of them will doubtless attend the meetings of the National; they swell the roll of membership; they contribute to the archives; they contribute more financially to the National than they do to the Branch. The Branch will be a stepping-stone for many from the Southern State Societies to the National, as the state society is a stepping-stone from the local societies to the Branch and the National. The constitution of the Southern Branch does not provide for any kind of membership which does not include membership in the National, therefore every member of the Branch is and always will be a member of the National, and as such interested in building it up in every way. How then can the Branch prove "a hindrance?"
Each annual meeting being held in a different section of this division, the Branch will do a great deal of missionary work in developing the dental profession in the South and in securing new members for the National. The increase of membership in the National from the division known as the South will annually be about double what it would be without the Southern Branch, as each Southern Dental Society elects twice as many delegates as it otherwise could—that is, delegates to the National and delegates to the Branch. Despite the fact that the Southern Dental Association took an active part in the formation of the National, there are in this division, as in others, men who will not travel great distances to attend the meetings of the National, and who would not send their dues when not attending, but who will attend the Branch because nearer home, and thereby contribute to the support of the National, and who will meet with the National when it comes within their division, when the Branch will not have any conflicting meeting. Love for the old Southern Dental Association will long live in the Southern heart, and while the Southern Branch is accepted as a substitute, without it the void would be unbearable.

Yours truly, Wm. Ernest Walker.

Hutchinson's Teeth are seldom seen in the milk teeth of children.—Graham.

One grain of the bichromate of potassium dissolved in four ounces of water, a teaspoonful every two or three hours, will be found to give relief in loss of voice, hoarseness, and in bronchial coughs.

Foreign Body in the Air Passages.—Nordman describes his experience when summoned to a child dying of suffocation from having "swallowed something." All efforts to find the foreign body were in vain. Tracheotomy was performed without results and respiration had ceased, although the heart was still beating. Artificial respiration was kept up with frictions and injections of ether until more than an hour and a half had passed, when suddenly a small balloon appeared at the tracheal opening, having been distended and forced upward by the artificial respiration. It was easily extracted and found to be one of the toy whistles consisting of a wooden part, 2.5 cm. by 8 mm., and a small balloon 2.5 cm. by 2.5 cm., which had lodged beyond reach in the right bronchus.—Journal de Med. et de Chir., Oct. 25. Another case is reported in which the child had inspired a smooth slender glass object, but instead of performing tracheotomy as indicated, Bonnus attempted intubation first. In a few moments the object was expelled in a fit of coughing, a new and suggestive application of intubation.—Presse Med., Oct. 30.
J. FOSTER FLAGG—WHAT IS IT?

Since reading the remarkable effusion of our italicized friend in the July issue of the Dental Cosmos, we have been much puzzled as to why Editor Kirk, being a scientific man himself, and recognizing the value of original investigation, has allowed such (Let us be charitable) amusing language to appear in his journal. We cannot believe that he has run short of material, and so are forced to the conclusion that, smarting under the criticism that "the Cosmos is too scientific," with the able assistance of Dr. Flagg he has gone in for comic literature. If so, we congratulate him on the initial effort, and hope that our commendation will stir his mountebank collaborator to still more extravagant vagaries.

NATIONAL DENTAL ASSOCIATION.

The first annual meeting of the National Dental Association will convene at Omaha, August 30, 1898, and continue in session four days. As this is the first gathering of the new body, we hope every one who desires it to be a great organization will attend the meeting this year. Carping criticism to the contrary notwithstanding, the power for good of the American Dental Association was very great, and its influence was widespread. If this new body fulfills its mission it will be a much greater organization and accomplish a great deal more than any which has gone before, and it is sure to be the medium for valuable work if we have the united interest and cooperation of all the societies in this country. Let the first meeting be the initial step in improving society work.

As there was some apprehension felt concerning proper hotel accommodations, we went to Omaha this current month to see what the prospects were. We have made arrangements for ample hotel accommodations and an excellent meeting place, and there need be
no fear in this regard. The hotels will give reduced rates, and while the railroads have made a special rate on account of the Exposition, we are endeavoring to have them reduce it still further.

THE NATIONAL ASSOCIATION OF DENTAL FACULTIES.

This important organization will soon convene at its annual meeting, and the proceedings will be watched with unusual interest because of the action taken last year, which did away with the promised increase of qualifications for admission to the dental colleges of the land. The future usefulness of the Faculties' Association will depend upon whether advanced steps are taken, or whether it continues to retrograde and to admit such students as are entirely unable to ever become good dentists. We hope that the ground lost last year will be regained and that a high standard of matriculation will again be established. Besides this, there are other problems being agitated by the thinking minds in the profession which should be considered by the Association this year.

In the last number of this journal we made the statement that "There are at present more practitioners of dentistry than can make an honest living, yet the number of colleges is on the increase, larger classes than ever before have been graduated this year, and that means that more young men have been turned into an already overcrowded field. This wrong will be increased in proportion to the number of schools and the laxity of the requirements." If this proposition is true, and we think it is, the Faculties' Association should make its work more extensive, and not only require certain knowledge on the part of the prospective student, but in some way make sure that the faculties of the various colleges are composed of men fit for so important a work as teaching. The larger the Association gets, the more difficult it will be to control in the interests of raising the standard.

There is a rapidly spreading belief that the dental colleges are not conducted in the interest of the profession; that they are run to make money regardless of consequences; that selfishness is the ruling motive, and that for these reasons the dental colleges as a whole are detrimental to our best interests. If these complaints were but the murmurings of the grumbler, or the talk of the gosiper, we should not discuss them here, but they emanate from too large a class of earnest, honest practitioners to go unnoticed.
While we have the greatest respect and confidence in the honesty and ability of most of the leading men connected with our schools, yet on account of the criticisms mentioned and the proceedings last year, which let down the bars for no other purpose than to get larger classes, we feel much uneasiness as to the work and good to be accomplished by the Faculties' Association. At the coming meeting the ground lost last year should be regained and other greatly needed reforms should be established. If the honest colleges which desire a higher standard continue to be outvoted by the schools which care nothing for it and aim only to make money, they will surely have to call to their assistance the National Association of Dental Examiners, which has the legal authority to prescribe what shall constitute a reputable college.

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

It seems to us that the power of this body for good has not yet been realized to the full extent of its possibilities. With the decision of the courts in its favor, what is most needed is a well defined and organized plan, vigorously executed. We hope each state board will send its ablest representatives to the meeting of the National organization with some well defined ideas for its future good. With the majority of the state laws recognizing holders of diplomas from reputable dental colleges as proper persons to practice dentistry, the importance of having a competent examining board to ascertain and prescribe which of the great number now issuing diplomas should be recognized as reputable is all important.

To be thoroughly effective, the Examiners' Association must be well organized and prepared to enforce its requirements; furthermore, a form of law should be devised which will be suitable for all the states, since at present the different laws vary so greatly that universal good government is difficult of accomplishment. The laws of some states regard diplomas from reputable dental colleges as sufficient evidence of qualification, while others do not recognize any diplomas, at least not those of colleges outside the state, and in order to practice the applicant must pass an examination before the state board of dental examiners. The first state to pass such a law was Massachusetts, and it has been in successful operation long enough to judge somewhat of its efficiency. We are not sufficiently familiar with either method to judge which is the better, but from
what we can learn, the one requiring examination is more effectual in securing to the community a better quality of practitioners. It goes without saying that the wise and faithful enforcement of the law is always essential.

With representatives from each examining board at the meeting of the National organization, they should be able to secure complete and reliable information concerning the workings of all the different laws, and to form such an one as would be acceptable to all the states, thus lessening the labor necessary for the conscientious enforcement of the proper requirements of the practice of dentistry. To this end each college faculty and state examining board should exert their energies, and in so doing they will have the support and commendation of the best men in the profession.

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**Notices.**

**BI-STATE DENTAL MEETING.**

The bi-state dental meeting of the northern Indiana and southwestern Michigan Dental Association will be held in Elkhart, Ind., September 21 and 22, '98. This meeting promises to be one of unusual interest and profit, and all members of the profession are cordially invited to attend. F. P. ADAMS, Sec'y Northern Ind. Dental Association, Elkhart, Ind.

**MINNESOTA STATE DENTAL ASSOCIATION.**

The fifteenth annual meeting of the Minnesota State Dental Association will be held September 6-8, 1898, in the Endicott Arcade Building, St. Paul. A good program and time are assured and everyone will be welcome. Reduced rates have been granted on all railroads in the state on account of its being state fair week. H. L. CRUTTENDEN, Sec'y.

**MISSOURI STATE DENTAL ASSOCIATION.**

The following officers were elected at the recent meeting of the Missouri State Dental Association at St. Louis, June 7, 1898: Dr. F. M. Fulkerson, Sedalia, Pres.; Dr. F. F. Fletcher, St. Louis, First Vice-Pres.; Dr. W. L. Reed, Mexico, Second Vice-Pres.; Dr. B. L. Thorpe, Billings, Cor. Sec'y; Dr. H. H. Sullivan, Kansas City, Rec. Sec'y; James A. Price, Savannah, Treas. Board of Censors: Dr. R. E. Darby, Springfield; Dr. Fred Franklin, Kansas City; Dr. J. E. Megraw, Fayette. Committee on Ethics: J. G. Harper, St. Louis; J. F. McWilliams, Mexico; J. T. Fry, Moberly. Committee on New Appliances: Dr. J. D. Patterson, Kansas City; Supervisor of Clinics: Dr. C. L. Hungerford, Kansas City. Committee on Publication: Dr. J. H. Kennerly and Dr. Wm. Conrad, St. Louis. B. L. THORPE, Cor. Sec'y, Billings, Mo.
NORTHERN IOWA DENTAL SOCIETY.

The Northern Iowa Dental Society had at Waterloo, July 5-7, 1898, the best meeting in its history and received twenty new members. Drs. A. H. Peck and J. H. Prothero of Chicago were present and added much of value and interest. The officers elected for the ensuing year are: Dr. A. N. Ferris, Waterloo, Pres.; Dr. G. H. Belding, Calmar, Vice-Pres.; Dr. W. R. Clack, Clear Lake, Sec'y; Dr. W. T. Knapp, Charles City, Treasurer. The next meeting will be held at Clear Lake, the first Tuesday in September, 1899, and continue three days.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The annual meeting of the National Association of Dental Faculties will be held at the Mercer Hotel, Omaha, Neb., beginning Friday, August 26, at 2 p. m. It is hoped that all members of the association will be present at that time.

The executive committee will meet the preceding Thursday at 2 p. m. Colleges are notified to present their business at the first session of the committee. By order of B. HOLLY SMITH, Sec'y.

JONATHAN TAFT, Chairman Ex. Com.

HARVARD DENTAL ALUMNI ASSOCIATION.

The association observed its second alumni day June 27, 1898, and about one hundred and fifty visitors were present. The work of the three classes of the school was shown, and many patients were present from all departments, giving evidence of what has been done the past year.

The twenty-seventh annual meeting and banquet were held at Young's Hotel, Boston, Mass., when ninety-three sat at the table. The speakers of the evening were Rev. Edward M. Taylor, D.D., Prof. Eugene H. Smith, Prof. Fillebrown and Harry L. Grant, A.B., the latter of whom spoke for his class of '98.

The following officers were elected for the ensuing year: Frederick Bradley, '86, Newport, R. I., Pres.; Edwin C. Blaisdell, '88, Portsmouth, N. H., Vice-Pres.; Waldo E. Boardman, '86, Boston, Mass., Sec'y; H. S. Parsons, '92, Boston, Mass., Treasurer; Waldo E. Boardman, '88, Wm. P. Cooke, '81, P. W. Moriarity, '89, Executive Committee. The council is composed of the above officers. WALDO E. BOARDMAN, Sec'y.

LATEST DENTAL PATENTS.


605,974. Dental chair, Frank Ritter, Rochester, N. Y.


606,388. Disinfecting apparatus, Francis Gizzi, New York, N. Y.

606,446. Fumigator, Joseph T. Commoss, New York, N. Y.

NOTICES.


DESIGN.

28,934. Dental separator, Henry W. Gillett, Newport, R. I.

TRADE-MARKS.

31,681. Dentifrices, Hall & Ruckel, New York, N. Y.

31,758. Disinfectants, germicides, or deodorizing compounds, Henry S. Blackmore, Mount Vernon, N. Y.


(List furnished by John A. Saul, patent attorney, Washington, D. C.)

LIST OF COMMITTEES FOR THE JOINT MEETING OF THE SOUTHERN BRANCH OF THE NATIONAL DENTAL ASSOCIATION AND THE LOUISIANA STATE DENTAL SOCIETY.


No. 4. Committee on Oral Hygiene: Dr. L. M. Cowardin, Chairman, Richmond, Va.; Dr. S W. Foster, Atlanta, Ga.; Dr. J. Percy Corley, Greensboro, Ala.; Dr. I. Simpson, Rock Hill, S. C.; Dr. B. F. Arrington, Goldsboro, N. C.; Dr. J. N. Crouse, Chicago, Ill.; Dr. W. T. Arrington, Memphis, Tenn.; Dr. L. Augspath, Little Rock, Ark.; Dr. S. Dickson, Bolivar, Tenn.; Dr. E. F. Adair, Harmony Grove, Ga.; Dr. F. J. S. Gorgas, Baltimore, Md.

No. 5. Committee on Prosthetic Dentistry: Dr. J. A. Dale, Chairman,
Nashville, Tenn.; Dr. George Evans, New York, N.Y.; Dr. Ed Eggleston, Richmond, Va.; Dr. Albert B. King, Baltimore, Md.; Dr. W. H. Morgan, Nashville, Tenn.; Dr. J. G. Fife, Dallas, Texas; Dr. L. D. Carpenter, Atlanta, Ga.; Dr. W. H. Cook, Denton, Texas; Dr. J. L Wolf, Washington, D.C.; Dr. James S. Knapp, New Orleans, La.

No. 6. Committee on Orthodontia and Oral Surgery: Dr. George Hardy, Chairman, Baltimore, Md.; Dr. L. M. Cowardin, Richmond, Va.; Dr. A. R. Melendy, Knoxville, Tenn.; Dr. J. E. Orrison, Baltimore, Md.; Dr. W. W. Corley, Talladega, Ala.; Dr. H Marshall. Atlanta, Ga.; Dr. Jules J. Sarrazin, New Orleans; Dr. E. P. Kerans, Charlotte, N. C.; Dr. R. C. Young, Anniston, Ala.; Dr. F. L. Wood, Roanoke, Va.; Dr. Wm. J. Younger, Chicago, Ill.

No. 7. Committee on Operative Dentistry: Dr. J. G. Fife, Chairman, Dallas, Texas; Dr. A. P. Johnston, Anderson, S. C.; Dr. J. Edwin Boozer, Baltimore, Md.; Dr. J. E. Orrison, Baltimore, Md.; Dr. B. Holly Smith, Baltimore, Md.; Dr. H. D. Boyd, Troy, Ala.; Dr. E. L. Hunter, Fayetteville, N. C.; Dr. L. A. Smith, Port Gibson, Miss.; Dr. Sam Rambo, Montgomery, Ala.; Dr. C. Sill, New York, N.Y.; Dr. J. M. Quattlebaum, Columbia, S. C.; Dr. W. H. Burr, Madison, Ga.


No. 9. Committee on Pathology, Materia Medica and Therapeutics: Dr. H. H. Johnson, Chairman, Macon, Ga.; Dr. H. A. Parr, New York, N. Y.; Dr. R. H. Jones, Selma, N. C.; Dr. E. B. Marshall, Rome, Ga.; Dr. J. T. Calvert, Spartansburg, S. C.; Dr. R. K. Luckie, Holly Springs, Miss.; Dr. J. W. Smith, Baltimore, Md.; Dr. F. Y. Clark, Saratoga, N. Y.; Dr. F. L. Wood, Roanoke, Va.; Dr. W. T. Coles, Newman, Ga.

No. 10. Committee on Microscopy, Histology and Bacteriology: Dr. W. T. Martin, Chairman, Yazoo City, Miss.; Dr. H. A. Lawrence, Athens, Ga.; Dr. S. J. Cockerill, Washington, D.C.; Dr. S. G. Holland, Atlanta, Ga.; Dr. F. C. Wilson, Savannah, Ga.; Dr. V. E. Turner, Raleigh: N. C.; Dr. W. R. Clifton, Waco, Texas; Dr. B. Rutledge, Florence, S. C.; Dr. C. T. Brockett, Atlanta, Ga.; Dr. T. P. Hinman, Atlanta, Ga.; Dr. W. H. Ewald, Portsmouth, Va.; Dr. J. A. Tigner, Rome, Ga.

No. 11. Committee on Appliances and Improvements: Dr. T. M. Allen, Chairman, Birmingham, Ala.; Dr. F. H. McAnnally, Jasper, Ala.; Dr. D. E Everitt, Raleigh, N. C.; Dr. W. H. H. Thackston, Farmville, Va.; Dr. J. P. H. Brown, Augusta, Ga.; Dr. J. E. Orrison, Baltimore, Md.; Dr. J. Rollo Knapp, New Orleans, La.; Dr. Ed D. Frost, Elizabeth, N. J.; Dr. Louis Dotterer, Charleston, S. C.

No. 12. Committee on Education, Literature and Voluntary and Special Essays: Dr. T. P. Whitby, Chairman, Selma, Ala.; Dr. R. D. Seals, Ft. Smith, Ark.; Dr. J. A. Harris, Baltimore, Md.; Dr. J. A. Hall, Collinsville, Ala.; Dr. J. A. Chapple, Atlanta, Ga.; Dr. H. W. Morgan, Nashville, Tenn.
Dr. B. B. Brabson, Knoxville, Tenn.; Dr. R. A. McDonald, Griffin, Ga.; Dr. E. C. Kirk, Philadelphia, Pa.

Entertainment Committee: Dr. Joseph Bauer (L.S.D.S.), Chairman, New Orleans, La.; Dr. J. Rollo Knapp (L.S.D.S.), New Orleans, La.; Dr. C. V. Vignes (L.S.D.S.), New Orleans, La.; Dr. E. J. Zeidler (L.S.D.S.), New Orleans, La.

Carnival Balls Invitation Committee: Dr. J. Rollo Knapp (S.B.N.D.A.), Chairman, New Orleans, La.; Dr. Joseph Bauer (S.B.N.D.A.), New Orleans, La.; Dr. Wallace Wood, Jr. (L.S.D.S.), New Orleans, La.; Dr. L. D. Archinard (L.S.D.S.), New Orleans, La.; Dr. E. Telle (L.S.D.S.), New Orleans, La.; Dr. V. K. Irion (L.S.D.S.), New Orleans, La. C. L. ALEXANDER, Cor.-Sec’y Southern Branch National Dental Association, Charlotte, N. C.

**News Summary.**

CARBOLIC ACID will prove superior to all other caustics in destroying abscess sacs.—*Dental Weekly.*

CASTOR OIL can be made more fluid by warming and more pleasant to the taste by adding sugar or an equal quantity of syrup of manna.—*Teixeira.*

WAY TO KILL MOSQUITOES.—Two and one-half hours are required for a mosquito to develop from its first stage, a speck resembling cholera bacteria, to its active and venomous maturity. The insect in all its phases may be instantly killed by contact with minute quantities of permanganate of potassium. It is claimed that one part of this substance in fifteen hundred of solution distributed in mosquito marshes will render the development of larvae impossible; that a handful of permanganate will oxidize a ten-acre swamp, kill its embryo insects and keep it free from organic matter for thirty days at a cost of 25 cents; that with care a whole state may be kept free of insect pests at a small cost. An efficacious method is to scatter a few crystals widely apart. A single pinch of permanganate has killed all the germs in a thousand-gallon tank.—*The Public Health Journal.*

PRESERVATION OF ETHER.—The loss caused by the evaporation of ether from unsealed bottles during hot weather, and in shops that are kept very warm in winter, can be prevented by the following ingenious plan: Fill the bottle nearly full with ether, pour in sufficient glycerin to bring the surface of the ether nearly to the bottom of the stopper; then insert the latter carefully, and with a piece of twine of sufficient length suspend the bottle neck downward from a nail or other support, letting the cord pass over the stopper and take a turn around the body of the bottle from each side, so that it will hang perpendicularly and safely. The glycerin descends and fills the neck of the bottle, sealing the latter hermetically, and when any of the contents are required for use it is necessary only to reinvert the bottle, remove the stopper, and carefully wipe the neck before pouring. The glycerin of course drops to the bottom, and allows the ether to be poured out almost to the last drop if care be taken. A similar plan is useful for bottles containing benzol._—*National Druggist,* xxvii, 210.
Coating of the Tongue.—(1) In severe infectious diseases the tongue is coated with a brownish fur, which consists partly of the remains of food and partly of dried blood. The microscopical examination of the coating removed from the tongue exhibits in such cases a profusion of epithelial cells and hosts of fungi of various forms. In addition to these there is a multitude of dark cellular bodies, derived doubtless from the corneous and exfoliated epithelium of the part (Bizzero). Schech again calls attention to the occurrence of a black fur, which is probably occasioned by the formation of pigment papillae on the tongue. Ciaglinski and Hewelke trace an appearance similar to that of a pigment-forming yeast fungus. (2) The tongue of infants is normally coated with a white fur, and a similar appearance is found in adults when the stomach is deranged. Microscopical examination shows epithelium, a few salivary corpuscles and very few fungi.—Dr. Rudolf v. Jaksch "Clinical Diagnosis."

Gelatine as a Coagulant.—The action of a solution of gelatine as a coagulant of blood was discovered by Dastre and Floresco (Societe de Biologie, February, 1896), and the application of this discovery to surgery is due to Carnot. Carnot dissolves the gelatine in normal salt solution (7 per cent solution of Na. Cl. in water), using two strengths, a 5-per-cent solution for ordinary cases and a 10-per-cent one for hemophiles, or very weakly patients. To sterilize these solutions they should be kept at boiling point for a quarter of an hour on two separate occasions at an interval of two days. Dr. Frey, writing in l’Odontologie, advises placing this gelatine mixture to melt over a sand-bath during the earlier stages of the operation, and then to moisten a piece of lint in it and place it upon the wound. If there be a hemorrhagic tendency the lint, dipped in the stronger solution, is left in the wound for about six hours, otherwise it is removed in a few minutes. When many teeth are extracted under an anesthetic Dr. Frey states that this procedure is advisable, as it prevents blood being swallowed and so much of the subsequent nausea.

Loss of Vitality in Metals.—It is a fact of comparatively recent discovery in chemical metallurgy that metals lose their vitality from repetition of shocks and strains, and may be said, as the expression is, to suffer from fatigue—that is, they may be worked till their molecules fail to hold together, and then they are in a state of exhaustion. As is familiarly known, bars of tin, rods of brass, and wires of any metal will separate, owing to fatigue, if bent backward and forward continuously. By careful experiments, however, the fact is made to appear that a remedy exists for this condition of metals if the overstrain does not border on rupture, and this remedy is very much like that which is applied in the case of an overworked human frame, namely, rest. Feather-edged tools recover their vitality better than any others. Of course, the length of time required for this rest varies with different metals and the amount of strain to which they have been subjected. Hard metals, such as iron and steel, use up one and two years’ time in the process; on the other hand, soft metals, like lead, retain their cohesive force longer and also require less rest.—New York Sun.
Longevity of Germs in Dust.—In a recent number of the Annales de Micrographie, Dr. Miguel gives the results of some interesting observations made by him in respect to the vitality of disease germs. In May, 1881, he took some earth from the Montsouris Park, at a depth of ten inches below the turf. This he dried for two days at a temperature of 30 deg. C., and then he placed the dust in hermetically sealed tubes which he put aside in a dark corner of the laboratory. When taken the soil contained an average of six and one-half million bacteria per gram. After desiccation the number had fallen to rather less than four million. Sixteen years later—that is to say, last year—he still found three and one-half million per gram, and he was enabled to isolate the specific microbe of tetanus. The inoculation of this soil in guinea-pigs determined death from tetanus after an incubation period of two days, showing the remarkable vitality of pathogenic microbes under favorable conditions.—Medical Press.

Tooth in the Inferior Turbinated Bone.—Dr. G. W. Graham relates the following case: One night about eighteen months before, while playing in the moonlight with her companions, a child ran against a projecting hinge and knocked out one of her front teeth, and otherwise injured her mouth, which bled profusely. A physician had checked the hemorrhage, and in a few days the wound had healed, minus the tooth, which was never found, although diligent search was made for it the next morning. An examination of the nose with head-mirror showed one nostril to be in a normal condition, while the other was filled with a polypoid growth, beneath which there constantly oozed a watery liquid in such quantity as to require constant use of the handkerchief. After removing the excrescence in the usual way the tooth which had so mysteriously disappeared was discovered firmly imbedded in the inferior turbinate bone. The girl had struck the hinge with such force as to drive the tooth entirely through the superior maxilla and bury it in the bone, and so thoroughly had it united with the parts that it was impossible to remove it with forceps without doing further injury to the nose. It was at length loosened by means of the dental engine.—Brit. Jour. Dent. Sc.

New Splint for Fractures of Nasal Bones.—A No. 15 spring brass wire is bent into the form of a rectangular letter U, the arms of which are about one inch apart and long enough to extend from the upper lip to the crown of the head or beyond. Opposite the supraorbital ridge a sharp angle is formed which enables the splint to enter the orbital cavity just below the orbital ridge; this angle fixes the splint against the supra-orbital ridge. The lower or transverse portion is carried forward away from the lip, for a distance of half an inch. Compresses placed between the splint and the side of the nose will correct deviations. If needed, a silk suture may be passed through the septum of the nose and tied to the transverse portion of the splint. For drawing down and firmly holding the point of the nose or its alae this is the best appliance. If one wishes, he can add to the intranasal splint an intranasal wire, which should be covered with soft-rubber tubing. The splint is held in position by means of a strip of rubber adhesive plaster passing over
the forehead and around the back of the head, like a hatband. The advantages of the splint are that it is simple, easily made and applied and permits inspection of the nose without removing the apparatus.—Hawes.

Use and Abuse of the Brain.—In the course of an address on this subject, Dr. William A. Hammond recently said: "Anxiety causes more brain disorders than any other agency I know of unless it be love. Many jokes are made about the gray matter of the brain, but I will say, right here, that I have a great respect for the gray matter of the brain. There is no higher organism than that. It is the grandest organ in man, and were I ever to worship anything, it would be a portion of the gray matter of the brain. It is well for us to know that the emotions cause more unhappiness and crime than any other function of the brain. Human beings are governed by their emotions, and it is well that they should be, though it is the emotions that wear away the brain, and not honest, intellectual work. Very few people suffer from intellectual work, and if my memory serves me I do not recollect ever having a mathematician for a patient. It is not intellectual work that causes nervous dyspepsia, but the emotions, such as anxiety, fear, sorrow and love. I consider that eight hours are sufficient for a man to use his brain, because if he exceeds that time he becomes nervous and fretful, and an exhausted brain is an irritable brain. You may not feel the evil effects of the stress of brain work at the time, but you will sooner or later, when it is too late. The men that work at night with their brains are the ones that expose themselves to danger and death, which will surely come unless the great strain on the mind is lightened."

Theory of the Origin of Atmospheric Oxygen.—T. L. Phipson, who has communicated several papers on the origin of atmospheric oxygen, is of opinion that the earth's atmosphere originally consisted of nitrogen only, and that the carbon dioxide in the air, water and earth was subsequently furnished by the action of volcanoes. In this atmosphere of nitrogen, carbon dioxide and water the primitive plants thrived, being essentially anaerobic, and free oxygen was the product of their activity in decomposing the carbon dioxide. The conclusions finally arrived at by the author of this theory are: (1) That in the earliest periods, as at present, nitrogen constituted the major portion of the earth's atmosphere; (2) that the presence of free oxygen in the atmosphere is entirely due to the action of vegetation; (3) that existing plants, like their primitive progenitors, are essentially anaerobic; (4) that the proportion of free oxygen in the air has been gradually augmented in the course of ages, the anaerobic organisms meanwhile adapting themselves at first to a more or less aerobic state of existence, as in the case of fungi, ferments, bacteria, etc., and later completely aerobic (animal) forms have appeared; (5) that even now the lowest unicellular algae give out, weight for weight, more oxygen than the superior plants; and (9) that, in proportion as the relative quantity of oxygen in the air has been augmented in the course of ages the cerebro-spinal nervous system, the highest characteristic of animal life, has become more and more developed, this fact being clearly demonstrated by the results of palaeontological researches.
Original Contributions.

PREPARATION OF COMPOUND CAVITIES IN MOLARS AND BICUSPIDS.


I have chosen this subject for a paper because I believe it to be the groundwork of operative dentistry, and at the two Missouri Association meetings I have attended nothing has been written on the preparation of cavities. It is a subject about which too much cannot be learned. Not that I intend to teach the members of this association anything, but hope to arouse some discussion and induce others to give their methods. I do not claim any originality, for I am indebted to Dr. C. N. Johnson for the most of my knowledge of operative dentistry, though I ought perhaps to first make an apology to Dr. Johnson, for fear I may have strayed so far from his teaching as to disgrace him in an effort to recapitulate.

The first thing necessary is space. We cannot expect a perfect operation in a normal denture without separation. The old law holds good here, if anywhere in dental science: "No two things can occupy the same space at the same time," and no operator can make a perfect operation without room for his instruments; however delicate they may be, they must occupy some space.

The first diagram I shall show, No. 1, is a simple cavity on the mesial approximal surface of a bicuspid, extending near the occlusal surface. If this be prepared, leaving it a simple cavity, you will have unsupported dentin and enamel at the occlusal surface, which will soon break down, because the dentinal canaliculi run longitudinally, and when destroyed the tooth substance loses its tenacity and will not stand the force of mastication.

No. 2 shows a compound cavity extended approximately so its margin is against the contact point of the opposing tooth. Here it is necessary to refer to the law "Extension for Prevention." If the
margin of the cavity is against the other tooth, food will naturally lodge between the teeth, and as the margin is the weakest point in a filling, however perfect the operation may be, thus caries is invited where the tooth substance has the least power of resistance.

No. 3 shows a compound cavity with round base, which would allow a filling to rock from side to side under the force of mastication. Also, as you see, the cavity has weak overhanging enamel edges at the occlusal surface, which having lost their nourishment, will become brittle and soon break down even though they appear strong at the time of operation; the dark line in the center also shows the fissure has not been cut out to the end. The cusps on bicuspid teeth are often poorly united, and in most cases where fissures are involved they should be excavated to the very end, or if not the saliva and food will be admitted, caries set up and in a short time the beautiful filling which you admired so much at time of completion will be found leaking. You are almost compelled to tell a lie to your patient to clear yourself, by saying: "Madam, I am sorry, but your teeth are too soft to hold a filling and must be crowned."

No. 4 is a picture of a compound cavity when completed. Sup-
pose first a simple cavity, as shown by No. 1. Take an inverted cone or fissure bur, extend the cavity over the occlusal surface to the very end of fissure. In a case as illustrated by No. 2 extend the cavity below the cervical contact point; and in No. 3 make square base with inverted cone bur; break down the overhanging tooth substance with a chisel, the margins of cavity being extended cervically below contact point, also lingually and buccally, which gives a square base, with fissures cut to the end; overhanging tooth substance cut away, using the step form in order to excavate fissures without endangering the life of the pulp. We now have a perfect picture, No. 4.

Manner of Retention: Square base; slight grooves at lingual and buccal expansion in distal end of fissure. I do not mean to have the enamel at base square-cornered, but slightly rounded, at either lingual or buccal cervical margin, with the groove in the dentin square and deepened slightly toward lingual and buccal surface. Cut the groove horizontally at the cervix in the dentin and not under the enamel; up the lingual or buccal wall excavate slightly under the enamel—as the dental fibres run perpendicularly you will not endanger the life of the enamel at this point. At the step, which must also have a square base, if you wish to use a groove at all, make it vertically with the enamel, as at this point the groove must not be made under the enamel. Continue this groove in like manner across the distal end of fissure; make the fissure wider at the distal end, thus forming a strong anchorage, and the filling can not be moved forward. Be sure the fissure is cut through the enamel to the dentin so that there may be body enough to the filling material to withstand the masticating pressure of soft bread, as you know that is the only thing which ever breaks an artificial denture or dislodges a filling. Bevel the enamel for three reasons: First, that there may be no sharp overhanging enamel edges; second, to avoid checking while inserting filling; and third, so that the filling material may slightly overlap the tooth substance. Use sharp chisels, sandpaper strips and disks in smoothing the edges, and if skillfully handled, disks in many cases are good to use in beveling.

I shall show but two cavities in molars. No. 5 is a cavity with mesial and buccal fissures involved, which must be excavated and extended over buccal surface; and the laws governing the preparation of these cavities being much the same as in No. 4.
No. 6 shows the buccal, distal-lingual, and distal-occlusal fissure involved. Extend lingual fissure over lingual-occlusal edge and down lingual side; extend the cavity to the end of distal-occlusal fissure; in these fissures no grooves are needed, as they are usually so narrow that a square base will furnish all the retention necessary.

General laws: Square bases; excavate wide of diseased tooth substance; smooth edges, slightly beveled; all fissures excavated to end; use step over pulp, and always "Extension for Prevention."

Discussion. Dr. F. F. Fletcher: There can be no set rule for the preparation of cavities, but Dr. Johnson's method is one of the best that has been given us. It is, however, most applicable to patients 18 to 20 years of age, and I think we would greatly err if we took a patient 8 to 14 years of age and attempted to cut out the cavities in this manner and fill with gold. In such cases it is much better to partially prepare the cavity, cut away only so much as would break down under ordinary wear, and then fill with some temporary material. A point to be noted in all cases is the general condition of the mouth. Where little or no care is taken there will be much soft tartar, even in the interstices, and here it is necessary to cut more vigorously.

PRELIMINARY AND GRADUATION REQUIREMENTS—THE LOGICAL STANDARD.

By M. F. Ault, D.D.S., Indianapolis, Ind.

Attention is first called to the principle, that in this country each one is entitled to the pursuit of happiness, and the rules of an organization are not in harmony with the principles of life in the United States if they defeat the laudable aspirations of a young man or render void the law of natural selection.

There seems considerable tendency on the part of those whose duty it is to prescribe the terms of good repute among dental colleges to move along the line of honest endeavor, but when the plan proposed is compared with our principles of life and common educational advancement in the different states it is certainly found to be excessive and arbitrary. It is proposed by the National Examiners to increase the preliminary requirements until they shall be equivalent to high school graduation. I am sure that while this is honestly entertained as a necessary step, it is beyond the advantages offered by the people in their means of public education, and this is
true not only in those states without high schools, but in most sections of the north this privilege is a luxury.

A high school diploma will not make a better student or more efficient dentist than an honest rank won in the common English branches, which so far as I know every township in the country offers its children free. Suppose a young man from a township has passed with credit the requirements of a good common school and should decide to study dentistry. Is there a just reason for excluding him? To me there is as good reason for exacting a university degree as a high school diploma.

The plan of high school requirements will not only debar many desirable students, but if honestly enforced will prove disastrous not alone to new schools, but even those with age and large attendance will be ruined. Why does this seem so? Because the requirement is beyond the public means of general education and no school can select a sufficient number of students from high school graduates to enable it to survive. Of course dental departments of state universities can do that which private institutions would not, with the present competition and hazard in business, attempt.

Ignorant students are not desired and we can depend upon the natural instincts of an organization to protect itself by casting off ignorance which is so dense as to prove an obstruction to the work of the school. But this is not a plea to admit any who might apply, but to place the standard of admission where it will be equal to the means offered by our common school system, and to place the standard of graduation where it will be equal to the demands of a highly skilled and intelligent profession.

Any person who can pass a good examination in the eight common English branches can secure a license to teach, and it seems to me that a test in those branches which are required of persons engaged in the public service ought to be sufficient intellectual equipment to study those branches which belong to the dental course.

This becomes more apparent in view of the small number of males that graduate from high school. A class of fifty will remain intact until it finishes the common course or the A grammar grade, and during the four years of high school the number and the ratio between male and female is so reduced that the graduating class will probably have four boys and sixteen girls. The unusually large class graduated from the Indianapolis high school in 1898
numbered 112, and of these there were only twenty-two young men. So I believe that the logical maximum requirements for admission to dental colleges is to be found in compliance with the general school law.

I wish to suggest a plan for admission and graduation which will if adopted not only possess the merit of being simple and inexpensive, but will give great impetus to uniform and substantial progress. (a) Make no excessive entrance requirements, but decide upon a standard which will be so satisfactory to all recognized schools that none will resort to slippery tactics as a means of self-defense, and that will give all worthy persons a chance to prepare themselves for examination before the National Examiners. (I mean that a dental college should be a place of preparation only and that in no sense should a school be the agent to determine fitness for practice.) (b) Let the National Examiners prepare the graduation questions, such questions to be the same for all colleges and sent sealed to the dean of each school. (Schools of the Association are apt to have the same length of term, and final examination could be set for the same date, except universities, and they can be provided with an extra set of questions). (c) Let the National Examiners appoint some disinterested person to be known as examination inspector, and on morning of examination the national seal is to be broken and examination conducted in the presence of the inspector. (d) Let the graduation fee, which is so often foolishly expended for worthless display, be used to pay the examining committee and inspectors for their services. (e) After the examination the inspector is to take charge of the papers and forward them to the National Examiners' headquarters, where they will be examined and graded and diploma issued in accordance with the supreme decision. (f) Let each school be assessed in proportion to its number of candidates for the degree.

This plan is designed to give all an opportunity to study dentistry without unjust restriction, and to place students and teachers under the necessity of submitting to a disinterested and unsympathetic body. It will secure better work by students and enforce closer attention by the faculty to know that the work of teacher and pupil is to be judged by men whose relation is so remote as to make all feel that merit is the only winning element.

It is evident that we have two plans before us, one local and the
other national. The first allows each college to determine its own standard, while the other is a single national standard for all. The first guarantees the irregularity and confusion that may be expected from as many standards as there are colleges, and the other will guarantee uniformity in work and equality in recognition and respect, since the diplomas of the associated colleges will possess the value of national endorsement.

THE YOUNG MAN IN DENTISTRY.

By O. W. Bedell, D.D.S., St. Louis. Read before the Missouri State Dental Association, at St. Louis, July 5-8, 1898.

The mechanical ability of most young dentists is equal to and considered as all-round men they are far in advance of what older men were when the latter entered dentistry. This is necessarily so, as they have all the advantages of the experience, training and instruction that have cost the older practitioners years of practice and study to acquire, presented to them in a short time and in a systematic and logical manner by men trained in the art of teaching. So they do not really begin where the older men did, but rather where they left off. For the same reason, each year should see better men turned out from our colleges, for the instructors have had one more year's experience in teaching and the students should get the benefit of it.

Not so very long ago, when a young man decided to begin this study he was expected to serve an apprenticeship from one to three years under an established dentist, keeping the office and instruments clean, and polishing rubber plates. At the present time, however, he would probably enter some college at once, and passing through the interval of college attendance, arrive at his most trying examination—that of public opinion.

Should he succeed with the public his relations with the other members of the profession will be changed. While attending school he was "a good fellow, a fine student, and had the making of a skillful dentist," but he now becomes the competitor across the street, and as such must enter his youth and lack of reputation against the experience and standing of the older man. Furthermore, he must not strive to remove this handicap by reducing prices or advertising, unless he wishes to be considered a quack and an outcast from the society of professional men.
Competition in dentistry is sharper than ever before in the history of the profession, and will become even sharper in the future. Men who have achieved great success and reputation during the past few years, if compelled to begin over again might find it hard to make both ends meet. Each year sees a large number of young men graduated from our dental institutions of learning, many more than those going out of dentistry, either by retirement or death, and the question arises, what can be done to enable these graduates to become reputable and prosperous dentists?

To furnish enough practice for the men who are beginning each year, either the older practitioners must divide their patients with them, or the general volume of dentistry done must be greatly increased. To accomplish the latter, I would suggest that the profession make greater use of the most important factor in the education of the public—the newspapers. At present they are filled up with the advertisements of unscrupulous men, who with high-sounding titles, deceptive promises and inducements prey upon the masses, and it is not only the ignorant who are impressed and taken in. To counteract this evil I am in favor of the extensive use of the press to describe new methods, appliances and inventions, which will show the masses at large that there are no secrets in our profession, and will disabuse their minds of the idea that some advertiser is the only expert crown and bridge worker in the western hemisphere.

The code of ethics in the medical profession is even more strict than our own, yet articles are written on medical subjects, not necessarily signed by any one individual, which instruct the public in many things pertaining to their health and happiness. Most people have a much better understanding of such terms as appendicitis, pneumonia, meningitis, as well as the technical operations in laparotomy, tracheotomy, and even removal of the stomach, than they have of pulpitis, and abscessed tooth, porcelain crowns, and last but not least—the making of a bridge—which they know as teeth without plates. That this is true is mostly our own fault, for we have simply stood aside and given over this excellent medium for instruction to the very men who do the profession the most harm.

I would recommend that articles be prepared by men appointed by the various societies, and after approval as a body of said articles they be given broadcast to the newspapers over the land without
signature of any kind, unless merely, "Published under the auspices of so-and-so society." For instance, some well written, concise article on cataphoresis might instruct many as to its use and mission, and dentists would then have to supply themselves with modern appliances to keep up with their patients rather than advertise their outfits to secure patients. This would not be advertising but merely instructing the public.

Discussion. Dr. F. M. Fulkerson: I question the statement that the young men in dentistry begin where the old ones leave off, for nine-tenths of those with whom the young men come in competition probably know more than he will in ten years, and in the practical sense there is but one place to begin. Not long ago a dentist left college with the absolute assurance that he could make a living the first month and perhaps make money the first year he practiced; but that day is past, and I believe it is a good thing. Young men are not able to handle all kinds of patients when they leave college, and if they could step at once into a lucrative practice most of them would never become dentists.

Dr. B. L. Thorpe: The majority of young men make a mistake in attempting to establish a practice in large cities, since for various reasons the field is much overcrowded in those places.

ANTISEPTICS IN DENTISTRY.

By A. H. Thompson, D.D.S., Topeka, Kan. Read before the Missouri State Dental Association, at St. Louis, July 5-8, 1898.

The earliest stage of the civilization of mankind is known to archaeologists as the Stone Age; this was succeeded by the Age of Bronze; then came the Iron Age, then the Age of Steel, but this day of marvels can best be named the Age of Antiseptics. Antisepsis can well lay claim to being the worthy rival of electricity, as the great distinctive feature which most marks the advance of civilization in the last few decades. Its principles and methods are so thoroughly scientific, its applications so exact and its benefits to humanity so marvelous, that it may well be christened the greatest discovery that has ever crowned the genius or blessed the hands that strive to minister to the sufferings of mankind. Fame can never honor too much the grand intellects who first discovered the principles of antisepsis, nor sufficiently reward the tireless self-sacrificing
workers and investigators who have developed and applied these principles in the treatment and prevention of disease.

The growth and development of the principle of antisepsis and its extension in every direction, so that it includes numbers of diseases which were not thought to be of zymotic origin, has led to the evolution of a distinct science of bacteriology. The greatest positive advance in the fields of etiology and therapeutics has been under the guidance of this science. Its theories are so high and intellectual, its principles so simple and comprehensive, its methods so exact and the results so positive that its accomplishments and triumphs are nothing short of marvelous. Antiseptic therapeusis applied in medicine and surgery has saved thousands of lives during the last few years which would have been lost under the old methods of treatment, and the enlarged usefulness of the medical profession through this means alone cannot be overestimated. Think of the lives lost through the horrors of gangrene and septic diseases during the late civil war just before the announcement of the principles and treatment of Lister, and then think of the results of the antiseptic treatment of wounds at the present time, when the occurrence of gangrene can be due only to criminal neglect on the part of the attending surgeon.

As a branch of medicine, dentistry has shared in the benefits of the new therapeusis to a wonderful degree, and has been peculiarly blessed by the discovery and application in practice of the principles of antisepsis. It has been of particular value for the reason that most if not all of the lesions which afflict the teeth belong to the category of zymotic diseases, the treatment of which was purely empirical, unscientific and uncertain until the promulgation of the discoveries of our great investigators in relation to the true germ origin of dental disorders.

The conclusive experiments which demonstrated the bacterial origin of dental caries, for instance, marked the greatest advance of the last half century in our knowledge of the etiology of this puzzling and destructive lesion. It had been treated empirically by mechanical means for many years, with more or less success, but no one could explain why the removal of the carious matter from a cavity in a tooth, and the exclusion of moisture and air from that cavity by a mechanical stopping, should cure the disease and stop its ravages at that place. From the time of Hunter downward many
theories were propounded to account for the action and phenomena of dental caries, but it remained for Miller with his wonderful experiments to prove by exact demonstration the true nature of the disease and the scientific accuracy of the operation of filling which had been practiced empirically. Miller's experiments settled forever the much discussed question of the etiology of dental caries, and the splendor of his achievement brought undying honor to his name, and the indebtedness of the dental profession to him can never be repaid.

Miller's brilliant discovery was only the beginning, however, but it was a beginning, for scientific precision had not yet been attained regarding any diseases of the teeth and mouth, and by means of the methods then introduced we have ascertained that there are few diseases of the mouth and teeth which are not due to or modified by the presence of organisms. In germ diseases we know that the incubation, growth, death and elimination of the organisms and their products occasion most of the phenomena which accompany the progress of the disease from inception to termination. The symptoms succeed each other with persistent regularity, each stage in the march of the disease being indicative of a corresponding stage in the life history of the microorganisms whose presence is the cause of the pathological disturbance. These organisms operate by processes more or less allied to chemical reactions, as their principal office is the development of ferments which have a toxic effect upon the tissues in many ways similar to organic poisons. It is these ferments which produce the pathological conditions, not the organisms themselves, and if the work of elimination is successful the system recovers. It is to aid nature by destroying the germs at their inception that antiseptics are employed, by which their work of secreting toxic elements is defeated and the tissues saved the risk of being overcome by poisonous secretions.

By the application of these principles to the study of dental caries Miller achieved a great victory. He found that this destructive lesion was merely a germ disease and was amenable to antiseptic treatment. This principle is now applied to almost all other dental diseases, and the failure to cure them in practice is due only to the limitations of human knowledge and skill.

For instance, septic root-canals and alveolar abscesses had been treated empirically with antiseptics for years, but the exact relation
between cause and effect had not been demonstrated by investigation and experiment. Some abscessed teeth were saved accidentally, but they were not treated scientifically because the science of the condition was not known. With the discovery of the bacterial origin of pus-formation and suppuration, a flood of light was let in upon this as upon many another obscure lesion. Then it was that exact treatment began to be followed on the scientific basis of antisepsis, and thousands of teeth that were formerly extracted when dead and abscessed are now preserved in usefulness. Every practitioner now saves teeth that but a few years ago would have been condemned to the forceps. This is a wonderful advance. The many remedies, all of an antiseptic nature, which are now used in the treatment of putrid canals and alveolar abscess attest the universal recognition of the septic nature of the disease, and all the phenomena attending its manifestation are now well understood as being indications of its bacterial nature.

In the investigation of that *bete noir* of modern dental practice, pyorrhea alveolaris, great advancement has been made along the line of antiseptic therapeutics. While constitutional in its origin, the local manifestations of this affection are of a septic nature, and these must be treated locally from an antiseptic standpoint. This is a fact that the profession has been slow to comprehend, but until they do acknowledge the presence of this great principle, little progress will be made in its therapeusis. The most used remedies are mainly antiseptic—often containing, it is true, properties of benefit in other ways to the tissues. The pyogenic membrane is the great enemy to be fought in this disease, and so caustic germicides are of immediate value. But they must be used intelligently and scientifically, with a knowledge of the disease and of the ends to be attained by scientific treatment. These are now but too imperfectly understood, although there can be but little doubt that by proceeding upon antiseptic lines we shall the sooner reach a successful method of combating this terror of daily practice, so far as local treatment is concerned. Constitutional medication is also important, of course, but the local treatment must be antiseptic.

A general danger to the oral cavity as a whole is the development of catarrhal conditions. These may arise from infection from the nasal cavity or pharynx and the mucous membrane of this area be affected in the same way. Hence cleansing and antiseptic
washes are indicated for constant use in all mouths as a preventive of this dreadful malady. Numerous diseases of the mucous membrane arise from various causes and these are always germ diseases. Antiseptic washes will also prevent these by the timely destruction of the germs and, in the case of children especially, will conduce to health and perhaps even save life by prompt action.

Discussion. Dr. C. L. Hungerford: Contagion and contamination are two points very little understood by the laity and often, unfortunately, by professional men. I have seen able surgeons clean their finger-nails with a common pocket-knife just before an operation where every preparation had been made for disinfection.

Dr. C. H. Darby: There is a tendency nowadays to rely too much upon antiseptic medicines and to neglect all mechanical means, and young practitioners especially err on this point. They know that a certain antiseptic will do a certain thing under certain poisonous conditions, so they proceed to pack the root-canals with this antiseptic, without employing any of the possible mechanical means for obviating the difficulty. When the mechanical means, which are the very foundation of all antisepsis, are exhausted, then is the time to intelligently use antiseptic medicines.

ANTIDOTES.

By DeCourcey Lindsley, D.D.S., St. Louis. Read before the Missouri State Dental Association, at St. Louis, July 5-8, 1898.

In order to make the subject of my paper a little more clear, I will preface my remarks by citing a very sad accident which occurred in St. Louis recently, adding one more victim to the list of deaths caused by that absolutely harmless anesthetic, nitrous oxid gas.

"Miss G., 26 years old, died yesterday afternoon in a dentist’s chair, in the Holland Building. Death resulted shortly after the patient had inhaled gas to alleviate the pain of having a tooth extracted. Miss G. complained of a severe toothache and, in compliance with her own suggestion, Dr. S. administered nitrous oxid, commonly known as laughing gas. Scarcely half a minute intervened before the young woman’s face began twitching violently as she convulsively clutched the chair with her outstretched hands. In another instant the aching tooth was in the doctor’s nippers. The pain that accompanied such an operation is usually sufficient to revive the patient, but Miss G. showed no signs of coming to, and
Dr. S. immediately resorted to artificial respiration to resuscitate her. Her continued coma alarmed Dr. S. and he called Dr. B., another dentist associated with the company, and his young lady helper, to his assistance, but despite their efforts the patient showed no signs of returning life. Dr. E., a regular physician, was summoned, but after working with the young woman a few moments he pronounced her dead. Deputy Coroner Lloyd was notified and an inquest was held. Dr. Lloyd did not hold Dr. S. responsible. The verdict was accident. —Daily Paper.

This, gentlemen, has brought most vividly to my mind the question, had the proper antidote been at hand, and the knowledge of how to use it immediately without wasting precious moments in sending for a physician, need this sad calamity have occurred? We all know how careless operators who are in the habit of administering gas will become, just because it has been their good fortune never to have had an accident, but you never know when the lightning is going to strike, therefore "Remember the antidote." There is a class of persons who have what is called an idiosyncrasy to a certain drug, and not knowing at what time a person so affected may fall into our hands, we should always be prepared for the emergency, so when it does come we are masters of the situation. Artificial respiration is an old-time remedy, but one we always fall back upon in time of need. This should have been resorted to immediately, getting the patient's head down low in order to admit as much fresh air as possible into the lungs, so as to counteract the effect of the asphyxiation caused by the carbonic acid gas in the lungs, and a powerful heart stimulant given, such as glonoin or nitroglycerin and nitrate of amyl. Amyl nitrite is most prompt but of less duration in action, and is best given by inhalation. Nitroglycerin is less prompt and less violent, but has a more enduring action and is therefore more suitable for internal administration. Its headache is of intense frontal character and persists for hours after the other effects have passed off. Brandy or whisky hypodermically administered are also strong heart stimulants, although not so quick in action.

Chloroform should never be administered in the dental chair on account of the cramped position, it being absolutely necessary to have the patient in a recumbent position to have free use of all the muscles of respiration. The state of incomplete anesthesia is always
a dangerous one in which to perform any operation, especially where the fifth nerve is implicated, as in the extraction of teeth, since the irritation of a sensory nerve, the fifth in particular, permits the transmission of reflex inhibition over the pneumogastric to the heart, thus arresting the action of its motor ganglia. I mention this important fact because physicians are in the habit of saying, "It is only a tooth to be extracted, and so it is necessary to give only a small amount of chloroform, as the operation is quickly over."

An ounce of brandy, subcutaneous injection of $\frac{1}{6}$ grain of morphin and $\frac{1}{80}$ grain of atropin twenty minutes before commencing the inhalation, is of great utility in sustaining the heart and respiration, and in rendering the anesthesia more profound. Antidotes: artificial respiration, lower the head, elevate legs, inhalation of ammonia, hypodermic injections of brandy or digitalis, surface of chest to be smartly slapped with towel dipped in ice water, nitrite of amyl, nitroglycerin dropped on tongue, and application of galvanic battery. Cocain should never be used hypodermically in the mouth without the previous administration of a strong stimulant, such as brandy or whisky, liberally administered to offset the great depressing effect this drug has on the heart's action. Antidotal treatment in cocain poisoning consists of measures to rouse the heart, especially inhalation of nitrite of amyl and such restoratives as brandy, whisky, aromatic spirits of ammonia, strychnine, atropin, digitalis, and ether and chloroform when convulsions are present. Hot baths, hot drinks, hot sinapisms over the heart, and friction are often serviceable, also artificial respiration. Ether is seldom used directly in our line of work and it will suffice to say the antidotes are practically the same as those for chloroform.

Arsenious Acid. Local arsenuous acid poisoning is something all of us have come in contact with more or less in making applications to devitalize pulps, by allowing some of the drug to escape onto the soft tissues, thereby causing an ulcer and perhaps sloughing to some extent. This condition, although seemingly slight in comparison where a patient's life is involved, is nevertheless one where we want an antidote and generally need it quickly. Whenever practicable the soft tissues should be curetted. Scarify freely and wipe out the wound with dyalized iron or muriated tincture of the same, and then cauterize with carbolic acid or iodin. This will have to be repeated for several days.
In conclusion I will say that it has been the greatest mystery in the world to me that there have not been hundreds of deaths in our profession, with the wholesale use of gas and so-called local anesthetics, with which latter we are deluged at the present day. And let me here enter my strongest protest against the use of any preparation which has not a published formula, for when you are ignorant of the poisons you are using, how can you know the antidote?

Discussion. Dr. J. H. Kennerly: Since hearing that Dr. Lindsley was to write this paper and that he intended to comment somewhat on the death which occurred a short time ago, a man came to see me about it. He stated that when he worked in the office the owner was in the habit of pouring several ounces of chloroform into the gas generator, so that he did not know how much chloroform he was administering with the gas.

Dr. C. H. Darby: A surgeon of some note recently gave me an antidote for chloroform syncope and stated that it would be successful in almost all cases. It is simply rectal dilation, and while an instrument is generally used, you can do without it. If you will notice what nerves you are dealing with in such cases you will see that there is a scientific reason why this should be effectual, and it is certainly worthy of trial.

Dr. Wm. Conrad: Gas should and will be used, and while it is not especially dangerous, it should be used only with intelligence and with the proper antidote at hand. This death occurred because the dentist in question was not prepared to administer the proper antidote immediately, and I believe every dentist should be well read on this subject. Cocain is very useful in certain cases, but more care need be used. In alarming cases of cocain poisoning, simply lay the patient flat on the floor. One common remedy not mentioned in the paper isaconite. If arsenious acid be used, the cavity and neighboring tissues should be wiped with dyalized tincture of iron. I have always used this and have never had a case where there was the slightest inclination to arsenic poisoning.

OLD FALSE TEETH.—A firm in England advertises to buy “old or disused false teeth.”

TO STICK PAPER ON GLASS.—Make a paste out of 230 parts of mucilage, 20 parts of water and 2 or 3 parts of aluminum sulphate, dissolving the sulphate in the water before adding the mucilage.
FOR POLISHING PLATE WORK. By Dr. T. Ledyard Smith, City of Mexico, Mex. For quickly cutting down or rough polishing rubber or gold plate-work, I find no better method than with the porte polisher, run with the dental engine. By removing the nut, a strip of three-fourths of an inch wide sandpaper or emery cloth may be slipped in the slot, and run as the same would be in a regular polishing lathe, only, this device run by the engine offers a more delicate result, as the instrument and handpiece are manipulated on the plate instead of the plate being manipulated against the polisher, as in the case with the lathe. This makes the result very different and the operation a pleasure. A plate may be made ready for a final polish in a very short time without the use of file or knife, and with a clean, delicate and artistic result.—*Items of Interest, July, 1898.*

HINTS. By a Lazy Man. 1. I could write six pages instead of six lines on any subject, but I'm too tired and I never read or write anything that will spoil a yawn. * * * 2. Sharpened chisels dipped in oil trim vulcanite as easily as cutting soft chocolate. * * * 3. If you pack vulcanite warm and wet, it packs clean as well as easy. * * * 4. Save your eyes—and your patients—by wearing glasses when you need them. Go to an oculist—no one else—and find out if you need them. No man knows the exact condition of his own eyes any more than of his own teeth. * * * 5. Nothing better to soften the hands and cleanse nails and fingers quickly than hartshorn ammonia, 20 or 30 drops to a basin of water. Use to clean any blessed thing about your office. Cheap. *Dominion Journal, July, 1898.*

COTTON POLISHING CONES. By D. V. Beacock, D.D.S. Brockville, Can. I have often been at a loss when finishing a plate with plain teeth to get anything that would polish between the teeth, but have found cotton-batting polishing cones to be just the thing. They can be made as small as one may require, cost nothing, cut very rapidly, as they hold the pumice or other abrasive material in the fibers, and can be made to hand in a moment of time. All one has to do is to take a bit of cotton-batting, the size
he requires the cone to be, hold it between the ends of the two fore-fingers and thumb against the point of screw or cone mandrel when running and it will be formed in an instant, then wet with polishing mixture and cut off the small end with scissors. I just happened to strike on it a short while since and was so pleased with it that I thought it might be of use to others.—Ohio Dent. Jour., June, 1898.

ALLOWS NO INSURANCE FOR SEPTIC POISONING. In an action brought to recover on a policy of accident and life insurance the evidence tended to show that the insured, while suffering from some serious derangement of his system, which manifested itself among other ways by severe toothache, had two of his teeth extracted by a dentist; that there was a diseased condition of the membrane surrounding some of the teeth and a general foul condition of the mouth; that the teeth were extracted in the usual way, but it caused a rupture of the upper maxillary artery or a branch of it, from which a violent hemorrhage ensued, and to stop that the dentist plugged the cavities with cotton; that thereafter blood-poisoning ensued from the absorption into the system of some chemic poison supposed to have been caused by the propagation of disease germs in the cotton, the seat of the affection being where the teeth were extracted, which blood-poisoning progressed to a fatal determination. Under these circumstances the supreme court of Wisconsin reversed a judgment rendered against the insurance company. It holds, March 22, 1898, Kasten vs. Interstate Casualty Company, that, under a policy insuring a person against bodily injury sustained by external, violent and accidental means, with a provision for payment to a beneficiary or beneficiaries in case of death from such injuries within ninety days therefrom, independently of all other causes, and with a condition that the liability of the insurer shall not extend to injuries, fatal or otherwise, resulting wholly or in part from poison or anything accidentally or otherwise taken, administered, absorbed or inhaled, a death under such circumstances as above stated is within the condition set forth and creates no liability against the insurance company.

SKILL AND CARE REQUIRED OF DENTISTS. Two distinct acts of malpractice were charged in the case of McCracken vs. Smathers, one in originally filling a tooth upon a live pulp, without
proper packing, and the other in improperly and unnecessarily boring through the jaw-bone after the party suing for damages had returned for treatment. Whether this malpractice, found by the jury, arose from the want of ordinary knowledge or skill, or the want of reasonable care on the part of the defendant, the supreme court of North Carolina says, March 15, 1898, is immaterial, as both are impliedly guaranteed by one offering his services to the public. The degree of care and skill required, it holds, is that possessed and exercised by the ordinary members of the profession. It need not be the highest skill and knowledge known to the profession, but it must be such as is ordinarily possessed by the average of the profession. It can not be measured simply by the profession in the neighborhood, as this standard of measurement would be entirely too variable and uncertain. "Neighborhood" might be construed into a very limited area. It might contain but few dentists, in sparsely settled sections perhaps only one or two. Both might be men of very inferior qualifications, and to say that they might set themselves up as the standard of a learned profession, and prove the standing of each by the ability of the other, continues the court, would be equally unjust to the profession and to its patients. The words "the neighborhood," as used in this connection, it further suggests, are essentially different from the phrases, "the same general neighborhood" or "the same general locality," which are found in some decisions from other states. But the supreme court expresses itself as satisfied with the instructions given the jury to the effect that the defendant would not be liable if he had exercised ordinary skill and care, and that, if he failed in either of these particulars, he would be responsible for the damages resulting from his own acts alone. Judgment for plaintiff affirmed.

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STEP-CHILD OF DENTISTRY. By Otto Bickel, D.D.S., New York. It is a sad but indisputable fact that the treatment of wounds caused by the extraction of teeth is a true step-child to dentistry. Whilst our profession does its utmost in striving for asepsis in the treatment of root-canals, we have almost forgotten to do our duty as to the wounds inflicted by the merciless dental forceps. This strange fact can be explained only if we consider that in most cases the patient does not return unless there is a severe complication. A fatal case which I saw lately causes me to take up the matter and
speak a few words of warning in behalf of this neglected part of dentistry.

We all know that the oral cavity is a perfect incubator for the culture of numerous kinds of microorganisms. But in spite of our knowledge, the extraction wound in most cases is left to the mercy of these minute enemies. The slight germicidal power of the saliva is a mere mechanical one—its continuous flow constantly disturbing the work of the dreaded bacilli. Furthermore, the locality of the dentist's operations renders it impossible to enjoy the blessing of thorough asepsis. Therefore it must be our earnest endeavor to make abundant use of antisepsis as far as possible. For instance, the patient's mouth presents stomatitis, or the teeth are neglected and unclean. Is it not a natural consequence that the extraction wound should show a suppurative tendency? Now in order to abort this tendency, should we not use a small ball of absorbent cotton saturated with some kind of antiseptic solution, thus closing out the intruding germs?

If a mouth is well cared for, a weak solution of permanganate of potash will not only promote healing, but will also abolish the disagreeable smell originating from the wound. But if we are confronted with a neglected mouth, or if difficult or several extractions have been performed, it is advisable and very necessary to utilize all our available means of antisepsis before the patient has left the chair. Many a case of necrosis will thus be avoided.

I have found the use of iodoform-ether applications, which have been recommended to the profession, reliable in all cases. This solution has not only a prophylactic, antiseptic effect, but also shows styptic qualities. When called upon it will never refuse to act. Animated by Hill's interesting paper about the introduction of Dr. Crede's new antiseptics into dentistry, I have tried the two silversalts and consider Crede's preparation a very effective weapon in the battle against microorganisms.—*Items of Interest, June, 1898.*

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OXID OF ZINC AND EUGENOL. By Dr. S. Blair Luckie, Chester, Pa. In the report of the Committee on Materia Medica, from the New Jersey State Dental Society, there appeared under the name of "pulpol" a description of a new medicated cement for pulp-capping, the claim being that it is non-irritating, a bad conductor of heat, and a powerful antiseptic and anodyne, the chief
ingredients being oxid of zinc and eugenol. Its consistency should be less than doughy; will harden in from five to fifteen minutes so that a filling can be introduced. It also has the property of hardening as well under saliva as if kept dry.

I do not wish to claim priority of use, but feel constrained to testify to the satisfaction I have derived from a mixture of oxid of zinc and eugenol alone, not only as an intermediate stratum between the floor of deep seated cavities and the filling, but as a covering to dressings, especially when it is desirous to avoid pressure, and also as a filling where a non-irritating, thermal protector and antiseptic is designated.

If properly mixed, that is, as much of the oxid used as the fluid will take up without becoming crumbly, and a good article of zinc used, a filling can be inserted that will last as long as the best cement. In the mixing, a condition will appear as though no more of the oxid could be added without producing the crumbling alluded to, but by patting the mass with the spatula, plasticity will return. It will harden more rapidly in the mouth than on the mixing slab, and will retain its quality as a filling material better in the tooth, as what remains of the mix becomes brittle after the lapse of time, while the fillings will present good margins and show comparatively good edge strength.

I have now had an experience of over four years with it, and have noticed that fillings in the approximal surfaces of molars and bicuspids will show no wasting in the least for one, and in some cases for two years. It can also be used as a pulp-canal filling, by being pumped in the canal and forced to all parts with a cone of gutta-percha, filling the canal antiseptically and producing no irritation beyond the apex.—*Items of Interest, July, 1898.*

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PORCELAIN INLAYS BY THE METHOD INTRODUCED BY DR. N. S. JENKINS, DRESDEN. Demonstrated by K. A. Davenport, D.D.S., at the Bath meeting. The cavity was the mesial surface of the right maxillary central incisor, which was prepared so that an impression could be obtained. The impression was taken with No. 40 rolled gold, great care being used to get the gold well above the gum margin, which was accomplished by passing the edge of the gold well upon the neck of the adjoining tooth, the gold being pressed firmly into place by the aid of amadou and
burnishers. The demonstrator mentioned that even with great care in large cavities the cervical margin will be found sometimes to be exposed. In such a case a small piece of gold is pressed over the part while the original piece is in place, and both taken away together.

He also mentioned the method suggested by Professor Darby, in which he turns the edge of the gold on itself a thirty-second part of an inch, then placing floss silk under this edge, draws it well above the margin and ligates it to the tooth. Having got the gold perfectly in place and firmly held by amadou, the overlapping edge (in this case on the labial surface, which is most liable to interfere when removing) was trimmed to within a sixty-fourth part of an inch of the border by means of a sharp spoon excavator; a delicate explorer was used to remove the gold. Powdered asbestos was mixed with water in the platinum spoon and the impression gently invested therein.

The selected porcelain was placed in the impression and all slowly dried out, after which the cover was placed over the spoon in such a manner that the material could be easily watched while the fusing was completed. Three firings were required before the proper contour was secured. The filling was then tried in before the gold was removed, to make sure of the contour; more material, as explained, could be added if required, and if too full the excess could be cut away by means of a corundum wheel and fused again to secure a properly glazed surface. After removing the gold a groove was made entirely around the filling with a diamond disc; the cavity was also undercut in the usual manner. Both the cavity and filling were coated with cement and the filling pressed firmly into place by means of linen tape and wedge-shaped pieces of orange-wood, and held until the cement became slightly hardened.—Jour. Brit. Dent. Assn., July, 1898.

DESTRUCTION OF PULP AND GOLD CROWN BY MERCURIC ACTION WITHIN AMALGAM. By W. T. McLean, M.D., D.D.S., Cincinnati. I have been greatly interested in the result produced by an amalgam filling inserted in a lower third molar, which was covered with a gold crown. The entire buccal surface of a right lower third molar was filled in March, 1894. The cavity extended below the gum margin and was not very deep.
A few months after its insertion the patient returned and complained of a peculiar and very unpleasant taste about this particular tooth; it became very offensive. I attributed the annoyance to oxidation or an acid condition of the fluids of the mouth affecting the amalgam, and I suggested that crowning the tooth with gold would no doubt prevent any further inconvenience, thinking that more convenient as well as more permanent. The patient permitted the operation as suggested and it was entirely successful; the unpleasantness became entirely eliminated. This patient returned a few weeks ago, being absent about four years—quite a long time without consulting a dentist. Her visit was for the purpose of having her teeth examined, on account of some slight inconvenience. Imagine my amazement when I beheld the gold crown entirely disintegrated and porosity everywhere noticeable, and the slightest effort removed it. This was surely the result of a physical and possibly a physiological action of mercury. I have always felt that there are idiosyncrasies whereby amalgam or mercurial medicaments are contraindicated, and I believe that this experience will materially assist to bear out this hardly settled question. It has taken about four years for this change to occur—pulp is dead, incipient decay around a part of amalgam filling.

I have reprepared cavity, cleansed and antiseptically treated canals, filled them up with powdered asbestos, saturated with a 50 per cent solution of silver nitrate; filled tooth with gutta-percha, and made new gold crown, 21-k., and set it. Saw patient recently and she is enjoying life from a masticatory standpoint, and I am thinking, conscientiously and scientifically, which is to blame, McLean or mercury? Some stomatological brother will confer a favor if he will explain.—Ohio Dental Journal, July, 1898.

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INFLUENCE OF MENTAL FACTORS IN CAUSING DEATH FROM ANESTHETICS. By Robert Ballard, M.R.C.S. Eng., L.R.C.P. Lond. In some cases operative measures are decided upon and the patient's consent obtained three or four days before the operation is finally performed, and during the intervening sleepless nights and long weary hours of waiting in bed the ever-present idea of operation looms larger and larger in the patient's mind. With sickening reiteration he dwells again and again upon what he may imagine to be the details of the operation, and
endures in anticipation a mental agony out of all proportion to the actual facts. Is it rash to assert that such a patient will be brought to the table with nervous and circulatory systems heavily handicapped for the strain which will be put upon them. The following case which occurred in my own practice well illustrates the grave condition which may be produced by fear and anxiety. A woman, aged 23 years, single, had suffered from frequently recurring attacks of appendicitis of considerable severity, and it was decided during a period of quiescence to perform laparotomy for the removal of the diseased appendix. The patient was a pale, nervous woman, much reduced in health by her former attacks, and with a marked neurotic family history on the mother's side. I first saw her the morning before the operation. She was then evidently anxious, but evinced, so far as I could judge, no signs of great mental distress. The pulse was 98, dropping ten minutes later to 89. The heart was normal in every respect, and the sounds, though hurried, were clear. On asking her to sit up I fancied I could detect a faint hæmical murmur at the pulmonary base. An examination of the chest gave negative results. When I left the pulse was 84, having dropped 14 in less than half an hour. I did not see her again until the following day, when she was brought into the next room for operation. Her condition was then typical. The heightened color, hurried irregular respiration, compressed lips and fluttering eyelids spoke of the fear and suppressed excitement from which she was suffering. The pulse was 104, and the heaving impulse of the heart could not only be felt but seen. The superficial veins of the neck were slightly engorged, and on careful scrutiny showed a faint but distinct pulsation. Indeed, her condition was so serious and the engorgement of the right side of the heart so obvious that I was in doubt as to whether it was justifiable to operate at all. At the last moment I decided to give gas and ether, in spite of a slight bronchial catarrh from which the patient had been suffering. The sight of the inhaler added the last straw to her terror, and when on the table she begged that the operation might proceed without an anesthetic. When fully under the influence of nitrous oxid the signs of engorgement disappeared, the pulse rate fell, and she eventually took the ether well and made a good recovery. The chief element of danger in these cases is the profound disturbance of the circulation, which commences in many cases some days pre-
viously and persists until the patient is well under the influence of an anesthetic. In the worst cases there are signs of serious embarrassment of the right side of the heart, and in two cases I have observed an undoubted temporary tricuspid regurgitation—physiological, no doubt, but none the less dangerous. It may be urged that inasmuch as this condition passes away as consciousness is lost its gravity has been exaggerated; but it is when the patient is still conscious and is struggling and holding his breath that the greatest stress is laid upon the heart and the occurrence of sudden syncope is most to be feared.—_Lancet._

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TINFOIL MATRICES. By W. B. P., F.R.C.S., Dublin, Ireland. Oxyphosphate fillings are a daily necessity, and as it is not always advisable to use rubber-dam in the case of irritable or very young patients, some other means of excluding moisture must be sought. During the past ten years I have been able to keep such fillings damp-proof during the progress of the chemical union that causes consolidation of the filling in the tooth cavity, by the aid of pieces of tinfoil. The cavity in the tooth is prepared in a suitable manner and the margins carefully shaped. The tooth cavity is filled with absorbent cotton carefully packed into it, after the use of the hot-air syringe. A piece of tinfoil of suitable thickness is cut out, measuring one inch or one inch and one-half square, and placed in readiness. The filling is carefully mixed into a pasty mass. The cotton wall is removed, and the plastic filling gently packed into every part of the cavity. Some overplus of the filling left on the mixing slab is placed on the piece of tinfoil in a suitable position. The tinfoil is quickly placed over tooth and cavity and folded over the lingual and buccal surface, or the palatine or buccal surface as the case may be. The tinfoil is gently brought into position with the forefinger and thumb, or with the forefingers of right and left hand. A stroking action of a right hand finger, while left index finger holds the tinfoil in position within or without the dental arch, will enable the filling to be solidly pressed into place in the cavity of the teeth. The excess of material is thus squeezed over the teeth, and the tinfoil can then be gently burnished over the filling so as to make a contour suitable to the case. In the case of bicuspids and molars, the patient can supplement the procedures of the dentist by steadily closing the bite on the tinfoil, and thus give the dentist a true con-
tour of the masticating surface. In many cases where the approxi-
mal cavities in maxillary incisors have to be filled, the tinfoil can
be folded double and passed between the teeth before the filling is
placed in the cavity. This flexible band of metal can be gently
drawn into place round the tooth, and thus cemented on the enamel
surface on each side of the cavity, so that the moisture is completely
excluded during setting of filling. Once the filling sets hard the
tinfoil can be peeled or scraped off the tooth or teeth, and the
dentist will find, if these details have been skillfully and gently car-
rried out, a well contoured filling with a smooth surface that needs
very little final trimming. Sometimes I place a band of tinfoil round
a tooth and then pack in the oxyphosphate filling. The band is
brought to its intended place, and I then envelope tooth and band
with a square piece of tinfoil smeared with the filling. This is
rubbed or folded into shape and position, and all moisture is
excluded. With young children tinfoil used in this way will be
found of great service to the dentist, as it does not give them any
pain or discomfort, while at the same time, the filling is kept pro-
tected from action of saliva during progress of setting. I am of
opinion that oxyphosphate fillings treated in this way will be found
to be harder and more durable under ordinary conditions than when
the plastic mass is packed and burnished into position and con-
toured with oiled instruments.

Few young children bear with patience the use of the rubber-dam,
and as a willing patient of ten years should be the rule rather than the
exception, I offer my experience in the hope that it will meet a want
in ordinary practice that is not altogether filled by the use of rub-
ber-dam, napkins, absorbent paper, or even saliva injector. The
tinfoil commonly used for filling teeth is much too thin for this pur-
pose; I prefer to use tinfoil somewhat of the thickness of writing-
paper, as it will bear the necessary pressure and manipulation with-
out breaking. Sometimes I fold the square of tinfoil into a strip
or band of three or four thicknesses, as may suit the space between
the teeth, and thus gain sufficient support to bring pressure to make
a contour filling above or below the gum, as the case may be in the
maxilla or mandible. A few experiments on some natural teeth
set in plaster will show anyone who cares to carry out this pro-
cedure that tinfoil can be made a valuable adjunct in many cases
where oxyphosphate plastic fillings have to be used. I showed this
method to several dental friends at my house last August, and they were much pleased with the adaptability of the tinfoil to the purposes I have described.—Dominion Dental Journal, July, 1898.

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SILVER NITRATE IN THE TREATMENT OF PULPLESS TEETH. By Dr. L. G. Noel, Nashville, Tenn. Read before Miss. State Dental Assn., April 7, 1898. It cannot be denied that good results may be obtained with many other agents, but it is doubtful if absolute disinfection and sterilization of the dentin can be so quickly obtained with any other drug as with the silver nitrate. Its solubility makes it more penetrating than anything else that has been exploited in this practice; but this quality, and its blackening effects upon the teeth, will almost limit its employment to the molars. True it may be used in the treatment of lower bicuspids and in many places where discoloration has already occurred as a result of chemical changes in pulp tissue, and where it is not deemed especially objectionable its application may be extended to other teeth. Now a word as to the method of applying it: Having cleansed the pulp-canals of septic matter as thoroughly as possible, and removed as much of the softened and septic dentin from the walls of the pulp-canals as can be taken away with impunity, and having allayed all peridental inflammation to the point of toleration of slight percussion, we put on the rubber-dam, and after washing out all other medicaments, apply the silver nitrate as follows: Having obtained from the druggist a short, wide-mouth bottle of blue or green glass, containing the finely pulverized crystals, we take a smooth platinoid probe (a gold probe would probably be better, but good results may be had with steel or platinoid), and wrapping a fiber of cotton loosely around the point, it is first dipped into water, then into the powdered nitrate, and carried as far into the canal as it will go. The probe may then be withdrawn, leaving the cotton fiber with its charge of silver nitrate behind. The probe is now used as a plugger, and the cotton pushed as far into the canal as it will go. This process is repeated until the canals are packed as full as they can be; then a pledget of cotton is moistened and rolled in the powdered nitrate and pushed into the pulp-chamber. The cavity of entrance may now be clothed with some temporary stopping and the case dismissed for a week or two.

Upon the return of the patient the whole may be removed and the
roots filled. Such is the solubility and penetrating power of this agent that we believe it will filter through the dentin and render aseptic any portions of the roots traversed by canals so tortuous or flattened as to elude the cleansing instruments of the operator. Our faith goes farther. We believe that the cotton (if raw cotton) might be left in the canals with such a charge of silver nitrate, and the permanent filling introduced over it, with as good result as can be obtained by other methods of root-filling. We are not yet prepared to adopt this as a practice, nor to recommend it to others, but we have been trying it in some cases where it has been impossible to obtain that degree of dryness necessary to make a good root-filling or gutta-percha or oxychlorid of zinc, and so far the results have been very gratifying. In many of the buccal roots of the superior molars, where nothing but a mere fiber of cotton can be placed, we would say saturate this fiber with silver nitrate and leave it, using oxychlorid of zinc, or some more solid filling-material for the permanent filling of the palatine canal. Perhaps the most gratifying results that we have yet obtained have been in the treatment of pulpless deciduous teeth. Our method of procedure has been as follows: After opening the pulp-chamber and allaying the soreness by the use of dressings of old wood creosote, we fill the pulp-chamber about half full of cotton, moistened and rolled in pulverized silver nitrate. A temporary stopping is placed over this and it is left for ten days. Upon the return of the patient the dressing is removed, the carious dentin excavated from the crown of the tooth, and after syringing out carefully with some antiseptic and bathing it with creosote, the whole cavity is filled with copper amalgam, without any effort at cleansing and filling the pulp-canals.

We have not had to tap a single case to relieve alveolar abscess where the above treatment has been used; however, it is a comparatively new practice, and we admit that a few short months is insufficient to establish it. The roots of these deciduous molars being usually greatly wasted by the process of resorption, and the canals always difficult to broach, no one has had much success in cleansing and filling them, therefore we believe all will hail with delight a method that gives success without these baffling efforts. That eminent writer, Dr. Safford G. Perry, has recommended merely cleansing and disinfecting the pulp-chambers: then if trouble arises after filling, tapping the roots to give exit to gas. Who has not
felt that the boring of a tap-hole was a clumsy way to relieve a very regrettable septic condition? Our silver nitrate cases (and we have quite a number) have so far exhibited no symptoms of septic trouble. Not the least recommendation for practice is the ease and speed with which it may be executed. For the copper amalgam filling, we will say that its greatest value is for the deciduous teeth, and in these cases it is specially indicated.—Dental Headlight, July, 1898.

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CATARRH OF THE ANTRUM OF HIGHTMORE. By H. I. Jones, M.D., San Francisco. Catarrh of the antrum is frequently overlooked and mistaken for an affection of the nasal mucous membrane. When an abundant fetid discharge runs from the nose, especially when it is intermittent, the existence of the disease of the antrum should be suspected, and a careful search with a nasal speculum and a good light for the welling up of the secretion through the foramen in the middle meatus. If this matter is wiped away it is apt to return, and a pulsating light reflex is occasionally observed similar to that seen in perforation of the drumhead during acute suppurative inflammation of the middle ear.

The mucous membrane lining the antrum of Hightmore is liable to suppurative inflammation, and a collection of pus which may completely or partially fill the cavity. This cavity is liable to be attacked from either one or two sources: from an extension of an inflammation of a tooth, or from some diseased condition of the nose.

From the location of the antrum, immediately above the bicuspid and molar teeth, the roots of which perforate the floor, and from its more-or-less communication with the nasal cavity, it would be expected that disease of its lining membrane would be frequent, resulting either from an affection of the teeth or extending from the nasal mucous membrane, which is often inflamed.

Authorities are divided as to the most common cause. Heath, Simon, Frankel, Moritz and others state that disease of the teeth is the most common cause of this affection. On the other hand, equally competent men, Bosworth, Hartman and others, maintain that the cause is from disease of the nasal cavities. The majority of cases in my own practice have been due either to external injury or disease from the teeth.

The normal opening from the cavity into the middle meatus varies from the size of a crow-quill to an opening nearly large enough to
admit the tip of the little finger. In the latter condition the product of inflammation may be readily discharged and spontaneous cure may be expected, but when the orifice is small it may readily become closed and the pent-up secretion become purulent and offensive. If there is free exit into the nasal cavity the patient will experience but little pain. If the secretion be pent-up he will suffer from tenderness of the teeth, cheek, orbit or frontal sinuses.

The discharge is most abundant early in the morning, after the patient has been long in the recumbent position. In chronic cases the discharge is purulent and generally exceedingly offensive. The patient complains of bad odor to the breath, and a discharge of pus from one side of the nose. Some annoyance will be felt from the offensive pus which trickles into the throat during sleep. Persistent discharge from one nostril is usually due either to a foreign body or to the disease under consideration; nasal polypi or disease of the frontal sinuses may cause similar symptoms.

When pain is in the region of the antrum, and an offensive purulent discharge from the nares of the corresponding side, there can be little doubt about the diagnosis. In all cases careful inspection of the nose and mouth must be made. If the inferior turbinated bone is much swollen, a little cocain applied will reduce the tumefaction, and with the aid of a good light, reflector and speculum the diagnosis will be easily made.

The only other affection with which disease of the antrum is liable to conflict is suppurative inflammation of the ethmoidal cells. In the latter there is much less pain, and the discharge from the nose is less copious, and on inspection the pus is found to trickle down at the posterior end of the inferior turbinated, instead of across the middle.

Another method or aid to diagnosis is by electric illumination of the antrum, by placing a four-candle-power electric light in the patient's mouth in a dark room. It is thus described by Davidsohn, who places less reliance on the illumination of the antrum and more on the illumination of the eye as a diagnostic aid in abscess of this cavity: "If the cavity should contain a small 'quantity of pus, the cavity itself may be illuminated while the corresponding eye remains dark." I myself have used this method for some time, and can verify its usefulness.

With reference to treatment in acute cases, fomentation and local
blood-letting; if suppuration has taken place, free exit of the pus through the alveolar space. If a diseased tooth is found to be the cause, it should be extracted, and the opening left by the fang enlarged so as to have free drainage. If the teeth are sound, it is best to draw the first molar, as its socket is deeper than the others and most liable to decay. If patient has already lost the teeth, the antrum can be reached through the space left. There is a diversity of opinion about the method of surgical treatment of suppurative inflammation of the antrum; one method of which is highly recommended, that of washing out and injecting antiseptics through the natural opening; if the opening is large it is easy, but when the opening is small it is very difficult, let alone painful to perform. I have tried it in many cases without success, being obliged to resort to the drill.

Sir Astley Cooper, the celebrated English surgeon, opened the antrum by extracting a tooth and entering the cavity by the hole left by the fangs. In using a bone-drill care should be taken lest it plunge in too suddenly and wound some other parts. The opening should be drilled on a line with the internal canthus of the eye of the same side, provided the antrum is of normal shape, and no high-arched palate. Make the opening so that you can put the end of your little finger in so as to make a thorough exploration. Wash it out with some antiseptic solution. I am in the habit of using zymocid and warm water, then peroxid of hydrogen and every other day with 5-per-cent solution of nitrate of silver, then packing it full with moist iodoform gauze. Constitutional treatment must not be overlooked.—Pacific Medico Dental Gazette, July, 1897.

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IMPRESSIONS. By Dr. I. P. Wilson, Burlington, Iowa. Read before Northern Iowa Dental Society, Sept. 1897. A correct impression is an absolute necessity in securing satisfactory results in the construction of a set of artificial teeth. We must begin right or we cannot expect to end right. Doubt should never be entertained regarding this foundation work. An impression that calls from the operator the expression, "I guess that will do," should be promptly condemned. We ought to know that it will do before dismissing our patient. When there is doubt there is apprehension from first to last, and when the work is completed and the plate introduced into the mouth our worst fears are usually realized. A
plate that sticks tightly to the mouth does not always mean a well-fitting plate. Wax impressions are not reliable. We may secure a fair impression of the palatine surface, but usually the buccal margins are faulty.

Evils of Suction Plates. A set of teeth made from such an impression with a huge "air-chamber" may be made to adhere so firmly that it can be removed only with difficulty. In such cases I have heard dentists say with an air of triumph, "How is that for a fit?" and the poor deluded patient would perhaps think that was a splendid fit. Such a plate cannot be worn with comfort. The sensation ensuing must be similar to that experienced in the process of "cupping." Indeed, the same result is sometimes produced, and I have more than once known of a blister being drawn by this kind of a suction cavity. If the patient has the fortitude to endure this drawing process for a considerable length of time, an abnormal development of tissue will fill the cavity. It is necessary to have only a fair impression of the central part of the roof of the mouth to secure the results referred to above.

In my early practice, more than thirty years ago, I used wax exclusively for taking impressions. I also used large air-chambers; hence I have an experimental knowledge of what I am writing. I believe that plaster of paris is used almost exclusively at the present time for full upper sets, while other preparations, such as wax or modeling compound, are still used by some for full underdentures and for all partial sets. In my own practice I use plaster of paris exclusively for both full and partial plates.

Management of Special Cases. The condition of the mouth is the first consideration and should be carefully examined before an impression is taken. If the texture of the gums, the hard palate and the alveolar ridge are found to be in a normal state, the taking of an impression is greatly simplified. But if there is a sponginess of the anterior portion of the alveolar ridge, with a hard bony structure along the median line, the case becomes more difficult to manage. An impression-cup that will pass freely around the gums should be selected. If the arch is high a little soft wax should be placed along the posterior margin of the cup before introducing the plaster, which should be mixed thick enough to produce slight pressure upon the soft yielding tissues. In some cases we find the anterior portion of the gums as soft and yielding as the muscles of
the cheek. If the plaster is mixed too thin and the impression is taken without any pressure upon these soft parts, the plate when completed will rest upon the hard palate, with no support upon the spongy gums. Such a plate will rock because of uneven pressure. The impression should be so taken that the soft as well as the hard tissues will be in a measure unyielding when the dentures are in place. Of course it will not do to force the spongy gums back in taking the impression so that they will act as a spring upon the plate. Either extreme should be avoided. When the impression is in place the lips should be raised gently to expel the air that may have been shut in, after which they should be drawn down with sufficient force to mark the folds of mucous membrane in the impression, or they will act as a spring in dislodging the plate.

When there are undercuts in the gums, care must be taken by some means to force the plaster into the recesses, and then before crystallization has fully taken place the impression must be removed, which will usually break into a number of pieces, but these may be put together again like a broken dish. Sandarac varnish will unite the parts perfectly. If the plaster becomes too hard a knife may be used in cutting grooves and breaking into sections the binding parts.

Taking impressions for partial sets is much more difficult and an accurate impression is an absolute necessity. An impression taken with any material that will yield or bend without breaking is unreliable and will result in an ill-fitting plate.

Plaster should be mixed thick enough to hold to the cup when turned upside down. A large number of impression-cups of various sizes and forms should be possessed by every dentist.

In some cases we find a bony prominence in the roof of the mouth which is hard and unyielding, and unless provision is made for this objectionable feature of the case a failure may be expected. Very soft plaster should never be used in taking such impressions, but plaster stiff enough to produce some pressure upon the soft parts involved. Judicious scraping of the model where the parts are soft, or a layer or two of heavy tin-foil over the hard parts will help obviate the difficulty. When the bony prominence does not extend back to the soft palate, the difficulty is easily remedied by forming a thin suction cavity over the entire bony surface, so the plate will not come in contact with it.
Before taking an impression the mouth should be rinsed thoroughly with cold water, and if the saliva is thick and ropy salt should be added to the water.

Impressions Without Cups. It becomes necessary occasionally to do away with an impression-cup in partial undersets, especially when any of the anterior teeth are to be supplied. In such cases I frequently take the impression only of the lingual surfaces of the teeth and gums, allowing the plaster to pass into the places of the missing teeth, but not through to the labial side. This may be accomplished by carrying the plaster on a spatula to the desired location. I prefer, however, to take a roll of wax and press against the lingual surfaces of the gums and teeth, then remove and dress it down, forming a deep longitudinal concavity in the wax next to the teeth, which I fill with plaster and put into place against the teeth. Usually the wax will come away from the plaster in removing it from the mouth, but body enough is left in the plaster to push it back into the mouth, frequently breaking it into several pieces, which may be readily glued together. This will give a perfect impression of the parts with which plate is to come in contact, and most satisfactory results are obtained.—*Items of Interest, June, 1898.*

SCHEME FOR DETERMINING THE AMOUNT OF DRUG IN EACH DOSE OF ANY PREPARATION OF THAT DRUG.

By John E. Groff, Ph.G., Providence, R. I. Many of our young medical practitioners find themselves handicapped at the very outset of their careers by ignorance of drugs and their preparations and the doses of them. To this ignorance more than to any other one thing may be attributed the extensive prescription of ready-made medicines in the form of elixirs, tablets, etc., which flood the market at the present day.

It has been the writer's pleasure to act as instructor in the particular branch of materia medica relating to the composition and strength of the official preparations and their doses to classes of young medical graduates during their hospital training. He has long noticed that physicians prescribe the various tinctures, fluid extracts, etc., without really knowing just how much drug was represented by the amount of preparation prescribed. To illustrate: He knows three minims to be the dose of tincture of aconite root, but he does not generally know whether he may double or
The Tincture

The divide to toxicodendron, "be treble and cannabis answering classes: They at hyoscyamus, in sostigma represented are cared ance received, proof rules well-recognized of general the sion. Large.

The poisonous liquor is Fowler's and Dono-van's solutions and solution of arsenious acid. They are all 1 per cent in strength. * * * The fluid extracts with one exception are 100 per cent in strength. * * * The tinctures—that is, the poisonous tinctures—vary in strength and are placed in classes: Camphorated tincture of opium, 1/9 of 1 per cent. * * * Tincture of nux vomica, 2 per cent of extract. (The extracts may be con-
sidered as four times the strength of the drug and the dose one-fourth as much.) * * * Five-per-cent tinctures—Cantharides, strophanthus. * * * Ten-per-cent tinctures—Opium, deodorized opium, ipecac and opium. * * * Fifteen-per-cent tinctures—Belladonna, cannabis indica, colchicum seed, digitalis, gelsemium, hyoscyamus, physostigma, squill, stramonium. * * * Thirty-five-per-cent tincture—Aconite root. * * * Forty-per-cent tincture—Veratrum virid. * * * All the fluid preparations of opium have been made 10 per cent excepting paregoric, the wine, and the vinegar. Also the powder of ipecac and opium. * * * The only poisonous official infusion is that of digitalis, the strength of which is 1½ per cent. * * * Among the wines we have antimony, ¼ per cent; colchicum seed, ½ per cent; colchicum root, 40 per cent; opium, 10 per cent.

When we speak of a preparation as being ½, 1, 5, 10 or 50 per cent in strength, we are to understand that the activity of ½ or 1 grain, or 5, or 10, or 50 grains of drug is contained in every 100 minims of the preparation. One minim therefore contains 1/100 of that quantity. Knowing how much drug is represented by one minim, we may easily calculate how much is held in solution by any number of minims.

Example No. 1.—It is desired to give 5 grains of belladonna in the form of tincture; how much tincture must be used? By our dose table we learn that 5 grains of good drug is rather a large dose; but the tincture being a 15-per-cent tincture, there are 15 grains of drug in every 100 minims. In one minim there is 1/100 of that amount, or 15/100 of a grain, or 3/6 of a grain to each minim. (It is between 3/6 and 1/6, but for uniformity we call it 3/6.) In 5 grains, the amount desired, there are 5 × 30, or the amount represented by 30 minims of the tincture.

Example No. 2.—It is desired to give 2 grains of belladonna; how much tincture represents that amount? All 15-per-cent tinctures contain 15 grains of drug in every 100 minims, or 1/6 grain to 1 minim. And as there are 12/6 of a grain in 2 grains, 12 minims of the tincture of belladonna will represent 12/6, or 2 grains of the drug. Two minims of the fluid extract, each minim representing 1 grain of the drug, serves the same purpose. One-half grain of the solid extract, which is four times stronger than the drug, would also represent 2 grains of the drug if it is desired in pill form.
Example No. 3.—The physician finds by his pocket-dose list that
the tincture of aconite is dosed at from \( \frac{1}{2} \) to 5 minims. How
much drug does that represent? The tincture is 35 per cent in
strength, or the active power of 35 grains of drug is contained in
every 100 minims of the tincture. One minim contains \( \frac{1}{100} \) of 35
grains, or \( \frac{35}{100} \) of a grain, or \( \frac{1}{2} \). Five minims contain \( \frac{5}{3} \), or 1 grain
and \( \frac{3}{2} \). And as our drug is dosed at from \( \frac{1}{2} \) to 2 grains, 5 minims
are a safe dose.

From these examples it will be seen that the doctor may start out
definitely. As it is, he gives 5 minims and increases or diminishes,
according to circumstances, and knows not in the end how much
drug he has been using. By observing these rules he always knows
what he is giving. In the same manner, after a very little applica-
tion the physician may deal with all the various preparations.

A 1-per-cent solution contains \( \frac{1}{100} \) grain of drug to the minim, and
\( \frac{1}{20} \) grain of arsenic, or \( \frac{5}{100} \), or 5 minims of Fowler’s solution, are one
and the same quantity. * * * A 2-per-cent fluid contains \( \frac{1}{50} \) grain
of drug in each minim; 50 minims = 1 grain; 5 minims = \( \frac{1}{10} \) grain.
* * * A 5-per-cent fluid contains \( \frac{1}{30} \) grain to each minim; 20
minims = 1 grain. * * * A 10-per-cent fluid contains \( \frac{1}{10} \) grain
of drug in each minim, and 1 grain or \( \frac{10}{10} \) will be found in each 10
minims.

In this manner one may be exact in his dosage. If, for instance,
he directs 6 minims of tincture of aconite to be given, and by mis-
take 12 are given, he knows just how much to worry; whereas if he
knew not how many grains of drug that amount represented, he
would be worried very much for several hours.

It is well to remember that both the tincture and the fluid extract
of nux vomica are exceptions. The fluid extract contains \( \frac{1}{2} \) per
cent of alkaloidal strychnin, or about \( \frac{1}{30} \) of a grain of strychnin to
each minim. The tincture contains 2 per cent of extract or \( \frac{1}{50} \) grain
to each minim. The dose of the extract is one-fourth that of the
drug, or from \( \frac{1}{8} \) to \( \frac{1}{2} \) grain. The corresponding dose of the tinc-
ture would be from 6 to 25 minims.

It is convenient sometimes to know how much drug is represented
by \( \frac{1}{4} \) or \( \frac{1}{2} \) an ounce or 1 ounce of a fluid preparation. The per-
centage strength being known, multiply by 5; the product is the
approximate number of grains in each fluid ounce.

Infusion of digitalis is \( \frac{1}{2} \) per cent. Multiplied by 5, we have
7½ grains to the ounce, or about 1 grain to the drachm. A 2-per-cent tincture contains about 10 grains to the ounce; a 5-per-cent tincture about 25 grains, etc.—Medical Record, Aug. 6, 1898.

WHY COAGULANTS DIFFUSE THROUGH DENTIN. By E. Lawley York, D.D.S., F.R.M.S. (Eng.) Read before Illinois State Dental Society, May, 1898. About a year ago I had the honor to present to this society a paper on "The Diffusibility of Coagulants in Dentin." The deductions I drew and the experiments I exhibited at the time showed you conclusively that carbolic acid would diffuse through dentin. Hearing that I was continuing this line of investigation the chairman of your executive committee did me the honor to request me to read another paper along the same lines, and from the generous and kindly manner in which you received my former effort, I consented. The following is the result of my experiments extending over the past year.

If you remember, I stated at that time that I found that there was greater rapidity in the diffusion of carbolic acid through the dentin of a tooth that had contained a putrescent pulp (four to eight hours). This occurred not once only but in every case, and it set me thinking. Why was there greater rapidity of diffusion in such a tooth and less in one that had contained up to the time of treatment a normal pulp; in the latter we had to deal with a tooth that had so far not undergone any pathological changes, either in the contents of the pulp chamber or the dentinal tubuli, all the albumin that is normally in a tooth being there intact, whereas in the tooth the pulp of which had died, and as a consequence undergone the process of putrefaction and the consequent formation of an innumerable number of end products, we had a totally different condition to deal with. In the first condition we might have an infinitesimal quantity of albumin to deal with, as I will show you later, whereas in the latter we have none, as I will now endeavor to demonstrate.

Many mouth-bacteria, as well as the majority of the pyogenic and putrefactive bacteria, have the faculty of dissolving coagulated albumin or albuminous substances, of peptonizing or converting them into soluble substances, just as albumin is converted into soluble peptones by the pepsin of the gastric juice. Microorganisms nourish themselves only by substances in a state of solution, and if
we present them solid substances they must first liquify these substances before they can make any use of them for their own nourishment.

After the death of a pulp it is invaded by various bacteria, strictly saproogenic as well as pathogenic, the result of which is that the pulp becomes a foul, semifluid mass. This putrefactive decomposition of albuminous matter is effected by a great variety of microorganisms and give rise to a great variety of products, some of which are volatile and are characterized by their offensive odors. This putrescence was the result of first the splitting up of the albumins into peptones, which according to Flugge may be effected by a number of microorganisms, then the splitting up of the peptones into a large number of gases, acids, bases and salts. Among the products of putrefactive fermentation known to chemists are the following: Carbon dioxide, hydrogen, nitrogen, hydro-sulphuric acid, phosphureted hydrogen, methane, formic acid, acetic acid, butyric acid, valerianic acid, palmitic acid, crotonic acid, etc., etc.

A few words on ptomaines may not be out of place. It is a name suggested by the Italian toxicologist, Selmi, and derived from the Greek word *ptoma*, meaning a cadaver. A ptomaine may be defined as an organic chemical compound, basic in character, and formed by the action of bacteria on nitrogenous matter. They have also been called animal alkaloids, but this is a misnomer, because in the first place some of them have been found in the putrefaction of vegetable matter, and in the second place the term animal alkaloid is more properly restricted to the leucomaines, those basic substances which result from tissue metabolism. While some of the ptomaines are highly poisonous, this is not an essential property, and others are entirely inert. Hence the severe and complicated conditions following in some cases a blind abscess or the opening of a putrescent pulp-canal, where we have exercised the greatest care. Since all putrefaction is due to the action of bacteria, it follows that all ptomaines result from the growth of these organisms. The kind of ptomaine formed will depend upon the individual bacterium engaged in its production, the nature of the material being acted upon, and the conditions under which the putrefaction goes on, such as the temperature, the amount of oxygen present, and the duration of the process. Ptomaines are the transition products in the process of putrefaction. They are temporary
forms through which matter passes while it is being transformed by the activity of bacterial life from the organic to the inorganic state. Complex organic substances such as muscle and brain are broken up into less complex molecules, and so the process of chemic division goes on until the simple and well-known final products, carbonic acid, ammonia and water result.

It is an established fact and will be borne out by the experiments which I will give you later, that the end products of albumin decomposition or putrefaction are no longer coagulable. I previously stated in this paper that the first step in the process of putrefaction is the transformation of the albumins into peptones. Now these peptones are not coagulable; for example, if you take pepsin and add it to serum albumin and allow it to digest at body temperature, you will find it converted into peptones, etc., which are not coagulable. This is precisely the same condition that we find produced by the action of peptonizing bacteria upon proteid matter. (Here exhibit tubes of decomposed serum albumin and tubes of serum albumin to which has been added pepsin.) On the addition of carbolic acid they do not coagulate. Now, how does carbolic acid act upon these substances? Does it coagulate the orificial ends of the dentinal tubuli and seal in all this poisonous matter? Most emphatically, no. The carbolic acid will penetrate as well as anything else you may use.

Let us now take another view of this much mooted question and see how the carbolic acid will act on the dentin of a tooth from which you have removed a normal pulp, one in which the albumin has not undergone decomposition. I stated earlier in my paper that carbolic acid diffused through the dentin of a tooth from which I had removed a normal pulp a trifle slower than one which contained a putrescent pulp. The reason for that was this: That carbolic acid did coagulate the trace of albumin that was there, but the former (carbolic acid) being in excess the coagulum was redissolved again. I will now show you capillary tubes filled with serum albumin (human), native albumin, and artificial serum albumin, and you will notice the coagulation proceeds slowly, and following behind a trifle slower you will see that the coagulum is being redissolved again. This is precisely the thing that occurs in the dentinal tubuli, only we have such a minute quantity of albumin in the tooth structure that it is hardly a factor.
To demonstrate the latter statement to your satisfaction I will give in detail some experiments made to determine the quantity of albumin in a tooth.

* Determination of albumin in teeth. * The teeth are first thoroughly scraped, removing as much of the adhering particles as possible. They are then carefully brushed with alcohol, which coagulates the albumin on exterior of the teeth. After the teeth are dry, they are finely pulverized. To this pulverized substance (about ten grams) is added a decinormal sodium chlorid solution (about twenty-five c. c.) alkalinized with sodium carbonate. This is thoroughly agitated and allowed to stand for 36 hours. During this time the mixture is frequently shaken. It is then filtered until a clear filtrate is obtained, and washed. The filtrate is acidified with dil. acetic acid and brought to the boiling point. This coagulates the albumin. It is allowed to stand for some hours until the coagulum settles and the particles become agglutinated. It is then filtered upon a counterpoise filter. The precipitate is then washed until no reaction occurs upon the addition of sol. of silver nitrate. The contents of the filter are then dried at a temperature of $110^\circ$ C. for about thirty minutes, then placed in a desiccator and afterward weighed. The albumin is repeatedly dried until a constant weight is obtained.

The tooth substance after being treated as above was again subjected to the same process, but yielded only a faint trace of albumin, showing that practically all the albumin had been removed. 7.5 gms. (115.74 grs.) yield .0028 gms. $(\frac{7}{100} \text{ gr.})$ of 1 per cent. * * 9.5 gms. (146.60 grs.) yield .0067 gms. $(\frac{67}{100} \text{ gr.})$ of 1 per cent. * * 11.5 gms. (177.46 grs.) yield .0060 gms. $(\frac{3}{100} \text{ gr.})$ of one per cent.

(1) These analyses of the teeth will clearly show you that the amount of albumin in a tooth is of too minute a quantity to be a factor. This applies to a tooth, the pulp of which was in a normal condition when analyzed. (2) A tooth the pulp of which has undergone the process of putrefaction or albumin decomposition. The end products are no longer coagulable. (3) Had we as large an amount of albumin in a normal tooth as we have always been led to believe, the quantity of carbolic acid which would be accommodated in the pulp chamber and canals would be quite sufficient to redissolve any coagulum that would be formed.

*Recapitulation.* I have shown you capillary tubes containing
egg or native albumin, serum albumin (human), and artificial albumin, all of which coagulate in the presence of carbolic acid, and you will also observe again redissolve in an excess of carbolic acid. None of these has undergone decomposition. I have also shown you capillary tubes filled with decomposed serum albumin (human), and gelatin and serum albumin (human), acted upon by various pathogenic and mouth bacteria, none of which shows any sign of coagulating in the presence of carbolic acid.

After getting these uniform results by repeated experiments hundreds of times and drawing my own deductions from them, I was naturally anxious to communicate with others who might have been over similar ground in search of other subjects. So I accordingly opened up a correspondence with Prof. Vaughn, of Ann Arbor, on the decomposition of albuminous substances and will give you his reply: "There can be no doubt that the end products of albumin decomposition are no longer coagulable." Prof. Klebs, of worldwide reputation, also states that they are no longer coagulable, as also does Prof. Hektoen, of the bacteriological and pathological laboratories of Rush Medical College.—Dental Review, July, 1898.

PHOSPHORUS NECROSIS OF THE JAW. The disease was first noticed in Germany, where the match-producing industry was started some years prior to its introduction into England. As far back as 1839 Lorinser perceived a special necrosis prevalent among the operatives employed in the factories in Germany and published a paper thereon. The subject opened, other contributors followed, and in 1847 Drs. von Bibra and Geist, of Erlangen, issued a work upon which the basis of our present knowledge of the subject practically rests.

The insidious nature of the disease with its lamentable consequences aroused concern, and legislative inquiries were instituted in England and other European countries with the view of devising means to prevent or counteract its ravages. Scientific investigation was conducted by medical men, who established two principal points, viz.: That in every case of phosphorus necrosis of the jaws the disease was originally associated with a carious tooth, and that operatives with sound teeth had immunity from the affection.

The improvement in latter-day factories, the proper ventilation of the "dipping" rooms and the general bettering of the condition of
the operatives have caused a considerable diminution in the number of cases; but the disease has still to be seriously reckoned with, there being, it is said, no less than six cases under treatment at one of the London hospitals, while eleven unreported instances formed the subject of the official inquiry.

Mr. Christopher Heath in his work, "Injuries and Diseases of the Jaws," provides, among other, the following interesting details of phosphorus necrosis: "Etiology.—The cause of the disease is unquestionably the fumes of the phosphorus which are inhaled by the operatives during the process of "dipping" the matches, and in a lesser degree during the counting and packing them. When the disease first showed itself in Germany, it was thought that it depended upon the admixture of arsenic with the phosphorus; and it is curious that in the museum in St. Bartholomew's there are some bones of cows from the neighborhood of Swansea, which, under the influence of arsenical vapor, have become enlarged and covered with a new bone formation closely resembling that around phosphorus necrosis. It has been proved, however, that arsenic has nothing to do with the disease; and if proof positive were wanting that phosphorus alone is the deleterious agent, it is supplied by a case quoted by Sir J. Paget of a man who induced necrosis of his jaws by inhaling fumes of phosphoric acid as a quack remedy for "nervousness." It is found that the phosphorus fumes produce no injurious effects, so long as the teeth and gums of the workers are sound, but as soon as the teeth become carious, or if a tooth is extracted so as to leave an open socket, the disease rapidly develops itself. The experiments upon animals by Giest and Von Bibra are amply confirmatory of this view, since they found that rabbits exposed to phosphoric fumes suffered no injury so long as the teeth and jaws were uninjured, but that if the teeth were extracted or the jaw broken, periostitis and necrosis rapidly resulted. On the other hand, a case has been recorded by Grandidier of necrosis of the upper jaw from phosphoric fumes in a child but six weeks old, and in whom, therefore, the teeth were not developed, and Langenbeck is opposed to the notion that carious teeth predispose to the disorder."

A noteworthy case might here be mentioned of one of the operatives in a London factory—a woman of good physique, who left her employment to become a wife. After eighteen months of married life she was attacked by phosphorus necrosis. The disease was
particularly violent on one side of the face, involving the loss of one-half of the maxilla and hard palate. These were replaced as well as possible by artificial means. The apparent explanation is that a low state of health following child-bearing afforded the dormant disease an opportunity to assert itself.

Mr. Heath continues: "Symptoms.—As the disease commences in the alveolo-dental periosteum, the early symptoms are those of alveolar periostitis. Pain referred to the teeth is one of the earliest symptoms of the disease, and this, which was intermittent at first, becomes at length continuous. The teeth become loose and pus is seen to exude from their sockets. At the same time the gums become swollen and tender and are detached to a greater or lesser degree from the alveoli, giving constant exit to a purulent discharge. In many cases of necrosis the face is swollen, so that, if only one side of the jaw is affected, a peculiar lop-sided effect is produced. In the cases of phosphorus necrosis, however, the swelling of the face is much more marked, the soft tissues around the bone being infiltrated and puffy to an extent which is not witnessed in other forms of the disease. One or more openings now form externally, through which pus constantly exudes, and the probe introduced through these readily reaches bare and dead bone.

"The patient's health has by this time become seriously affected, owing both to the actual suffering he has undergone, and to the interference with his nutrition which the state of his mouth necessarily involves, it being impossible for him to take any but fluid or semi-fluid food, and that in small quantities. The constant presence of most offensive discharges in the mouth, and mixing with the food, must have an injurious effect upon the patient, though this is questioned by Salter, who remarks that these patients swallow daily many ounces of pus "without any obvious detriment to health." The necrosed portions of bone project more or less into the mouth and give the patient great inconvenience, and in very severe cases of phosphorus necrosis gangrene of the cheeks and lips ensues with a rapidly fatal termination. In less severe cases the patient may drag on a wretched existence for months and sink at last from exhaustion, or may occasionally recover with considerable loss of bone and deformity."

To turn to the practical side of the question, it is clear from the observations of those who are acquainted with the disease and its
treatment, that precautionary measures must stand first and foremost in consideration. Man is by no means a naturally clean animal. The cleanliness of his person is a matter of education. We recognize this in many of our patients, who, after having mustered sufficient courage to submit to the filling of defective teeth, take good care in the future to keep pace with decay. In the first place it should be a regulation in all workshops where crude phosphorus is used that the teeth of the operative should be sound and healthy. Secondly, it should be incumbent upon employers to provide the necessary means for periodical examinations of the teeth and the repair of injury and enforce these examinations. Unfortunately, we have to confess that the workers themselves are not altogether blameless for their trouble. A happy indifference to the risks they run, or a callousness born of constant contact with danger, is not uncommon among them. Flâgrant neglect is the consequence. Men have been known to partake of food without first removing the crust of labor from their hands. Again necrosis has been traced to the use of a pointed match as a toothpick carried among other lucifers loose in the pocket. Carelessness after extraction too is also responsible for many ills.

It becomes a duty, however, in well-governed communities to protect the foolish from themselves. A rigid scrutiny by responsible persons over the conduct of operatives in the "dipping" rooms should be exercised, and such hygienic methods as are available enforced. It is said that by abandoning the use of crude phosphorus, phosphorus necrosis would soon disappear. There appear, however, to be objections from authoritative sources to this resource. At the sitting of the Academie de Medicine in February last year, the late Dr. Magitot, in reply to questions by the minister of finance on sanitation in the match industry, said: "M. Vallin at a previous meeting proposed the suppression of the employment of white phosphor as the chief means to secure sanitary safety in this industry. I am not able to accept this view, for, in my opinion, it would amount to an avowal that hygiene is impotent to bring about the disappearance of the dangers inherent in the manufacture of matches which is now carried on. I believe, on the contrary, that by having recourse to particular precautions, one is able, even though continuing to use white phosphor, to sufficiently ameliorate the condition of this industry so as to preserve the
workpeople from phosphorism. These precautions are the putting into practice of the two following methods: A. *Forced ventilation of the workshops* (general isolated individual ventilation), by the means at the disposal of the engineer. B. *Selected workpeople*, neither permitting the entrance nor the maintenance in the factory of workers tainted with the initial lesion of the mouth, the port of entrance for necrosis. The entire prophylaxis is contained in these two terms. The observations and the experiences furnished by the match factories enable us to affirm and to prove the complete and absolute efficacy of the above measures, which I submit to the approbation of the academy."

At a later meeting Dr. Magitot supplemented his remarks by reading the opinions of the directors of one of the most important match factories. These contended that it was impossible to suppress industrially the use of white phosphor. He believed, moreover, that the adoption of the match with amorphous phosphor would constitute a worse measure than the evil complained of by developing clandestine manufacture, and thus creating anew graver centres of phosphorism.

Referring back to Mr. Simon's report to the privy council in this country (1863) we find a similarity of view expressed by Dr. Bristowe. After a careful investigation of the subject Dr. Bristowe concluded that danger existed exclusively in working with common phosphorus. Having regard, however, to the fact that with proper precautions "the use of common phosphorus for matchmaking need not be an unwholesome occupation," and while alive to the advantages of amorphous phosphor and advocating the employment of the same, he could not see the extreme necessity of any rigorous measure which would prohibit the use of the crude material.

The question as it presents itself to us is primarily a dental one. From the bulk of evidence at our command it is established beyond reasonable doubt that communication can take place only through direct contact with the periosteum of the jaw; it is therefore easy to believe that by strict attention to the teeth of those employed in such unenviable labor a baneful disease might be expunged from our text-books—except as a matter of history.

Affecting the legal aspect, it is difficult to understand the motive for concealment. What is there about these cases of phosphorus poisoning that recoils from investigation? If proper sanitary and
preventive measures are employed, and every aid that medical skill can offer utilized for the relief of the unfortunate victims, is there, we ask, any need for silence? Such proceedings only breed mistrust and court suspicion. The government edict is framed for the well-being of employer and employed alike, and any attempt to disguise the truth must be regarded as a childish evasion of the law unworthy of sensible men.—*The Dentist, July, 1898.*

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**BUCCAL MANIFESTATIONS OF SYPHILIS.** By Faneuil D. Weisse, M.D., New York. Address before First District Dental Society of New York State, Nov. 9, 1897. My experience for years past among dental students as teacher and among dental surgeons as consultant is, that they have a dread of the buccal manifestations of syphilis that they may meet with in their practice, and a corresponding desire to know how they should deal with such cases that may come to them.

Syphilis is a systemic disease due to the introduction of a virus into the blood, which, after a period of incubation after its introduction, develops a primary and local lesion at the point of introduction of the virus. During the period of incubation, it is held, the system is under the influence of the virus, which will develop the various subsequent manifestations of a systemic disease, because even where the local primary lesion has been excised within a few hours after its development, the systemic and constitutional symptoms of syphilis have always followed.

We see an analogy to the introduction of the vaccine virus in the process of vaccination—the virus is introduced, then follows a period of incubation, then there obtains a development of the local lesion at the point of introduction of the virus, followed by a certain amount of lymphangitis radiating from the local lesion and adenitis with systemic disturbances. The effect of the vaccine virus is to immune the system against the attack of variola, or at least to partially immune it, so as to modify it into varioloid. The introduction of the virus of syphilis develops the local primary lesion; the systemic accompanying symptoms, and the several stages of the disease follow, the system thereafter being immune from subsequent infection. With reference to what the virus of syphilis is, syphilographers are still in doubt. Statements have been made from time to time that a vegetable microorganism had
been found in the blood of syphilitic patients; but each time these opinions have been abandoned.

The period of incubation after the introduction of the virus into the blood varies according to different authors; but the majority of them hold that it is about from ten days to four weeks after inoculation that the primary ulcer may manifest itself. The disease develops by three stages: Primary—the local, initial lesion or ulcer. Secondary—skin eruptions and mucous patches of the mucous membranes. Tertiary—osseous and visceral lesions (gum-mata or granulation-tissue formation). The primary ulcer is the first external evidence of syphilis, no matter from what source the virus may have come.

The source of contagion is a matter of interest to the dental profession. The virus is transmissible by application to a surface where epithelium has been excoriated or the deeper tissues wounded, and the sources of the virus are: First—The exudation from a primary syphilitic ulcer. Second—The exudation from a mucous patch (wherever situated). Third—The exudation from a secondary skin-eruption. Fourth—Inoculation of the blood from a patient in the secondary stage of the disease.

The primary syphilitic ulcer, or hard chancre, may occur at the buccal cavity from immediate or mediate contagion. I have seen the primary ulcer on the lip, the gum, and the pillars of the soft palate, but I have never seen one on the tongue. When it occurs upon the lip it presents an inflamed, spherical, hard mass, bedded in the substance of the lip, having at its surface an area of ulceration; a deep ulcer may form, if the surface is irritated by local applications. When it occurs upon the gum it is less swollen, simply presenting an area of ulceration; when upon the pillars of the soft palate, there is less prominence to the lesion and deeper ulceration.

Wherever the lesion is located at the buccal cavity, within a week or ten days one or more submaxillary lymphatic glands become enlarged, indurated and painful, but rarely suppurate. The only condition that you can confuse with the primary ulcer and enlarged submaxillary lymphatic glands is the local ulcer of epithelioma, and the consecutive submaxillary glandular involvement; but the diagnosis is easy from the history of the case,—the short history of the syphilitic lesion determining its precise character. I doubt if any dental practitioner ever sees a case of primary syphilitic ulcer at or
in the buccal cavity, because, in all the cases which I have seen, the mouth is in such a condition that it occupies the entire attention of the patient, and he or she is not likely, under the circumstances, to require any dental operations.

Passing from the primary stage, the buccal cavity may be affected in secondary syphilis by ulcerations of the pillars of the soft palate and mucous patches of the mucous membrane. When the pillars of the soft palate are affected they will be found to present an inflamed and congested appearance, with a certain amount of irritation of the throat; or there may be ulceration of the mucous membrane of the pillars of the palate, without the history from the patient of the exposure to a cold, but simply the development of the condition above described, with a certain roughness of the voice and soreness of the throat.

Concomitant with this there will have developed, in all probability, eruptions of the skin, giving further evidence that the secondary stage of the disease has been initiated. Further on, in the secondary stage, mucous patches appear upon the mucous membrane at the interior of the lips and cheeks, the dorsum and borders of the tongue,—most frequently at the borders of the tongue and the inner surfaces of the lips; seldom, if ever, at the floor of the buccal cavity.

The mucous patch is a reddish, round area; starting thus singly, several may run together, producing irregular forms of the patches. The surface is either even with the mucous membrane or a little depressed, covered with a whitish layer which you cannot scrape off; the surface does not bleed very readily, but there is a slight exudation from it. There may be but one mucous patch upon the border of the tongue, or upon the inner surface of the lip, and yet its exudation will contaminate the mucus of the buccal cavity, so that the mucus is capable of inoculating any abraded surface—skin or mucous—to which it may be applied. Sometimes you will see a fissuring of the vermilion border at the angle of the lip. Examine carefully, for there is often a mucous patch upon the mucous membrane surface at the angle. Whenever you see the above-described mucous patch conditions in a patient's mouth, tell him to go to his family physician to be treated—that his system is out of order, as indicated by the condition of the mouth.

Of tertiary buccal manifestations of syphilis we have the development of gummata or syphilomata—syphilomata is much the better
term. The structure of this tertiary evidence of syphilis is a new formation of granulation-tissue (granulation-tissue is the multiplication of the connective-tissue cells of a part) in the submucous plane or periosteum plane of the buccal parietes.

No two tissues can occupy the same place at the same time; as the granulation-tissue develops it leads, by pressure, to the degeneration and absorption of the surrounding tissue, in order to make place for the newly-formed granulation-tissue.

Most frequently the syphilomata occur in the soft palate—submucous plane—rapidly developing a swelling of the same, which presents a livid, inflamed appearance, and then passes on to ulceration and sloughing of the granulation-tissue within. It must be remembered, as stated above, that as granulation-tissue develops it induces degeneration and absorption of the surrounding tissue to make place for itself. When this granulation-tissue, as formed, sloughs, it is as a bung in a bung-hole—you take out the bung and you have a hole left. So when this granulation-tissue sloughs out, it is found to have involved a destruction or sweeping away of more or less of the substance of the soft palate—uvula, body, and even the pillars of the soft palate may be sacrificed. Under appropriate treatment the ulceration may be arrested and healthy, permanent cicatrization of the mucous membrane surfaces will occur.

When the granulation-tissue develops in the periosteum of the buccal face of the hard palate, it will cause death of the horizontal plates of the palate bones and the palate processes of the superior maxillary bones, which will rapidly necrose and be exfoliated, leaving as a direct result communication between buccal and nasal cavities. This destruction of the soft and hard palate by syphilomata or gummata determines the condition of acquired cleft palate or perforated palate, in contradistinction to congenital cleft palate.

Sometimes the periosteal gumma is located at the palate process of the superior maxillary bones, and forward, involving the alveolar process of the same, and when thus located it will involve the destruction of the alveolar process in the loss of the teeth.

There is no other disease that will produce the rapid destruction of soft and hard palate, and at times alveolar process, but the tertiary stage of syphilis, which must of necessity have had a primary and secondary history, possibly ten, fifteen or even twenty years previous. In such cases never attempt to make a prosthetic appli-
ance for the acquired deformity of the soft and hard palate. Do not attempt to take an impression of the parts until the tissues have completely cicatrized and present a perfectly healthy surface.

Hereditary or congenital syphilis has its buccal manifestations of mucous patches, and as the temporary teeth appear they rapidly decay and are shed prematurely. As the child grows up evidences of congenital syphilis in the buccal cavity are few; some cicatrices may present of previous ulcerations of the mucous membrane, and as the permanent teeth erupt they will present the condition known as the "Hutchinson peg-top teeth." The permanent central incisors come in irregularly, either converging or diverging; they are smaller than normal, the cutting edge coming down to a point. When they do not come to a point the cutting edge is notched, the notches ultimately being worn down, owing to the deficiency of enamel development.

Parrott describes a peculiar condition of the cuspids and permanent molars—the crowns presenting transverse lines of depressions, dividing the teeth into two portions, one thicker than the other. The Parrott teeth as an evidence of syphilis is not concurred in by all syphilographers, but the Hutchinson peg-top teeth with notches at the cutting-edges is generally accepted as an evidence of hereditary syphilis.

I have of course not attempted to describe all the manifestations of syphilis in its various stages, but have confined myself to the disease as it presents itself at and in the buccal cavity in the primary, secondary and tertiary stages of the disease, together with the buccal phenomena of hereditary disease. The most important syphilitic lesion for which dental practitioners should watch is the mucous patches of the buccal cavity, which present not infrequently in the mouths of men as well as women patients, as the secondary and even tertiary manifestations of the disease.

I stated before that the mucous patch has an exudation which contaminates the fluids of the mouth, rendering the buccal secretions a source of syphilitic contagion; but it is to be remembered that in a syphilitic patient without existing mucous patches in the mouth the saliva is innocuous, so that in the absence of mucous patches in a given mouth, even though the patient manifest other evidences of syphilis, you can perform dental operations with perfect safety. With existing mucous patches in a given mouth the
saliva of the same is capable of inoculating any excoriated surface of skin or membrane to which it may be applied, either directly from the mouth of the syphilitic, as by a kiss, or it may be passed from the syphilitic patient to another person by the media of spoons, cups, glasses, pencils, penholders, pipes, cigars, money (either coin or paper), napkins, etc., and lastly, instruments, surgical or dental; but remember, that if communicated by any of these means from a mucous patch, the syphilitic lesion manifested by the patient, to whom the disease has been transmitted, is always a primary syphilitic ulcer or chancre on the person inoculated.

Persons cannot be too careful as regards the promiscuous use of cups hanging to water-coolers in public places and conveyances.

I remember seeing a lady in one of our Fifth Avenue banks go to a desk to write out a check; her glove hampered her and she put the penholder in her mouth while she took off her glove. I could not stand it, and I said to her that it was a very dangerous thing to put a public penholder in one's mouth. She started at my remark as though she were insulted thereby, but I said to her, "I say this as a physician, that a penholder of this kind can convey a very serious disease to you," whereupon her expression changed and she said, taking the penholder out of her mouth, rather startled, "Oh, thank you! thank you!"

Toys used by children have also been a source of disease, as they are so liable to put them in their mouths. Remember that these toys have been handled in shops by innumerable persons.

Of surgical instruments, it is related that a Eustachian catheter, in the hands of a prominent aurist, was the means of communicating syphilis to thirty or forty people. The ordinary catheter has also been a means of contagion.

In respect to dental instruments, I have yet to hear or read of a well-authenticated case of mediate contagion of syphilis caused by them. I would ask any gentleman present to state in the discussion if he has ever heard or read of such a case.

As dental surgeons you may be called upon by the general surgeon to put the mouth of a syphilitic patient in a healthy condition, the patient at the time having mucous patches—namely, to extract roots of teeth, to file away any sharp, irritating projections, and to clean the teeth, as such conditions of the teeth aggravate very materially the comfort of the patient by irritating mucous patches that may be present. In such cases you must carefully examine your own fingers and see that they are free from any points of excoriation or abrasion; and all instruments used by you should be thoroughly disinfected after use. I hold that the dental surgeon should be as careful to disinfect his instruments after use in any operation—whether upon a syphilitic or non-syphilitic—as the general surgeon is. I do not think, however, that this is the practice among dental surgeons, as it should be.—Dental Cosmos, June, 1898.
NEW YORK LETTER.

To the Editor of the Digest, New York, August 17, 1898.

Mr. Editor: A New York summer letter can hardly be expected to be wholly dental, so we are led to make it illustrative and incidental.

Go where we may we strike a path over which some dentist has trodden "looking down in the mouth." During an outing this month on Tarrytown Heights we visited Greystone Castle, built by an ambitious New York merchant and costing some $250,000. On a fatal day the bubble of wealth burst and the owner took his life. The structure came into other hands and again ended a financial failure. The third time a dentist saw a fanciful ideal in the property and it became his. Originally it was copied after the famous Windsor Castle. It has a laid-out park of some thirty acres, and is situated on one of the most commanding sites on the Hudson River, and the view can hardly be equalled.

Now what dentist could have made such a venture? Only one
who has been nearly as famous in his way as the castle, and that was Dr. Maynard, formerly of Washington, D. C. No one could have met the late Doctor on the street without being forcibly struck with his appearance, and at once wondering who he could be. He had some of the characteristics of Atkinson, but was more courtly, and not of a spontaneous nature, and had more added to his circumstances to increase his self-esteem. His inventions brought him distinction and wealth, and these do not commonly tend to humility. His ability as a dentist was preeminent, and his inventions of the

Maynard Primer and Rifle brought him large revenues from the government.

While living in Washington he began to carry out his fancies for building, and we were prepared in visiting Greystone Castle to understand why Dr. Maynard could be captivated by such an establishment.

We are indebted for the photograph of his illustrious father to Mr. George Maynard, a New York artist of note and a member of the popular Century Club.
If we are rightly informed, the veteran of 87 years, Dr. John B. Rich, is the successor to Dr. Maynard. Some day it will be our pleasure to tell the readers of the Digest something about the man who has been in active practice so long. He looked good for another decade when last we saw him.

There was an important fact omitted from our recent letter, namely, that thiol is a very useful new remedy to be used in connection with vasogen, another new agent, being far more penetrating than vaseline. These two in combination have a decided value, not only in acute inflammation of soft tissue but even after it has subsided, being a powerful emollient.

We are tempted to criticise the editor of Items of Interest for his recent editorial concerning Christian Science, for we feel that he knows not whereof he speaks. We are not at all a believer in the Christian Science doctrine, but we do believe in the life of Christ made real in the natural man, and that this life covers all the needs of our spirit, soul and body. The editor of Items ignores this; he is a theosophist.

"What Is It" that is troubling Dr. Flagg? Nothing has ever lowered the tone of the Cosmos so much as that recent bit of low wit. It was too thin to deceive anyone.

A clipping from a Toronto (Canada) paper:

Dr. R. O. Moffat, a young doctor, died in a dentist's chair to-day (July 19). He took chloroform to have six molars extracted, and died while the operation was in progress. All the teeth had not been extracted when he began to recover from the effects of the chloroform, so more was given him, and he died of weakness of the heart.

What is the necessity of having six molars extracted anyway? Some day it will be malpractice to remove six molars unless they are extraordinarily decayed. If there could be legislation in this direction, we think it would denote progress more than much of what we have had.

The dentists are going fishing. We see that Dr. M. L. Rhein and wife, and Dr. R. Ottolengui and wife are at Spring Lake, Me., and our genial friend, Gaylord, and Smyth of Washington, D. C., Fillebrown, and some others are at Rangeley Lake. If more dentists would go they would be better fitted for work. Fish are said to furnish brain food, to say nothing of the rest and recreation of procuring them. We speak with added emphasis because of a yearly
visitation to Rangeley Lake from 1862 until 1879, spending the entire month of September, and for the first few years camping out. Had it not been for these outings we could hardly have lived until this day.

Trout are frequently caught in the waters of which we speak weighing close to five pounds, and this lake was stocked four years ago with the noted Land Lock salmon, which attain a weight up to fifteen pounds.

We see by a Maine paper that many prominent New England dentists, especially from Boston, have taken refuge in the Maine woods to secure hunting and fishing.

Our present sensation is the charge against Dr. Kennedy, of this city, for the murder of a young woman in one of our hotels. He is a graduate of a reputable dental school, and his father was a well-known practitioner here for many years. The Doctor's friends will not believe that he can be guilty, and while the evidence at present is against him, it is hoped that he may be cleared from the charge.

Dr. Leroy and wife of New York recently took the steamer from New York to Portland, and then rode their wheels back through the shore towns to New York. This is a sensible proceeding and enables busy dentists to become better acquainted with their wives, which some of us fail to do.

The whole of Maine is reported to be overrun with deer, and they are so tame that they not only eat the crops but frequently pasture with the sheep and will receive food from a person's hand. The farmers are complaining that their crops and gardens are being ruined.

We met Dr. St. George Elliot on his return from the recent New Jersey meeting at Asbury Park, and speaking of the new forms of mat gold he said, that they could be packed more densely with less force because they had a greater specific gravity. We think his opinion valuable.

For some reason American dentists have not fared well during the siege of Santiago, as we see by the war news that the instruments of Dr. Juan Ferrer were carried outside his office and smashed with a sledge hammer.

We copy the following from the daily press:

Dr. Gardner Q. Colton died at Geneva, Switzerland, August 8, 1898, in the
New the eighty-fourth year of his age. He was the discoverer of anesthesia. Twenty years ago he estimated that in New York City alone he pulled 300,000 teeth. He was born in Georgia, Vt., February 7, 1814. He came to New York and studied medicine, and while lecturing on philosophical subjects and chemical phenomena he used nitrous oxid gas, which he called "laughing gas." One day he stumbled into the discovery of its anesthetic effects.

May it be hoped that we shall never again hear the claim that Dr. Colton was the discoverer of anesthesia, for nothing could be more false. If, as he boasted twenty years ago, he had removed over 300,000 teeth, what has he not done since, and how many of this vast number were illegitimately removed? We fear that nitrous oxid is a great blessing turned into a curse.

Dr. Phelps of Columbus, Ga., gave us a pleasant call this month. He is one of the most successful practitioners in the state and a fine operator.

Cordially,

New York.

PHILADELPHIA LETTER.

Dear Digest: PHILADELPHIA, August 15, 1898.

Two very interesting editorials are to be found in the August International; the universally honored editor, Professor James Truman, handles both subjects with his wonted skill. The first is a reply to Dr. Black, concerning his well-known views upon the subject of filling materials and the relative density of teeth. We agree with Dr. Truman that Dr. Black's deductions from his published experiments have aroused antagonism everywhere, as they are in direct opposition to the clinical experience in dentistry for many years, and men in the east at least are slow to accept these statements as final. It is not to be supposed the dental profession will be converted to Dr. Black's views so long as he confines his work to the laboratory, and holds as practically valueless all clinical observations.

The second editorial refers to the New Jersey State Board of Dental Examiners, and particularly to its secretary, Dr. G. Carleton Brown. We will not comment upon this subject, thinking it best to leave it as Dr. Truman has in the close of his remarks. However, everyone should read the editorial carefully and thoughtfully, and then read Professor Peirce's paper upon the same subject in the April issue of the International.

We are feeling very lonesome here in Quakerdom during the hot weather. Dr. Darby is in New York State, Dr. Kirk is reported in New England, Dr. Litch and wife are climbing the mountains,
Dr. Jack is in the country, Dr. Warren is at the seashore, Dr. Gaskill is in Europe, Drs. Truman and Peirce are in the west, bound for the Omaha Exposition and the meeting of the National Dental Association, where we hope to meet them. And so it goes, as we pass up one street and down another we find the offices of our best-known dentists closed. This is a good omen in more senses than one; it shows that many of our practitioners can afford to go away during the summer months, and that they appreciate the value of rest and recreation.

It is no doubt a fact that many men, both dental and medical, have lost their strength and health from too close application to work. A marked example of this is shown in the recent death of our fellow townsman, Dr. Wm. Pepper, a popular teacher, and one of the best-known and most successful physicians in America. Like too many other ambitious men, he overestimated his nervous force until the strain sapped his strength, and he found he was not equal to the demands made upon him; but it was too late, for he died two weeks ago in the midday of life.

To turn to a lighter matter, we referred some months ago to the fact that here in Philadelphia we never take Dr. Flagg nor anything he has to offer very seriously. He is always inclined to be humorous, and was long ago accepted as a wit. The editor of the Digest in the last number takes the editor of the Cosmos to task for publishing Dr. Flagg's "What Is It" article. Let us explain for the Cosmos. Dr. Kirk was no doubt in a hurry to get away on his vacation, and so left much of his work to the manager of the Cosmos, Mr. Frank Hise, who put in Dr. Flagg's paper as a filler. Hise is a good fellow and an able business man, but it is not to be expected that he will in all cases appreciate the scientific value of papers offered for publication. We therefore beg Dr. Crouse not to embarrass Dr. Kirk further with the matter. However, Dr. Flagg is not alone in his Christian science theories; Dr. Ottolengui comes out as a warm advocate—read the five-and-a-half page editorial in the August Items of Interest.

Cordially, The Spectator.

Convulsions.—Professor Graham does not find children in convulsions caused by teething.

Application for Warts.—Glacial acetic acid, 10; precipitated sulphur, 20; glycerin, 50. To be applied daily.
NEW BLOOD.

"Something will have to be done at this meeting to advance the interest in section work. We note with regret that the last three meetings have failed to introduce many new men or workers into this sort of exercise. What is wanted is some new blood and enthusiasm. This is especially true in the executive committee where old, dilatory methods are still in vogue. The meeting this year should have been boomed from the start instead of covering it with the numerous wet blankets that have nearly smothered it."—Editorial in August Dental Review.

We quite agree that the young men in the profession should come forward to give impetus to the society work and that the executive committee might be improved. The "dilatory methods," however, we do not quite understand, and the "smothering with wet blankets" needs some explanation.

The only damper we have any knowledge of is the report quite generally circulated that there was insufficient hotel accommodation at Omaha. No one was more responsible for this misrepresentation than the editor of the Dental Review. We visited him in his office, and he urged that the hotels were quite inadequate, and that a change should be made, and his influence more than that of any other person induced us to submit the question of change to the executive committee. The least he could do now would be to keep silent or else admit that he was in error. Instead of this, however, he endeavors to cover up his own part in the matter by criticising others.

We believe that all necessary arrangements for the National Dental Association meeting have been made, and we are glad to state that the railroads have given an especially low rate and that the hotels afford ample accommodations at reasonable rates. Everything points to a successful and profitable meeting, and we would urge upon the delegates not to be dismayed by the calamity howlers.
AS A PROFESSION, WHAT WILL BE OUR FUTURE RELATIONS WITH OTHER COUNTRIES?

We are in receipt of a communication from Dr. Wm. T. Harris, the United States Commissioner of Education at Washington, D. C., asking for information in regard to the standard of qualifications required of practitioners of dentistry in this country. As explained to us, he desires the facts in order to answer intelligently communications received from the secretaries of several European countries, who are making an effort on behalf of American dentists who have gone to Europe to practice their profession, and who are debarred from so doing because of the laws now in force over there.

The only ground on which such laws can justly be enforced is, that American dentists are not sufficiently qualified to treat patients properly. The laws regulating the qualifications of dental practitioners are supposed to be for the protection of the community, and the vital question is, are the dentists sufficiently qualified to serve the community, regardless of whether it is in America or in Europe? Nevertheless, the object of such laws is too often lost sight of, and legislation is secured to prohibit competition, thus greatly wronging the community. If we are correctly informed, the legislation in European countries is for the purpose of prohibiting American dentists from practicing there.

It is well known throughout Europe that American dentists are superior in skill to European practitioners, and it will not be denied that the most successful men over there are those who received their first training in America. Why then are they to be excluded and the people resident in and traveling through Europe be deprived of their superior skill?

There is no doubt that many incompetent individuals have gone from this country to practice in Europe, and have imposed upon the community under the name of American dentists, and succeeded from the very fact that competent men have gone over there and demonstrated the superiority of American dentistry. Many of these imposters have gone there possessed of diplomas from bogus institutions calling themselves colleges, which phase of abuse justifies legal enactment. On the other hand, it is a great injustice to European peoples that the educated and skillful dentists from this country are debarred from practice.
Owing to the result of our late war with Spain, this is a much more important question now than ever before, because our intercourse with Europe will be much greater from now on, owing to the fact that we have acquired new territory, and since we are nearer our relations will be more intimate with foreign countries. It therefore seems the proper time for our educators to take the matter in hand and first adopt a course of study for all schools which will be sufficient, and second, enact national laws so that any American dentist who has proved himself competent in this country can take up the practice of his profession in Europe.

PRELIMINARY AND GRADUATION REQUIREMENTS--THE LOGICAL STANDARD.

We publish in this issue an article by Dr. M. F. Ault, which calls for more than passing notice. First, because the writer gives quite fully the arguments used at the last session of the National Association of Dental Faculties, when that body rescinded the action taken the year before which contemplated a higher standard for admission; and second, because he proposes a plan which he thinks will remedy all existing defects.

The first position taken by the writer is not logical; he says: "In this country each one is entitled to the pursuit of happiness, and the rules and regulations of an organization are not in harmony with the principles of life in the United States if they defeat the laudable aspirations of a young man or render void the law of natural selection." This principle, however, does not authorize an individual to pursue any occupation for which he is not fitted, and especially in so important a mission as the care of the human teeth. The Supreme Court of Illinois prescribes the qualifications for students of law to be equal to a high school education, and surely a profession such as dentistry is more responsible and requires much more ability than law.

In medicine as in dentistry the preliminary requirements are far too lax. Almost any young man can to-day enter a dental college if he has money enough to pay the necessary fees. His education is a secondary consideration, and his moral character is not scrutinized too closely. The exceptions to these two propositions are exceedingly rare, and where an applicant is rejected by one school he is almost invariably admitted to some other in the Association.
If the school-boy of the country school were not allowed to secure additional learning elsewhere, there might be some ground for the claim of injustice to him. The fact, however, that there are excellent preparatory schools all over this country gives no excuse for the candidate not getting a good foundation, if he has the necessary ambition and ability to make a good dentist. If he has not determination to do this, it is much better that he be kept out of the ranks of the dental profession. We already have too many of that shiftless class who give up too easily, and this is just what ails the dental profession. It is too largely composed of those who have come into it because it seemed an easy means of livelihood. They never got beyond the district school and haven't enough ambition to succeed at any occupation which requires skill and persistency. They do not care to be any better educated or uplifted, and we do not need any more such at present.

What we want for the incoming dentist is the boy who is determined to have a good education, even if he must go away from home and endure some hardships to acquire it. If that kind of a student enters a dental college he will desire something more than a mere diploma, and will work to get all the advantages that the school affords. When entering upon the practice of dentistry he will continue his studies and will have the persistency so much needed to make a success, consequently he will be a benefit to the community and an honor to his profession.

The next proposition the writer makes, that "a high school diploma will not make a better student or more efficient dentist than an honest rank won in the common English branches," is a greater error than the first one. The object of education is to discipline the mind so that the student can reason logically and think consecutively along any line of work. The district school gives merely a simple groundwork for the beginning of study, and with the limited education therein afforded the best student would not have sufficient training to understand any of the technical terms necessarily incidental to the study of dentistry. While the course in the high school gives good advantages and discipline, and in many ways teaches the pupil how to study, yet it is little enough education preliminary to the practice of a profession.

The writer further says "The plan of high school requirements will not only debar many desirable students, but if honestly enforced
will prove disastrous not alone to new schools, but even those with age and large attendance will be ruined." This statement comes from the dean of a dental college, and we are disposed to believe that this one sentence sounds the key-note which rang through the Association, and probably accounts for the retrogression of last year. What a calamity was averted from the colleges, that is, if they are run to make money. But what about the welfare of the dental profession? Well may the Faculties' Association be alarmed at the attitude of the National Examiners, who are bound to take a controlling position, unless the Faculties regain the ground lost last year.

It is estimated by reliable thinking men, some of them deans of colleges, that fully one-half of the graduates never make the practice of dentistry their life occupation, although they have spent three years' time and a large amount of money in college, before learning that they are not successfully grounded or do not possess sufficient ability to practice a profession which, instead of being easy and lucrative, requires a great amount of varied ability and is not profitable in proportion to the outlay necessary. Why are these classes so large? Because, as the writer of the article suggests, if the high standard were enforced it would not be a profitable business to run dental colleges.

The plan of examination offered by the writer will, we think, meet with general approval, and while certain modifications and changes will be necessary, the general outline is excellent, and if properly carried out will work great reforms and raise the standard of dentistry in this country far beyond anyone's expectations. The remedy must be applied, however, before the student enters college, and not when he is ready to graduate.

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FIRST DISTRICT DENTAL SOCIETY OF ILLINOIS.

The seventeenth annual meeting of the First District Dental Society will be held at Monmouth, Ill., Sept. 27-28, 1898. An excellent program has been prepared, and a cordial invitation is extended to the profession.

O. M. Daymude, Ex. Com.

BI-STATE DENTAL MEETING.

The bi-state dental meeting of the Southwestern Michigan and Northern Indiana Dental Societies will be held at Elkhart, Ind., Sept. 21-22, 1898. The profession of these and neighboring states are cordially invited to be present.

F. H. Essig, Sec'y Southwestern Michigan Society.
LATEST DENTAL PATENTS.

607,295. Dental instrument, Wm. O. Talbot, Biloxi, Miss.
608,150. Dental plugger, Alden Bush, Elyria, Ohio.
608,984. Dental plugger, Winfield E. Hanson, assignor of one-half to O. M. Shaw, Boston, Mass.

(List furnished by John A. Saul, patent attorney, Washington, D. C.)

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

Notice is hereby given that the next annual meeting of the National Association of Dental Examiners will be held in Washington, D. C., commencing 10 a. m. Thursday, Oct. 18, and continuing in session the 14th and 15th. The headquarters will be at “The Hamilton,” 14th and K streets, opposite Franklin Park. The rates will be $2.00 and $2.50 per day. Members can communicate with Dr. H. B. Noble for additional information regarding accommodations.

The poll-vote closed Aug. 9, with 72 votes for Washington, 20 for Louisville, 17 for Chicago, and 12 for Omaha, balance scattering.

CHARLES A. MEEKER, D.D.S., Sec'y, 29 Fulton Street, Newark, N. J.

PROCEEDINGS OF MISSOURI STATE DENTAL ASSOCIATION.

The thirty-fourth annual meeting of the Missouri State Dental Association was held in the Planters' Hotel, St. Louis, July 5-8, 1898. About 150 dentists were in attendance and the sessions were all of unusual interest and profit. The roll was increased by forty new members during the meeting.

The meeting was opened on Tuesday morning, July 5th, promptly at ten o'clock, by the president, Dr. Frank Slater, Rich Hill.

After roll-call the regular order of business was taken up, as follows: Minutes of previous meeting read and approved.

Committee on Necrology reported that resolutions of condolence had been sent to Dr. Thompson, Topeka, Kan., to Dr. W. E. Tucker, Springfield, and to Dr. M. D. Wilson, Lexington. On motion, said resolutions were adopted and made a part of the minutes of the association. A letter was read from Dr. Thompson, warmly expressing his appreciation of the sympathy of his fellow-members. On motion, the letter was received and recorded. Dr. B. L. Thorpe, Billings, called attention to the death of the father of Dr. S. C. A. Rubey, and in accordance with the custom of the association a committee was appointed to draft resolutions of sympathy.

First Day—Afternoon Session. Meeting was called to order promptly at two o'clock. Roll-call and reading of minutes was followed by miscellaneous business. The matter of publication of the papers and discussions of the meeting, discussed at considerable length in the morning session, was again taken up. On motion of Dr. A. J. Prosser, St. Louis, the association endorsed the action of the executive committee in placing this matter in the hands of THE DENTAL DIGEST, published in Chicago by Dr. J. N. Crouse.

First vice-president, Dr. F. M. Fulkerson, Sedalia, was then called to the chair, and the president delivered his annual address. [See p. 444.]

The president resumed the chair, and called on Dr. J. C. Goodrich, Wentzville, one of the oldest members of the association, for his “farewell address.” He replied that the only address he could make would be one of farewell, and it was accordingly programmed.
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First Day—Evening Session. Meeting called to order at 8:15. After roll-call the minutes of the previous session were read and approved. The reading of essays and discussions was then taken up. A paper on "Orthodontia," by Dr. Edward H. Angle, St. Louis, was the next on the program, but Dr. Angle not being present it was passed.

Dr. J. D. Patterson, of Kansas City, was called on and read an exceedingly interesting paper on "The Ideal Lower Denture in Difficult Cases." [See p. 441.]

Dr. J. H. Kennerly asked that Dr. J. G. Harper, St. Louis, be permitted to read his paper, which had been unfortunately overlooked on the program. Dr. Harper's paper was an able and carefully prepared essay on "Tobacco, and Its Effect on the Oral Cavity." [See p. 447.]

Miscellaneous business was again taken up, and the matter of delegates for the National Association Meeting discussed. At the request of the president, Dr. J. D. Patterson explained that delegates who were permanent members of the National Association did not require credentials, but delegates going from the various state associations must be selected by regular ballot at a regular meeting of the associations, and the selection was supposed to be based on some especially creditable work. Each delegate must carry a certificate signed by the president and secretary of his association. Each state association is entitled to one delegate for every ten members. On motion the matter was deferred until a later session of the meeting.

CLINICS AT MISSOURI DENTAL COLLEGE, SECOND DAY, MORNING SESSION.

Dr. Wm. Conrad, Supervisor.

Taking Impressions of Undeveloped Root-Canals. Root-Filling with Guttapercha and Wood Points. Dr. B. Q. Stevens, Hannibal: The wood points are made from orange-wood sticks found in dental supply houses. When a sufficiently delicate point has been secured, take a canal plugger and paint the wood point with chloro-percha about one-fourth the length it is to go into the canal. Then approximate the length of the tooth and the canal to be filled and paint a spot on the wood point as a guide when filling the tooth. Then take sheet gutta-percha about the thickness of ordinary tissue-paper, cut into small squares and wrap one or two around the wood broach by warming over a lamp. Do not think filling is at end of root when the patient flinches; draw back a little to let the air out, and then force it up to your measure. Moisten the canal before measuring with carbolic acid and glycerin. If the root is flat and tortuous in any way, pump in chloro-percha before putting in wood and gutta-percha points. Warm the points as carefully as a gutta-percha filling.

A Case of Abrasion from Tobacco Chewing. A full lower denture on left side, but lacking molars on the right; superior right lateral and central missing—have been out for years. In masticating the abrasion has worn down until the lower centrals and laterals have reached gums above. To correct this condition, construct a bridge from the right cuspid to the right central with open-faced crowns made of iridium gold. This regulates the distance the bite is to be raised. Having the distance, put thin iridium bands around the teeth to be raised without destroying the enamel except slightly between the teeth. Use 32 or 33 gauge plate and extend the bands only low enough to secure a good grip on the tooth. Drop the iridium caps in these bands and raise the bite according to the front bridge. Put two of the same kind on the right side, raise the two cuspids with platinized gold; this evens up the lower denture. In the superior mouth, fill out the lateral with open-faced crown and contour the cuspid with platinized gold filling.

The Lowry System of Crown and Bridge-work. Dr. H. S. Lowry, Kansas City, exhibited this system, which consists of a series of dies made of metal that is indestructible, and also of a stamper into which the dies fit, for contouring gold crown and for checking the cap. It is provided with a series of
complement dies, better known as trial caps, divided into sections and corresponding exactly with rows 3, 4, 5, 6 and 7. Also a crown soldering plier, used for soldering gold span crowns or "dummies" for bridge-work, for holding the band while soldering in the ring, for holding porcelain facing in coaptation with bicuspid gold crown during process of soldering. There are two series of band and contouring dies, each of which is provided with a counter or complement die. The main features of the system are durability, convenience in manipulation, and the perfect contour work it produces.

Exhibit Cranium with Two Impacted Teeth. Also Models. Dr. F. H. Achelpohl, St. Charles: 1. There was nothing especially new in the case, but it was brought forward for the benefit of those who have not the opportunity of seeing such things at all times. A case of this kind would suggest the possible cause of many cases of severe neuralgia which are difficult to diagnose. 2. Plaster-paris cast, an enlarged reproduction of the lower half of a maxilla, which has been of great value in educating students in the anatomy of the teeth and their nerve and blood supply. This is far more easily demonstrated by such means than by any amount of verbal explanation of the diseases of the teeth and their roots.

Taking Impressions and Making Models for the Correction of Irregularities. Dr. C. D. Lukens, St. Louis: Fill the forward part on the side of the tray with plaster without putting any plaster over the arch of the tray. Place the frame in position, manipulating the lips upward instead of down, so as to insure a good high impression showing all the inclines of the mouth. Then remove the tray, leaving the plaster in the mouth, and cut a deep notch in the plaster opposite the cuspid teeth. With a knife-blade pry away the front piece of plaster, breaking down the lateral half with the fingers, laying the pieces on a sheet of blotting paper to dry and leaving them there from six to ten hours. It is very important to let them dry, because in putting the pieces together, if the plaster is wet, the sharp edges cannot be kept. Then paint them with an 18 per cent solution of shellac varnish; after half an hour coat again with a 20 per cent solution of sandarac varnish, and in about thirty minutes more with a soft camel’s-hair brush paint the plaster into the impression. Then turn it upside down on a glass slab to harden. After ten hours break away with a knife your impression from the model. Great care should be taken not to use a thicker solution of varnish than that given, or else you will obliterate all the fine lines of your model.

Modeling Compound as a Counter Die. Dr. John G. Harper. St. Louis: The modeling compound is heated up the same as for taking an impression, and the die is moistened with water to keep the compound from sticking to it. The die is then pressed into the modeling compound, pulled off and removed, and you have your counter die. If in swaging up the plate there are any points not driven down close enough to the die, laying a little lead and striking with a hammer will drive it into place. The advantage of using the modeling compound is that it is very quickly prepared and there is no danger of getting any lead on the plate nor of the lead and die fusing together, as is the case when you make the counter die of lead.

Refining Gold. Dr. Harry M. Hill, St. Louis, demonstrated the refining of gold dental scraps wet with nitromuriatic acid; also the inquartation process used in the United States Refining Mint. Refining gold by putting one part of the gold scraps with three parts of silver, then immersing it in a bath of sulphuric acid C. P., and applying heat to bring it to the boiling point, which dissolves the silver and baser metals, leaving the gold as a residue of brown powder in the bottom. This neutralizes the acid and makes the precipitation.

Combination Filling of Non-Cohesive and Cohesive Gold. Dr. J. G. Chisholm, St. Louis, demonstrated the use of non-cohesive gold in the three-wall cavities, finishing with a cohesive veneer mechanically united to the non-
cohesive. Claims that in all gold fillings a non-cohesive margin is superior to others, and by its use time can be saved. The strong resistance of the cohesive gold is combined with the soft yielding of the non-cohesive. The latter is used in ribbon form.

**Immediate Exirpation of Pulp.** Dr. P. H. Eisloeffel, St. Louis, demonstrated immediate extirpation of pulp without pain to the patient. Where pulp is exposed it is painful to remove without the application of cocain, but this method is absolutely painless. Use a piece of orange-wood and shape the point to the size of the root-canal, then with a single tap of a mallet drive the point to the end of canal, which expels the pulp, and it will come out with the wood point. If it does not, a barbed broach wrapped with a little cotton will remove it without trouble.

Dr. Eisloeffel also stated a peculiar case. The patient, a man, had a piece of steel thrown at his head, lodging there and remaining for six years. At the time of the accident a surgeon tried to remove the steel, but being unable to find it had saved the patient's life by sewing up an artery. The man suffered great pain and inconvenience when masticating and thought that a tooth was giving him trouble The teeth were examined and all found to be in good condition. He then pointed to his throat and said there was where the trouble was. His throat was so swollen that he could not swallow, and he made the remark that he thought his jaw-bone was broken. Dr. Eisloeffel, thinking it was a piece of bone, asked if he should remove it, or if he would prefer to go to a surgeon. He said, "Go ahead and remove it," which was done by making an incision and taking it out with forceps. On account of its peculiar shape, very similar to a Brazil nut, the forceps would not hold it well, but a second trial successfully brought it out, and the weight was two ounces. When the patient found that the piece of steel had been removed he jumped out of the chair for joy. He said that a surgeon had been paid a large fee for removing it. Two weeks afterwards he was seen and had improved in every way, seeming to be altogether well.

**Bleaching Badly Discolored Teeth.** Dr. F. F. Fletcher, St. Louis, used 25 per cent ethereal solution of pyrozone, having first cleansed the cavity of all debris and removed discolored dentin by excavators as for a filling. The pyrozone is applied on a pellet of cotton and desiccated, the hot air then applied, and in thirty minutes the result is perfect.

Second Day—Afternoon Session. The minutes of Tuesday evening's session were read and approved. The secretary then read a letter from Mr. W. B. Swan, St. Louis, inviting the association to examine some rare specimens and relics collected under his supervision and on exhibition at the office of the Missouri Pacific Railway. On motion of Dr. J. R. Megraw a vote of thanks was extended to Mr. Swan for his courteous invitation and a small party organized to visit the exhibit.

The president then called on Dr. R. H. Mace, St. Louis, who presented to the association a movement for organizing a dental corps in the United States Army and Navy. Dr. Mace spoke as follows:

"The idea occurred to me a few months ago that it would be a very valuable thing to have an efficient dental corps in the United States Army and I accordingly addressed the following letter to the Surgeon General at Washington:

St. Louis, Mo., May 23, 1898.

**Surgeon-General Sternberg, U. S. Army, Washington, D. C.**

DEAR SIR:—Being a dentist of twenty-five years' experience and realizing how isolated will be the condition of the army in the Philippine and other islands the necessity has occurred to me of organizing and equipping a sufficient corps of competent dentists to accompany the troops. If this suggestion meets with your approval and the authority can be granted I would consider it an honor to serve my country in being allowed the privilege of:
organizing such a corps. I have served three years in the U. S. Volunteer Army.

Very respectfully, R. H. MACE, D.D.S.

On May 27th I received a reply to this communication, as follows:

Subject—Dentists.

In reply to No. 3838—229.

War Department, Surgeon-General's Office.

R. H. MACE, D.D.S.

SIR:—In reply to your letter of the 23d inst., suggesting the necessity of organizing and equipping a corps of competent dentists to accompany the U. S. troops, I have to inform you that there is no authority of law for the employment of dental surgeons in the United States Army.

Very respectfully, STERNBERG,
Surgeon-General U. S. Army.

Immediately upon receipt of this letter I addressed a communication to Congressman Joy:

St. Louis, Mo., June 1, 1898.

Dear Sir,—Enclosed you will please find copy of a letter sent to Surgeon-General Sternberg and his reply, which will give you my idea of forming a dental corps to accompany the troops to the islands.

Dr. C. H. Hughes, with whom you are no doubt acquainted, has written Surgeon-General Sternberg a personal letter commending the innovation, which letter I suppose is on file in the Surgeon-General's office.

To establish this service, which is recognized by many here to be one that will add much to the health and service of our soldiers and sailors, I realize that a bill authorizing the establishment of a dental corps must be passed by Congress. Therefore I appeal to you, hoping that you will be sufficiently interested to take the necessary steps to accomplish this purpose.

Respectfully, R. H. MACE, D.D.S.

A few days after I received notice of the introduction of a bill for the establishing of a branch of the medical department, to be known as "The Dental Corps." The following is a copy of the bill:

Congressional Record. p. 5938, May 27, 1898 Book.

Bill presented by Mr. Otey (H. R.) to establish a branch of the Medical Department to be known as the Dental Corps, providing for the appointment of a Brigade Dentist for each Brigade, with the rank of Major, and one for each Regiment with the rank of Captain.

Referred to Committee on Military Affairs.

It seemed to me that it would be a proper thing to bring this matter before the association. I think it would probably give this bill greater strength to have the association indorse it, and if we do take this action the Missouri Association will of course be the first one to indorse the bill. It might be well to appoint a committee to draft resolutions to this effect if it is the pleasure of the meeting.

On motion of Dr. G. A. Bowman, St. Louis, a committee was appointed to draft resolutions indorsing the action of Dr. Mace.

The essays and discussions were then taken up, and Dr. J. R. Megraw, Fayette, presented his paper on "The Individual and the Society." [See p. 459.]

At the suggestion of Dr. J. H. Kennerly the courtesies of the floor were extended to Dr. J. N. Crouse, Chicago, who addressed the meeting concerning the past, present, and future work of the Dental Protective Association.

On motion of Dr. G. A. Bowman, St. Louis, the association took action indorsing the work of Dr. Crouse, and appointed a canvassing committee.

The next paper on the program was by Dr. R. L. Ready, Liberty, on the "Treatment of Pyorrhea Alveolaris." Dr. Ready not being present, the paper was read by the secretary, Dr. H. H. Sullivan. [See p. 458.]

Second Day—Evening Session. After the transaction of considerable
miscellaneous business, Dr. F. F. Fletcher, St. Louis, read his second paper on "The Ideal Bridge of To-Day and the Next Step to Improve It." [See p. 455.]

The next paper taken up was on "The Young Man in Dentistry," by Dr. O. W. Bedell, St. Louis. [See p. 527.]

CLINICS AT MARION-SIMS DENTAL COLLEGE, THIRD DAY, MORNING SESSION:

DR. WM. CONRAD, ST. LOUIS, SUPERVISOR.

Approximal Filling, Tin and Gold. Dr. M. C. Marshall, St. Louis, demonstrated the use of tin and gold in combination for filling deep-seated cervical cavities. The carrying qualities of tin combined with gold are so peculiar that they cannot be explained in words, but after educating the sense of touch anyone can readily see what is meant by the carrying quality. Again, tin acts upon the tooth structure in a therapeutic manner, and is also a poorer conductor of thermal changes than any other metal used in filling teeth. The tin we now get from the manufacturer is chemically pure, eliminating the disintegration heretofore claimed to take place. We secure the carrying properties of tin combined with gold by placing one sheet of No. 4 tin between two sheets of No. 4 gold, cutting it into strips and rolling. I think by the above operation a better apposition is secured to the vulnerable parts of these deep seated cavities. The only objection is the bronze-like appearance of the filling that follows.

Dr. Burton L. Thorpe, Billings, demonstrated the treatment of putrid pulps with a preparation of two parts sodium and one of potassium, as manufactured by Dr. Schreier, Germany. It is a white, silvery-looking material, something like mercury in appearance. The bottle is sealed up with wax and has to be punctured with a broach. Use an old barbed pulp canal cleaner in this treatment, throwing away after using, as it becomes brittle and is liable to be broken off in the tooth. After applying the rubber-dam and gaining free access to the cavity, dry it with cotton, and then insert a minute particle of this preparation on the broach, being careful not to use too much, as the material has a strong affinity for oxygen and forms combustion with the putrid material of the pulp. Care should be used in not overtreating with this preparation. After treatment put in a dressing of oil of eucalyptus, seal and leave for a day or two before inserting the permanent filling. This material burns the putrid matter and leaves it in a soapy condition.

Dr. J. H. Kennerly, St. Louis, demonstrated a quick method of making temporary crowns by using an ordinary rubber tooth, to which is soldered a wire, the crown being contoured and retained by means of gutta percha.

Dr. P. H. Morrison, St. Louis, demonstrated the thorough cleansing of teeth. The salivary calculus is frequently not all removed and sanguinary calculus is often entirely overlooked. Proper instruction should be given to the patient about the use of tooth-brush and care of the mouth.

Third Day—Afternoon Session. Minutes of previous session were read and approved. The first paper was by Dr. A. H. Thompson, Topeka, Kan., on "Antiseptics in Dentistry." [See p. 529.]

Dr. O. L. Kerr, Independence, Mo., then read his paper on the "Preparation of Compound Cavities in Molars and Bicuspids." The paper was illustrated by a series of pencil drawings from which the accompanying cuts are made. [See p. 521.]

The next essay on the program was by Dr. B. J. Cigrand, Chicago, on "The Full Porcelain Crown Without a Peer." Dr. Cigrand was not present but had forwarded his paper, and same was read by Dr. J. H. Kennerly. The subject was illustrated by diagrams, which were distributed among the members before the reading.

Third Day—Evening Session, was devoted entirely to the transaction of
business. Minutes of previous session were read and approved. The president then called for the report of supervisor of clinics, Dr. Wm. Conrad. Same was submitted, and on motion accepted. Election of officers followed.

Fourth Day—Morning Session. The meeting was called to order, and on motion the courtesies of the floor were extended to Dr. H. W. Loeb, St. Louis, for the purpose of describing and exhibiting a case of unusual interest at present under his care. Upon being introduced, Dr. Loeb said: "I am very much pleased to be here, and to give you an opportunity of seeing what I consider an unusually interesting case for dentists as well as rhinologists. The patient is a young woman, perhaps twenty years old, and she says that her trouble all comes from a kick of a horse which landed on the bridge of her nose. Investigation has suggested to me, however, that the affection is due to lupus. The nasal bones and soft parts are entirely destroyed, and the openings of both antra can be seen and their accessories. For this reason I thought the case would be of special interest to dentists, as these openings, are not visible in the natural state and cannot often be seen in the living subject. The demonstration will prove to you, I think, that these openings are much higher up than is generally supposed." Recess was then declared for the purpose of viewing the subject. The presentation was one of great value and was highly appreciated by the dentists. On motion of Dr. B. L. Thorpe, the thanks of the association were tendered to Dr. Loeb.

Essays and discussions were then resumed. Dr. H. Prinz, St. Louis, presented a very valuable paper treating of "Hemorrhage Following the Extraction of Teeth, Its Etiology and Treatment."

The subject of "Antidotes" was treated by Dr. DeCourcy Lindsay, St. Louis. The topic was of universal and practical interest and called forth a very general discussion. [See p. 593.]

Dr. E. S. Chisholm, St. Louis, was on the program for a paper on "Philosophical Laws as Applied to Dentistry." He was not present, but a letter from him giving a brief outline of the subject was read by the secretary, and on motion was placed on record.

Miscellaneous business was then resumed. The report of the treasurer, Dr. James A. Price, was read and accepted. The report of the executive committee, Dr. J. H. Kennerly, chairman, showed most efficient service and a minimum expenditure, which called forth a vote of thanks from the association in accepting same. On motion a vote of thanks was extended to the following whose courteous assistance had rendered the meeting a success: To the Planters Hotel Co., to the St. Louis Dental Manufacturing Co., to the Missouri Dental Depot, to the Rowan Dental Manufacturing Co., to Dr. Wm. Conrad, supervisor of clinics.

The installation of officers was next in order, and the retiring president, Dr. Frank Slater, appointed Drs. Kennerly and Prosser sergeants-at-arms to present the president-elect, Dr. F. M. Fulkerson, for installation. Dr. Fulkerson being presented, Dr. Slater in a few words welcomed him to the office and presented him to the association as their presiding officer for the ensuing year. Dr. Fulkerson responded fittingly and took the chair.

A cordial invitation had been extended to the members of the association to visit the Anheuser-Busch brewery during the afternoon. This is the largest plant of the kind in the world and is one of the sights of St. Louis. Quite a large delegation availed themselves of this opportunity.

Adjourned to meet the first Tuesday after the Fourth of July, 1899, in Kansas City.

Mixture in Difficult Dentition.—Sodium bromid, 50 centigrams; orange flower water, syrup of ether, of each 30 grams; distilled water, 120 grams. For external use. Rub the child's gums with the mixture several times a day, after nursing. —Pediatrics, v., 46.
The improvement in the section on the Mouth and Teeth in the 1897 edition of Gray’s Anatomy over any previous edition is very marked and in many respects is thoroughly up to date. A few errors have crept in, however, to which I desire to call attention, not only that correction may be made in the next edition, but that students may avoid the error of adopting as fact the statements which I point out as incorrect.

On page 932 of the volume under consideration the names of the surfaces of the teeth are given with definitions, as labial, lingual, buccal, distal, proximal, the definition of proximal being: “That surface toward the mesial line,” proximal being used as the reverse of distal, the latter being defined as “that (surface) away from the same” (that is from the mesial line).

Both of these definitions are misleading. No definition of mesial having been given, the student turns to his dictionaries for light. In Gould’s Dictionary of Medicine he reads, “mesial, same as median.” Turning to median he reads “middle, meson or mesial” with reference to “M. line.” Turning to line he finds a table appended in which “median line” is defined as a “line joining any two points at the periphery of the meson or medium plane of the body.”

Referring to plane he finds “medial, median and mesial plane; a plane generally antero-posterior, dividing a body into two symmetrical halves.” Accepting this definition and applying it to the mouth, the mesial line or plane is one tangent to the centre of the roof of the mouth passing antero-posteriorly between the superior centrals (providing of course that they are normally placed). From this definition then, together with the definition of proximal given
on page 932—"toward the mesial line"—he would naturally conclude that the proximal surface of the molars and bicuspid teeth; ever intended, included on 592 of formulated surfaces defined. to tooth."

The conclusion thus arising might have been avoided by adopting the definitions of Dr. G. V. Black, found in the 1895 transactions of the American Dental Association as follows: "Distal—away from the median line of the face, following the curve of the dental arch." "Proximate (proximal would seem to be preferred, as its termination harmonizes with mesial, distal, incisal, etc.) applied to a surface of a tooth (either distal or mesial) which is next to another tooth." "Mesial, towards the median line of the face, following the curve of the dental arch." The mesial surface, however, is not included in the list of tooth surfaces given, proximal being evidently intended to indicate the reverse of distal, the former being described as toward the latter, away from the mesial line. In the text, however, except in the definitions, proximal is not used as the name of a tooth surface, mesial being substituted, although nowhere defined. For instance, on page 933 we read, "The mesial and distal surfaces are triangular;" "short mesial" and "long distal" cutting edges; "they are flattened mesially and distally," etc.

The *mesial* and *distal* are used in conformity with the definitions formulated by Dr. Black, and it is to be regretted that the definition of *proximal* was not also in harmony with his nomenclature.

On page 933 the cuspids are spoken of as *canines*, a term which the common nomenclature of the A. D. A. agreed should be discontinued, together with wisdom teeth, six-year molars, etc. A slight error occurs on this page in these words, "the concave labial surface is marked by three ridges uniting in a basal ridge." Undoubtedly the *lingual* surface is here intended.

On page 935 we read as follows: "The movement of the human mandible is forward and downward, the resultant of these directions being an oblique line, upon an average of 35 degrees from the horizontal plane." Reference being made to a footnote reading, "W. E. Walker, Dental Cosmos, 1896," I feel at liberty to make the following remarks: For "mandible" read "mandibular candyles;" for "35 degrees from the horizontal plane" read "40 degrees from the facial line." There can be no angle from the horizontal plane, as
there is no horizontal plane in the head. The plane of condyle
movement forms an angle of 35 degrees (average) with the plane
of occlusion, which, however, is not a horizontal plane; but if we
suppose the facial line to be placed vertically, then of course a line
perpendicular to this would be horizontal. In such a case we
would find the plane of occlusion forming an average angle of 15
degrees to this imaginary horizontal plane, which, however, would
form with the plane of condyle movement an average angle of 50
degrees instead of 35 degrees as stated in the text.

The text continues, "When the lower jaw is advanced until the
cutting edges are in contact the jaws are separated, but as the high-
est part of the lower arch—its third molar—advances it meets and
rests upon a higher point, second molar of the upper arch, and thus
undue strain of the incisors is obviated." A similar statement is
made by Bodecker in his "Anatomy and Pathology of the Teeth,"
but my studies of the articulation and occlusion of the human
teeth having convinced me that it was an error, I expressed that
view in a discussion of the Chairman's Address in the Dental and
Oral Section (now the Section on Stomatology) of the American
Medical Association in 1896. Finding this statement reiterated in
the present edition of Gray, I concluded to investigate the matter
more closely. I therefore went to the college laboratory and made
casts of the students' mouths, taking them as they came, all that I
could get, until the number reached 33, rejecting only those mouths
in which very many teeth had been extracted, which could of course
show nothing on this point. These were not selected cases, for I
took them exactly as they ran, proceeding as follows: A roll of soft
modeling composition was placed on the lower teeth and the student
instructed to bite on his incisors, bringing the mesial surfaces
squarely together. The upper and lower impressions were then
filled, the plaster coming in contact posterior to the teeth, thus mak-
ing a so-called plaster articulator. The impression material was
then removed, and the relation which the upper and lower teeth
bore to one another was readily seen. As each bite-impression was
taken and the cast made it was marked with a number and the num-
ber entered on a list with the name and age of the student. I have
this list with me and shall be pleased to answer any questions in
regard to the physique or physiognomy of these subjects.

I also present the casts for your inspection. Of the thirty-three
it will be seen that twenty-two have the molars entirely free when
the incisors are placed end to end, though in two of these cases they
do nearly touch. Of the others seven are excluded because of
abnormality, the incisors meeting end to end at all times, there
being no overbite in occlusion and no *shearing* motion. I was sur-
prised to find so many having this peculiarity. Of the thirty-three
only three have actual contact of the molars in such manner as to
balance the incisors in biting, according to Bodecker, and Gray, 1897
textbooks. These cases, however, prove the exception rather
than the rule. Of one of these cases it must be remarked there is
contact of the molars only on the right side, where the lower second
and third molars have come forward, due to the loss of the first
molar. There is no contact on the left side. The second case has
lost the left upper second bicuspid and lower left first molar; also
lower right second bicuspid and first molar. The third of the con-
tact cases has no bicuspids and only one molar on the left lower side,
and shows great wear of the incisors. This is also shown in the
normally occluded casts of the same mouth. Contact in this case
is between the right lower second and upper first bicuspids and left
lower second and upper first molar. The abrasion is so extreme as
to permit of placing the incisors on end on opening the jaw but
very slightly. I think you will therefore admit that the statement
referred to is fairly disproved by this collection of casts.
I have also with me casts of three unusually symmetrical mouths,
having casts in each case showing the perfect occlusion as well as
the biting position. You will note that these three cases also fully
support my position. I think it will be found that the *balancing
contact* does not occur any more frequently in the lateral positions
of the jaw than in the forward position, but this I have not proven
so positively, not having taken the *grinding* impression of a suffi-
cient number of cases to establish a rule.

The foregoing was written early this spring, since which time
Dr. H. H. Burchard's Dental Pathology has been established. I
note on page 178 the statement again appears, this being the third
time it has been given place in our text-books; first by Dr. Bo-
decker, and both second and third by Dr. Burchard, it being remem-
bered that the portion of Gray's Anatomy in which the statement
appears was edited by Dr. Burchard. As stated in his recent work
on dental pathology we read: "In the act of incising food the jaws are first separated and the lower jaw advanced until the cutting edges of the upper and lower incisors are opposite one another. While the jaws are in position with the incisors in occlusal contact they do not bear alone the stress of whatever muscular force is applied, but it will be seen that the distal cusps of the third molars, the highest points of the dental arch, advance and meet the distal cusps of the upper second molars, highest points of the dental arch, so that when the incisors are in edge-to-edge occlusion, although all of the other teeth are separated to an extent governed by the overbite, the dental arch is supported posteriorly by contact of the last molars, thus preventing undue stress upon the incisors."

In addition to the bite-impressions which I have taken to ascertain the fact on this point I have questioned a great many individuals as to whether their molars touch at the same time with the incisors when the latter are in the edge-to-edge position, the answer being almost invariably in the negative.

I can conceive of only one way in which this erroneous statement can have originated, and that is in Dr. Bodecker's having been misled by Dr. Bonwill's advice to construct artificial dentures with what he calls a "balancing articulation," so that the molars will touch at the same time that the incisors meet edge to edge, and also so that there will be contact when the jaw is thrown to one side, but also on the side that is not in use, in order to support the plate and avoid its displacement in mastication. But nowhere in Dr. Bonwill's published writings that I have seen has he claimed for natural teeth this balancing provision for contact of the molars when the incisors are in the edge-to-edge or biting position.

MATERIA MEDICA AND THERAPEUTICS.


There have been no conspicuous discoveries in dental materia medica since the last meeting of the American Dental Association. A few preparations of correct formulae, mainly of antiseptic quality, have been introduced, but the deluge of drugs of this kind, intended for application in dental practice, following the acceptance of the bacterial genesis of many oral diseases, has culminated in a
strong tendency to ignore the very new remedies, and on the other hand to investigate more thoroughly the virtues of those that have been already more or less known. There are several reasons why we are disposed thus to resume more intimate relations with the older drugs. Aside from some objectionable properties they are comparatively simple in their chemical and therapeutic action, time-tried and reliable, non-secret, and most not even proprietary.

Formaldehyde (CH₂O) holds a similar questionable position in the estimation of a few authorities in our profession, although its respectability is as well known and unwittingly established as the active principle of the earth of ant-hills, which from time immemorial has been gathered by the people of continental Europe and used by them successfully as a local remedy in the domestic treatment of swellings, bruises, suppurating sores, abscesses, neuralgia, gouty and rheumatic pains, etc. This fact probably led to its introduction a few years ago to medical science in the forms in which we now receive it.

At a meeting at Old Point Comfort in 1894 the writer had the privilege of describing this compound to the American Dental Association. The claims made for it at that time as a combined disinfectant, antiseptic and germicide have been found by careful investigation to be based on solid truth; at the same time we should remember that its irritant properties, without a corrective, render it rather unpleasant to use in the mouth. Some writers in the journals report cases of serious sloughing of the gums caused by formalin, even when diluted. Such accusations surely must have their influences in overcoming the good reputation it has acquired in other hands, and although some of us must confess to having had none other than beneficial results by its use in all sorts of suitable cases, now that positive evidence has been submitted by reputable gentlemen of the injurious effects produced in the mouth by this agent, we shall probably be less free with it than heretofore, for all our medicaments should be like Caesar's wife, 'above suspicion.'

In order, however, to give the deserving a portion of its due, permit us to say that if extracted teeth intended for diagram work by the classes in our colleges be kept over night in a 5-per-cent solution of formalin they will thereby be completely sterilized; and further, inasmuch as there is no method known which will destroy infectious matter on steel instruments in less than ten minutes with-
out injuring them, which is too long a time for Patience to stand around smiling at Grief, we need something harmless and immediately effective, and if burs, excavators, etc., after cleansing be dipped in full strength formalin, wiped dry and scented with whatever you please, they will be more thoroughly and safely sterilized than by any other conveniently available means; furthermore, the formalin can be used repeatedly in this way.

Dr. Edwards of Oakland, Cal., assured the writer that 25 per cent of formalin will prevent mercury from attacking gold.

The latest phase of cataphoresis is the laudable effort of writers in journals to instruct us in the definite rules of electrolysis. Although it is rather ancient history, as may be seen by reference to the reports by this section (Materia Medica and Therapeutics) to the A. D. A. in 1896 and 1897, we may be pardoned for introducing here, merely however as a suggestion, a brief list of cataphoretics employed in dentistry, with their active principles so arranged that the proper pole to be used in connection with them may be easily selected:

<table>
<thead>
<tr>
<th>Negative.</th>
<th>Positive.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen Dioxid H₂O</td>
<td>O</td>
</tr>
<tr>
<td>(Pyrozone)</td>
<td></td>
</tr>
<tr>
<td>Potassium Iodid K</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>C₁,H₂₁NO₄</td>
</tr>
<tr>
<td>Sod. Hypochlorite Na</td>
<td>Clo</td>
</tr>
<tr>
<td>(Electrozone)</td>
<td>C₁,H₁₆NO₃</td>
</tr>
</tbody>
</table>

The vertical lines show simply the separation of the ions by the current and the direction those needed desire to travel. Thus, negative O, I, and Clo go toward the positive pole, while the positive basic principles like silver, cocain and other bases as compared with acids go toward the negative pole. The pole to use, therefore, is the same in name as the active penetrating principle of the drug employed, for, as we know, like repels like and opposites attract.

In regard to the question as to whether “nonconductors, like alcohol, chloroform, phenol, tinct. iodin, etc., either single or mixed, can be used successfully in cataphoresis,” I am inclined to answer in the affirmative. We must remember that the current is conducted by the tissues from pole to pole, independently of such substances, and owing to the pressure of the current itself (and H is the positive pole to be applied), they can be induced to penetrate farther than by mere absorption.
Chemico-metallic processes intended for the filling of tortuous root-canals are worthy innovations on the older methods. The interaction between the acid Dr. Weld uses (modified nitrohydrochloric) and his pin alloy, composed mainly of zinc with some silver and tin also, results in the production of compounds, the virtues of which are strongly indicated in such positions. Nitrosyl (NO\textsubscript{Cl}), an unstable disinfecting gas, and zinc oxychlorid (ZnO, ZnCl\textsubscript{2}) are the principal bodies and formed together with some silver oxid (Ag\textsubscript{2}O) and stannic chloride (SnCl\textsubscript{3}).

In the June number of the Dental Cosmos, page 497, appears an article from the Journal of the British Dental Association, reported by H. Bellamy Gardner, which deserves some criticism at our hands, inasmuch as it positively contradicts a statement made by the writer in an address to the A. D. A. last year. The article in question gives in detail a series of experiments on N\textsubscript{2}O by Drs. Kemp and Brush, to "prove its specific anesthetic influence as distinct from any inert gas," like N. Dr. Brush was "convinced that N\textsubscript{2}O does not produce its influence simply by depriving the patient of oxygen," and Dr. Kemp states that "he was unable to obtain a compound of N\textsubscript{2}O with the hæmoglobin of the blood." These conclusions we can safely endorse, but to another assertion by Dr. Kemp we must decidedly object. It is as follows: "With regard to the general metabolism, one result of these researches is to show positively that CO\textsubscript{2} in the arterial blood (the italics are ours) is greatly diminished and is not increased, so that any theory involving the dependence of anesthesia on a retention of CO\textsubscript{2} within the system is in opposition to the direct findings of the experiments." Now surely Dr. Kemp knows that CO\textsubscript{2} does not escape from the body by means of the arteries. As well might he assert, so far as scientific deductions and historical facts are concerned, that he had searched the Great Salt Lake of Utah for evidence of the work done against Spain by Admiral Dewey and could find none, so Admiral Dewey is not entitled to the distinction of smashing the Spaniards in Manila harbor.

If Dr. Kemp will kindly examine anywhere on the venous side of the capillaries instead of on the arterial side, after giving his dog an average dose of N\textsubscript{2}O, he will find strong evidence of accumulated CO\textsubscript{2}. N\textsubscript{2}O is rich in O, but it is a chemical compound, differing in this respect from either free O or the air we breathe. It forms no direct combination with any substance. It is active only by the O
it sets free to oxidizable bodies. With it and C, H, S, P, etc., the normal oxids of these elements are produced, CO₂, H₂O, SO₂, P₂O₅, etc. These facts are easily proven by experiment.

It obeys the same rules governing its own chemical nature in the animal body as well as elsewhere. When inhaled it goes through the arterial circulation unchanged, superseding for the time being iron, the oxygen carrier of the body, and when the capillaries are reached it gives up its O to form the combinations with C, H, etc. that atmospheric O produces, but to a greater extent. The CO₂ developed thus, in greater quantity than usual, cannot escape freely beyond the point of its development, for the simple reason that the reduction of the ferric oxid in the arterial blood is not accomplished, leaving the iron unprepared to convey the CO₂, as ferrous carbonate, to the lungs. If, however, either free oxygen or air be administered simultaneously, or at short intervals, one of the physiological functions of iron is restored sufficiently to prevent the cyanosis of CO₂ congestion; and so, according to the case in hand, the animal may thus be kept indefinitely in the anesthetic condition without serious danger of death by asphyxiation.

HEMORRHAGE FOLLOWING EXTRACTION OF TEETH, ITS ETIOLOGY AND TREATMENT.

By H. Prinz, D.D.S., St. Louis. Read before the Missouri State Dental Association, at St. Louis, July 5-8, 1898.

Hemorrhage after extraction of teeth has been so frequently the subject of lengthy discussions in dental societies that it might at first seem improper to bring it again before the profession. We read so much about new methods and remedies recommended for treatment in such complications, however, that if taken together with the older teachings and presented in concise form the title of this paper may be justified.

There are two fundamental factors which may be regarded as the causes of alveolar hemorrhage: One, organic fault of the patient; and two, mechanical accidents of the operation. Organic faults have their origin in an abnormal fluidity of the blood, or in a defective construction or morbid condition of the blood-vessels. Directly from the abnormal fluidity of the blood results a disease known as haemophilia, in which the fibrin and all the plasma-forming constituents of the blood seem to be materially reduced, while
the aqueous portion, the liquor sanguinis, is greatly increased. Exudation of blood in the surrounding tissues of such persons happens very frequently: a slight slap, a little pressure of the garments, etc., may cause a profuse discharge beneath the skin.

The pathology of hemorrhagic diathesis is very little known. Virchow is of the opinion that an abnormal pressure of the circulation exists. The blood-vessels seem to be very thin, and apparently undergoing a fatty degeneration. The best ascertained cause of haemophilia is hereditary predisposition, says Quain, and it is rather a peculiar circumstance in bleeders that the disease is generally transmitted to the males of the family, while the females have the greater capacity of conveying the anomaly to the offspring, the sufferer again being a male member.

In leukemia we are probably more able to give a plausible cause for extensive hemorrhage. This chronic disease might result from a large increase of the leucocytes in the blood, while the blood-making organs, the spleen and lymph glands, become swollen. Important changes occur in the bone-marrow, and in some cases it becomes of a greenish-yellow pus-like appearance, being infiltrated to some extent in the spongy part of the bone. Such cases are dangerous, usually ending in lethal exitus by profuse hemorrhage from the nose, per anum, etc.

Scurvy, as a result of an accumulation of saline material in the blood, increases the danger of hemorrhage. It is a disease more peculiar to the sailors of olden times. The salt-pork diet, together with extraordinary strain on the system, as for instance in arctic explorations, lowered the vitality, and in consequence, the vessel-walls offered less resistance to osmotic diffusion of the saline blood.

Anemia, chlorosis, etc., in fact all diseases of the blood circulation materially increase the danger of hemorrhage. Attention has been called to the occurrence of violent hemorrhage as a result of extraction of teeth during menstruation; a condition which Hollaender calls vicarious hemorrhage. Salter describes two cases from his own practice. He extracted a lower molar from a woman of twenty, and the little hemorrhage soon stopped; but about ten hours later it commenced again very violently and lasted for two days. After application of hot sitz baths and purgatives the menses set in and hemorrhage from alveolus stopped. Ritter mentions a few similar instances, and Gutmann gives us an elaborate treatise referring to
four of his own cases. He concludes that the menses are of material influence upon the duration and-strength of alveolar hemorrhage. Extraction of teeth is not an absolute contraindication during menstruation, but it is certainly advisable to delay the operation if possible. During pregnancy and lactation there probably need be no fear of increased bleeding, and I have been unable to find any reference to it in the literature.

Brain-workers, persons affected with plethora, chronic alcoholism, etc., may be subject to greater hemorrhage, and more so during the hot period of summer.

Defective contraction of the blood-vessels may also hinder the easy control of hemorrhage, for the newly-formed thrombus may be constantly washed away by the blood-stream, because the injured vessel walls will not contract. Such conditions are not numerous; anemic persons, habitual users of alcohol and syphilitics are found among its subjects.

Local causes of alveolar hemorrhage may be of accidental nature, such as fractures of the alveolar process, or as a result of major surgical interference, viz., by the use of the alveolar forceps or the chisel. But usually those cases yield quickly to treatment. Gaudinder's tabulation of 212 cases of lethal hemorrhage developed the fact that in most cases where the extraction of a tooth was the cause it could be traced to the lower molars. A closer anatomical study of the mandibula by Hollaender made it clear that the roots of the lower molars terminate very near the inferior maxillary canal; in some instances they pass directly into it. The extraction of such a tooth will cause an almost uncontrollable hemorrhage, as the formation of a thrombus in the inframaxillary artery is very questionable. The same results may occur if accidentally an aneurism of the same artery happens to be too near the apices of the roots.

The treatment of hemorrhage by the dentist consists foremost in surgical and mechanical applications, although a knowledge of constitutional medication is desirable. Before we consider these methods closer, it might probably be of some interest to know what the older knights of the forceps employed in arresting bleeding from a tooth-socket. The oldest medical compendium so far known is the Papyrus Ebers, covering a period from 3700-1500 B. C. We find quite a number of remedies mentioned for application in dental disorders, but no direct allusion is made to hemorrhage. The
medicines employed were mostly of a semi-solid consistency, having honey or dough as a base, with which onions, olibanum, caraway-seed, verdigris, etc., were incorporated. Probably the Egyptian dentist used these for plugging the empty alveolus. During the Grecian and Roman period the teachings of Hippocrates, Celsus, Galen and others do not particularly mention treatment of hemorrhage after extraction, although they prescribed and used quite a number of astringent mouth-washes and pastes. It seems that they extracted only such teeth as were rather loosely attached, as the plumbum odontagogum, the lead forceps, would probably never lift a tightly implanted molar from the socket. Abulkasem, an Arabian surgeon living at the end of the tenth century in Cordova, Spain, gives in his book, the "Athasrif," a most excellent treatise on extracting teeth, together with elaborate illustrations of all the instruments employed, but very little is said about the treatment of hemorrhage. Ambroise Parre, the famous French surgeon of the sixteenth century, is the first one who tells us plainly to wash the wound after extraction, to compress the empty alveolus with the fingers, etc. It seems that the actual cauterization was used in the mouth about this time. The older Foucon in France invented a little compressing apparatus for stopping alveolar hemorrhage, a probably necessary implement, as the key about this time came in general use, of which Holmes tells us, that while the bolt was turning the victim thought he was in that place where the man ought to be who invented this instrument of torture.

Jourdain used little balls of charpie soaked in Monsel's solution and plugged the alveolus tightly up to the gingival margin. The two great English surgeons, John Hunter and Bell, are among the first who employed a rational treatment for alveolar hemorrhage. Then came the father of modern dental surgery, John Tomes. He devoted a special chapter in his work, "A System of Dental Surgery," to the treatment of hemorrhage after extraction. He advocated matico leaves very highly. Let us hear what he had to say about them: "In the cases of alveolar hemorrhage which have come under my own care the bleeding has been speedily arrested by matico. * * * The degree of success attendant on the use of the matico leaf will greatly depend on the care with which it is applied. * * * The leaf should be rolled up and the rough side kept outward. The rolls are taken up in the plugging forceps
and passed firmly down to the bottom of the alveolus, the somewhat pointed end being introduced first." * * * Tomes stated correctly that the degree of success depends more upon the care taken in this operation itself than upon the matico leaf, which has no haemostatic properties and acts in a like manner to dental spunk.

The object sought for locally arresting alveolar hemorrhage is to aid the formation of a thrombus. The drugs employed therefore must possess astringent and coagulant properties. Amongst those used we name alum, tannic acid, iron in its various forms, notably persulphate or Monsel's powder, ferropyrin, styptic collodion, chromic acid, copper sulphate, chlorid of zinc, etc. For mechanical plugging of the alveolus, spunk, cotton, lint or gauze, cork, gutta-percha, plaster of paris, modeling compound, and even the extracted tooth itself are used, each operator having a preference for some individual method. Hot water syringed drop by drop into the empty alveolus, prolonged compression of the socket with the fingers, or the actual cautery may be sometimes resorted to. Some recommend pressure upon or even ligation of the external carotid artery, but this is a very doubtful help. It is probably well to mention here that during a fainting spell hemorrhage will invariably cease so long as the spell lasts.

The treatment of alveolar hemorrhage as suggested by Ritter has given us, with some alterations, universal satisfaction. The tooth socket is forcibly syringed with hot water and iodoform gauze cut in strips and rolled in tannic acid is tightly plugged in each *single alveolus* up to the gingival border. This careful plugging is of the utmost importance for complete success of the operation. A little softened modeling compound is then well pressed over the plug, the jaws are closed, the compound removed, chilled and replaced, and a bandage applied about the head for keeping the splint in place. This is kept undisturbed for about two days, the splint keeping the teeth far enough apart to introduce liquid food. After removing the compound and plug the parts are painted with astringent solution. In a case of emergency we were forced to use the actual cautery. Not having a galvanic apparatus at hand, a ball-shaped amalgam burnisher was heated to dull redness and the socket of the empty alveolus slightly touched about twelve or fifteen times. The hemorrhage stopped at once. Seemingly the pain produced by the hot iron is much less than we should expect it to be.
For internal medications small repeated doses of sugar of lead and opium in combination are very useful; fluid extract of ergot, aromatic sulphuric acid, etc., may also be suggested. The patient should assume an erect position, be kept away from all excitement, and diet himself. Lemonade and ice-water are useful for quenching the thirst, but under no circumstances should alcoholic liquids be given, as they increase the blood pressure.

A great factor on the part of the dentist himself is to preserve absolute coolness; this will aid him to master the situation at once and to gain the confidence of the patient, a material help in accomplishing his task.

Discussion. Dr. E. B. Crane: In treating cases of hemorrhage occurring some hours after extraction I always use a combination of tannic acid and plaster. Take two tablespoonsful of the plaster and one teaspoonful of tannic acid, which makes a stiff batter, and then press this down firmly on the gum. The hemorrhage will be stopped in less than two minutes, and in four or five days the plaster will become soft and disappear. I have never failed with a case thus treated.

The main point of disagreement in the discussion was whether chlorid of iron should be used when tannic acid was ineffectual. Dr. Marshall stated that no condition ever existed which would warrant its use, while others claimed to have employed it successfully and without bad results.

REMOVAL OF THE DENTAL PULP.


Those familiar with the history of the healing art will consent to the proposition that in the proportion that medicine has grown scientific and skillful has less dependence been placed in the therapeutic effects of drugs for the alleviation of human ills. Thirty years ago it was no uncommon thing for a patient to be salivated with mercury and deafened by quinin administered for the relief of a slight attack of malarial fever.

That these exhibitions are less frequent to-day is due not to the fact that these drugs have lost their anti-malarial efficacy, but to the data furnished by the scientific investigators of the pathological
action of drugs. Secondary effect has assumed greater importance and possible evils attending administration have outweighed the advantage of immediate relief.

The practitioners of the specialty of dentistry for more than half a century (since the introduction of arsenic into the profession by Spooner in 1836) have resorted to the application of arsenious acid to the dental pulp with a view to its destruction. For years the teaching was that the arsenic should not remain in the tooth cavity longer than twenty-four hours; but of late it is not uncommon to leave it sealed in for two weeks, and many do not disturb it until disintegration of the pulp has taken place. We are told that it is not necessary to expose the pulp to make the application effective; that the arsenic will penetrate the dentinal tubuli and the pulp destruction will be accomplished painlessly. Indeed so penetrating are we led to believe this agent to be, that a recent writer has claimed that teeth to be crowned should have their pulps destroyed and removed, as the slight amount of arsenic contained in the cements with which the crown is set probably will cause pulp destruction.

Has anyone found the exact limits of the destructive power of this agent? Is it a fact that this treatment, which has persisted so many years with little modification, has been attended with no secondary evils? It becomes a very difficult matter from a clinical standpoint to answer these questions without fear of contradiction. That pericemental disturbances do frequently occur can be stated without dispute. That arsenic may be the cause of it has long been the thought of the writer. This opinion has been formed through observation of the contrast between pulless teeth made so by surgical procedure pure and simple, and those from which the pulps have been removed after the application of arseneal preparations; this observation covering a period of sixteen years. During this period I have yet to see a case of pericemental inflammation or abscess where the pulp has been removed without resort to the use of arsenic. The contention has been that where pericemental disturbances occur in teeth in which the pulps have been destroyed by arsenic, it is the result of faulty technique or failure to operate under proper aseptic conditions. We think this assumption untenable, in view of the fact that skilled, clean and careful operators have not been able to establish any record not indicating cases of apical or pericemental trouble, in spite of reasonable precautions.
If, as has been stated, arsenic will destroy the dental pulp by an extension of its action through the dentinal tubuli, it cannot be disputed that its fatal effects upon that organ must also embrace the contents of the dentinal tubuli throughout the tooth. The well-known germicidal qualities of arsenic, together with the fact that it has been used successfully as the chief ingredient of embalming fluids, would indicate that no trouble should be expected from the contents of these tubuli when they have been subjected to the arsenical application and securely sealed from the chance of subsequent infection. Indeed, it would seem that the contents of the pulp-canal and tubuli while directly under the influence of the arsenic would offer a very poor field for infection; and it seldom happens even in careless hands that immediate unfavorable results follow. The contents of these tubuli, shut off from outward infection, separated from the circulation and under the embalming influence of the arsenic, would seem to offer no menace to the health of the tooth, even though the apex were imperfectly sealed; yet trouble not infrequently arises in afteryears, even when the operator has been reasonably certain that the apex was entirely closed.

Why? Is it possible that a sleeping volcano has been located in the apical space by the application of arsenic, that the effect of the agent has not been limited to the confines of the pulp-canal and dentinal tubuli, that the area of the tissue affected breaks down in seasons of depressed vitality, or becomes infected through the medium of the circulation? Why should the arsenic affect only the contents of the pulp-canal and dentinal tubuli? The apical opening may be infinitesimal, but it must of necessity be large in comparison with the tubuli in the dentin. Why may not the nerves and vessels in the apical space and a considerable area of the pericemental membrane have a share in the action of the arsenic? There is no positive evidence of a well-defined line of demarkation in the effect, even after the agent passes the point where it has power to destroy; may it not deplete and incapacitate the tissues until disaster is invited and may subsequently occur?

The most doughty and enthusiastic advocate of arsenious acid, Dr. J. Foster Flagg, (in the Cosmos for July, 1877) says: "It is the almost universal experience that after an arsenical application has remained in the tooth for several days soreness of the organ supervenes; a tenderness upon occlusion; slight pain from striking,
etc.—all indications, apparently, of peridental difficulty; but these same symptoms are concomitant with the dying of the last portion of pulp, no matter from what cause, and if a pulp be extirpated during the existence of this condition, it will under the microscope present an appearance which will clearly indicate the reason for such tenderness in the evident absence of vitality in the greater portion of the tissue, and the equally evident presence of high inflammation in that portion immediately contiguous to the apical foramen.” If this state of inflammation occurs in every case with the dying of the pulp, why is it not better that it be extirpated under the influence of an anesthetic?

Arkovy indicates that the agent is quickly taken up into the blood-vessels, no coagulation of tissues whatever occurring. He says, “It has a specific influence upon the blood corpuscles, combining with the haemoglobin to form a compound of arsen-haemoglobin. In nearly every case it is taken up in substantia (in the form of molecules) into the blood ways; when there it produces, besides the above mentioned changes, granular detritus of the contents. The nuclei in the neurilemma are somewhat increased, granular destruction of the myelin, and here and there disappearance of the axis-cylinder occur.”

Dr. Kirk in a recently published paper (Cosmos, August, 1898) says, “Broadly considered, any inflammatory action is a disturbance of the normal processes of nutrition; this is true of both general and local inflammations, the disturbance being proportioned to the intensity of the irritative action. Where bacteria and their products are the excitants of the inflammation their effective invasion is conditional upon the vital status of the tissue concerned. If the vital resistance of the tissue is sufficiently high it becomes immune and bacterial invasion is impossible. The vital potential of a tissue is the result of the sum total of its nutritive processes normally performed. Any interference with the normal nutritive process therefore results in a diminution of the vital potential of a tissue and renders it liable to invasion by bacteria with consequently inflammatory reaction. A disturbance of normal nutrition resulting in lowered vital resistance is therefore a precedent condition to effective bacterial invasion.”

This is exactly what we may expect of the remote effects of arsenic, to lower vital tone, disturb nutrition, and by so doing
invite infection. It is not claimed that any extended amount of tissue beyond the apex is as profoundly impressed as the pulp-structure, for if such were the case, immediate expression of this pathological condition would ensue. The records of surgery furnish abundant evidence of encysted areas which subsequently break down and become infected through the circulation. This, we believe, is the rational explanation of pathological expressions occurring in the apical space of teeth which have been treated with arsenic.

If the suspicions which have been aroused in the mind of the writer have any foundation in fact, and if he has correctly interpreted his clinical experience, arsenic should no longer enjoy its universal popularity but should give place to surgical procedure. Ten years ago this would have been more difficult than it is to-day, and the difficulty of to-day involves not so much the absence of other means, but aversion to a change of practice and the well-fixed habit which has fastened itself upon the profession of treating teeth for which no charge is made. Some of our best operators will assign two hours to a patient to fill a tooth with gold, and five minutes in which to destroy a pulp. If we can justly claim to be dental surgeons and not mere cavity-stoppers, this is not right and must be changed. One or two hours is not too long for the removal of a dental pulp, and a fee of $10 to $25 is not too much to charge for its accomplishment.

The first consideration of the surgeon is the necessity of operative procedure; second, that the patient and field of operation are in as favorable condition as can be obtained. These general considerations are not to be overlooked by the dental surgeon. No effort should be made to remove a dental pulp in a high state of inflammation. Antiphlogistic agents must be used until the irritation with its consequent dilatation of vessels has subsided.

My custom has been to flood the cavity with tepid solution of bicarbonate of soda; the cavity is then closed with a pledget of cotton saturated in cocain hydrochlorat for a few moments, care being taken not to allow any pressure to defeat the object of the application. If any excess of debris or accumulation of leathery decay is found in the cavity an effort is made to remove enough of it to gain access for subsequent applications to the pulp, not entirely uncovering that organ however. Great care is taken not to cause
any pain, for the patient has been assured that the treatment may take time and patience, but is to cause no pain. To break this promise at any time would be unfortunate, but to do so in the initial treatment would be suicidal to the confidence so essential to success.

A concave disk of vacuum cavity material, made by driving the reverse or butt end of an excavator into a sheet of the metal held on a lead or wooden block, is now adjusted to the cavity so that its edges will impinge upon the walls and prevent pressure. Under this disk a pledget of cotton saturated with oil of cloves is placed, the whole then being covered with temporary stopping. The gum over the affected tooth is painted with aconite and iodin in equal parts, and the patient dismissed until one or preferably two hours can be reserved for the operation. If pain has ceased and the excessive irritability subsided when the patient reappears, the pulp is cocainized with the electric current and removed. Here we will have to proceed cautiously, but the reward is in sight. Why should we not have patience? My practice is to use a minimum amount of current and a saturated solution of cocain. I have heard complaints of occasional failure of cataphoresis. A surgeon is full of resources; if cataphoresis is not successful in the fullest sense, it may be supplemented by injection or by the administration of a general anesthetic, preferably nitrous oxid gas. In all cases where teeth containing living pulps are to be excised or ground down, advantage is taken of the opportunity to remove the pulp under the influence of the shock of the excision. This can be done with no pain whatever; the apprehension of the patient being lessened by cutting the enamel with disks or burs, leaving only so much to be excised with the forceps as will not require any great stress or violence. A cone-shaped bur of suitable size is ready in the engine, clean and sharp; broach, etc. are to be ready, for the entire pulp must be removed instantly. The bur may not be necessary, but if the pulp is not freely exposed it should be plunged into the canal, the ragged orifice enlarged and the pulp broken up. The broach is now passed quickly to the apex and the pulp twisted out in toto. It is needless to say that surgery finds its most inviting field in the single-rooted teeth, but success can be attained also with the molars, if the effort is painstaking. Surgery is not only more scientific, but when it is proven to be more successful, a plea for this alteration of our methods of practice should not be unheeded.
DEATH FROM PYEMIA FOLLOWING ATTEMPT AT TOOTH EXTRACTION. A chemist’s assistant, 18 years of age, endeavored to extract some roots of a left upper molar by means of a sharpened wooden penholder. After these attempts at amateur tooth extraction he suffered severe pain in the neighborhood of the roots and some swelling which progressively increased in size, involving the cheek adjacent to it. Three days later a blackish slough commenced to form and the patient applied for treatment to the hospital, where he was ordered a mouth-wash. Two days later he again went to the hospital, and when seen by the surgeon of the day was found to have a blackish slough, separated by a distinct line of demarcation from the surrounding tissues, which were much inflamed. The slough occupied the region of the upper left molar teeth and extended inwards into the palate, involving it to an area of about the size of a quarter. The temperature was 102.6; pulse rate 120; tongue was foul and patient looked ill. He was anesthetised, the slough freely scraped away and the tissues cauterized with pure carbolic. In spite of this treatment another slough formed, the adjacent teeth became loose, and the bone was stripped and laid bare by burrowing pus, which could be freely squeezed out. The patient was again anesthetised and the parts were freely scraped a second time. Owing to great respiratory embarrassment during the anesthesia tracheotomy was performed. The edges of this wound also showed signs of sloughing, and gradually the patient sank, dying some days later. The post-mortem examination showed multiple visceral abscesses, etc.—Dental Record, August, 1898.

EXPERIMENTS REGARDING THE “SETTING” OF PLASTER OF PARIS. J. A. Belcher reports (Treatment) the results of experiments undertaken to determine the effects of the various agents on the “setting” of plaster of paris: “Two drams of plaster mixed with one dram of a 5-per-cent solution of sodium chlorid, hardened in two minutes. Mixed with one dram of a 5-per-cent solution of sugar it hardened in three minutes and a half. Mixed with one dram of a 1-per-cent sodium chlorid solution it hardened in five minutes. Mixed with one dram of a 0.5-per-cent sodium
chlorid solution it hardened in five minutes. Mixed with one dram of a 5-per-cent calcium chlorid solution it hardened in six minutes and a half. Mixed with one dram of tap water it hardened in nine minutes. Mixed with one dram of distilled water it hardened in nine minutes. Mixed with one dram of saturated solution of sodium chlorid it hardened in eighteen minutes. Mixed with one dram of a 5-per-cent solution of glycerin in distilled water it hardened in nineteen minutes. Mixed with one dram of 5-per-cent solution of white of egg in distilled water it hardened in twenty minutes. Mixed with one dram of a 10-per-cent solution of white of egg in distilled water it hardened in twenty-five minutes. Mixed with one dram of a 10-per-cent solution of glycerin in distilled water it hardened in thirty-five minutes. Mixed with one dram of a 25-per-cent solution of glycerin in distilled water it hardened in sixty minutes.' The figures tell, says Belcher, their own tale, and show that where it is of importance to make plaster of paris set rapidly it should be mixed with a 5-per-cent solution of common salt, and this may be made roughly by adding a tablespoonful of salt to a pint of water.—*Scientific American*, Aug. 13.

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**REMOVAL OF INFERIOR DENTAL NERVE THROUGH THE MOUTH.** Dr. Alexander H. Ferguson reported to the Chicago Medical Society, on April 13, a case of neuralgia, in which all of the three branches of the nerve were affected. The tongue and the ear were also involved, and medical treatment had proved useless. The inferior dental nerve was then removed in view of the removal of the Gasserian ganglion, a much graver operation. The head was thrown well back and a gag put in the mouth. The distribution of the inferior dental nerve was then cut at its exit and from the mental foramen, and dissected out at that point and cut as it began to divide in its distribution. A half-inch trephine was then used on the jaw where the last two molar teeth were situated. After the gums had been separated longitudinally and the soft parts pushed to one side, a trephine was applied on the inferior maxilla and the nerve exposed where it traveled through the jaw. An incision was made parallel to the ascending ramus of the jaw and a little to the inner side thereof, cutting through the mucous membrane, and by blunt dissection the nerve was found as it entered the foramen on the inside of the jaw, a good guide being the sharp
spiculum situated in that part. After the nerve had been severed at the mental foramen and exposed at its entrance into the inferior maxilla, it was extirpated in toto by pulling it out from the middle of the jaw, and then hooking it from the upper incision until it hung loose, then following it up as far as possible and cutting it. In this procedure the artery was injured and the wound had to be packed firmly. Packing was left in three days, then removed and no hemorrhage followed. Patient was relieved instantly and has remained free from pain since.—Chicago Medical Reporter, May, 1898.

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LABORDE TREATMENT OF CHLOROFORM ASPHYXIA. Herzog of Charkow has recently published in the Deutsche Zeitschrift fur Chirurgie some experiments made according to Dr. Laborde’s method of producing resuscitation in cases of chloroform and ether asphyxia by rhythmic traction of the tongue. The effect of making traction on the tongue is to stimulate its sensory nerves, and to bring about reflex contraction of the respiratory muscles through the medium of the central nervous system. Dr. Laborde recommends that the tongue should be seized firmly, and traction be made about twenty times a minute. Up to the present time twelve cases have been recorded in which this method proved successful in asphyxia from anesthetics. For the purpose of testing Dr. Laborde’s conclusions, Herzog made a series of experiments on dogs partially asphyxiated by means of large doses of chloroform and ether, and found that in nineteen cases respiration was restored spontaneously in six, but that traction of the tongue was only successful in resuscitating three of the remaining thirteen. In these three instances the animals began to breathe again after traction had been made twelve times, and their recovery was complete; in two other cases respiration was restored, but the cardiac action nevertheless failed, and although the respiration was kept up for sixteen and six minutes respectively the pulse did not rally and the animals died. The results obtained by Herzog are thus at variance with those of Dr. Laborde, who obtained resuscitation in the great majority of cases. It is probable that Dr. Laborde commenced to make traction of the tongue at an early stage, when the animals were still capable of recovering spontaneously. The asphyxia obtained in Dr. Herzog’s experiments always occurred in the last stage of the narcosis. Asphyxia in the early stage of the narcosis, while it is
so frequent in the human subject, could not be obtained in the experiments on animals. Herzog concludes that Dr. Laborde's method is not reliable in the asphyxia of the last stage of narcosis, but that it may be tried as an auxiliary to other methods in the primary steps.—London Lancet, July 9.

INFLUENCE OF DIET ON GOUT. The conclusions arrived at by Dr. A. P. Luff in his notable Goulstonian lectures of last year have been added to by a series of elaborate and effective researches by that investigator, which tend not only to disclose the origin of uratic deposits, but in addition to furnish certain clews to the dietetic management of gout.

It will be remembered that Dr. Luff decided that uric acid is normally produced only in the kidney, and is not normally present in the blood of mammals. It is normally formed from urea, probably by conjunction with glycosin; that in gout uric acid is present as a soluble sodium quadriurate, and that in its soluble form it is not a toxic agent. It is precipitated in the tissues as sodium biurate. Its nonexcretion in the soluble form is probably due to some affection in the lining epithelium of the convoluted tubes. The sodium quadriurate is not accelerated in its decomposition by diminution of the alkalinity of the blood, nor does increased alkalinity increase the solubility of the sodium biurate. Luff has found that the solubility of sodium biurate is not only increased by the presence in the blood of the saline constituents of vegetables, but that these same salines exercise a remarkable inhibitory power over the decomposition of sodium quadriurate. The solubility of the sodium biurate was also found to be decreased by adding the salines of meats.

The bearing of these conclusions upon the dietetic management of gout is noteworthy, and Dr. Luff has recently undertaken a new series of experiments with a view of ascertaining the relative effects of the mineral constituents of meat and vegetables upon the solubility of the biurate, and so to determine inferentially what might retard the conversion of the quadriurate into biurate. Speaking in general, Dr. Luff found that small proportions of the mineral constituents of the ash of nearly all vegetables increased the solubility of the biurate. This could not be attributed apparently to any common saline constituent of vegetables, for by careful experiment
it was decided that this property possessed by certain vegetables did not depend upon its sodium, calcium or magnesium salts, but pertained to the vegetables as vegetables. It is to be supposed that the natural vegetable ash is a combination which cannot be successfully imitated, and like certain mineral waters it possesses virtues which its imitation by artificial means does not possess. The vegetables active in retarding the conversion of the quadriurate into biurate were spinach, Brussels sprouts, turnip tops, turnips and celery.

The important point in these conclusions is that the alkaline factor is not the important one achieved by the administration of these vegetables. The methods by which our ancestors relieved each other of exacerbations of gout by the administration of vegetable ashes receive some justification through the researches effected in the modern chemical laboratory.—Medical Age, August, 1898.

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THE GENESIS OF A WORD. By Henry H. Burchard, M.D., D.D.S., Philadelphia. In accordance with what the writer has always believed to be a well-founded plan to solve difficulties in pronunciation and definitions, a search was made recently for the significance of the word tooth, as based upon its etymology. The pedigree, the evolution of the word from its simplest, or better say original form, to its present spelling and pronunciation is interesting as a specimen of comparative philology and the migration of languages.

The word also furnishes an additional argument for the doubts which have been raised as to the birthplace of the Aryan languages. Upon the assumption that this birthplace is to be sought in the region in which it appears a common ancestor of all Indo-European languages, a general agreement until lately placed this place of origin somewhere in the neighborhood of the highlands of Northern India. Within recent years well-founded exceptions have been taken to the unqualified acceptance of this belief; for as shown by Isaac Taylor, "Origin of the Aryans, 1889," a critical examination of the Sanscrit with other vocabularies shows that some words undoubtedly more primitive than Sanscrit may be found in Lithuanian, and in addition to this words exist in Sanscrit which have no explanation of local origin, but appear to be transplanted from another source, apparently Lithuanian.

The primitive word for tooth is in Sanscrit danta, in Lithuanian
dantis, clearly progenitors of the Greek odous, odontos, and the Latin dens, dentis. The early migration of Aryan races is indicated by the appearance of a similar word among the Kelts of Wales, where the form dant appears. It might be suggested that dant is a modification of the Latin dens and a relic of the Roman conquest of Britain, were it not that the word antedates the Roman invasion of Britain.

By the common interchange of th for d and z for d, found even at the present day in the pronunciations of foreigners, dantis appears in Gothic as tunthus, and later in German as zahn. The Low German form of Saxon and Dutch gives tand, and the direct progenitor of tooth appears in Anglo-Saxon as todh. In this word it is probable that t replaces the d, giving toth, a form undoubtedly seen in very early English literature; the change to tooth is but slight. Teeth is a typical Anglo-Saxon plural. The tand of the Low-Dutch appears in Danish, Sweden and Old-Saxon alike, so that there can be no doubt of the genesis of the Anglo-Saxon "English."

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A COMPEND OF COMPARATIVE DENTAL ANATOMY.

Definition.

Classes.

Teeth.—

Structure.

Development.

Arrangement: { Monophyodont.

Diphyodont.

Danish—tand. th Saxony and Dutch—tand.

Swedish—tand. d Anglo-Saxon—todh.

Old-Saxon—tand. z Gothic—tunthus.

English—tooth—teeth.

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EFFECT OF HEAT ON DENTIN. By Dr. G. W. Cook, Chicago. Abstract of paper read before Tri-State Dental Meeting, June 22, 1898. In investigating the amount of heat that can be used in a tooth three factors are to be taken into consideration: The effect of heat on bacteria, amount of moisture extracted, and effect on the dentin. A temperature of 130° centigrade continued for four and one-half minutes will in three applications sterilize a root-canal, but this causes a loss of moisture, and what effect that will have on the tooth is a question.

The organic matter in a tooth consists of colloids easily reduced to gelatin by boiling, and which form a sort of matrix or base by
which the inorganic salts are held together, this forming a hard, and to a degree elastic and flexible body.

It is well known that all colloid substances take up a certain per cent of water by imbibition, and their elasticity and flexibility are largely due to this property of taking up water. On the other hand, if the water is driven off by heat or otherwise, a shrinking follows, and instead of being elastic and flexible they become brittle and inelastic. From these facts the brittleness of old, dry teeth, or teeth which have been subjected to a degree of heat sufficient to drive off water, can be explained.

Although it is hard to make out any contraction in the dentin or separation of it from the enamel, yet it is a well-proven fact that after drying the enamel is easily broken off from the dentin and the whole tooth structure rendered more brittle. This can be explained only by assuming that the water held mechanically by the colloid matrix of the tooth has been driven off, thus rendering the organic structure brittle and non-elastic.

When teeth have been subjected to three applications of a root-canal drier, continuing four and one-half minutes each, of a temperature of 130° centigrade, there was a loss of 0.65 to 1 per cent of weight due to driving off the moisture. This did not seem to lessen the resistance toward pressure at all, but it did render the tooth substance more brittle.

In conclusion, the author believes that the application of the root-drier at a temperature of from 90° to 130° centigrade for a few minutes is all right, but if the drier is hot enough to cause the hissing sound which is heard at a temperature of 170° centigrade, moisture is being driven out of the organic substance and the tooth is becoming brittle.—Indiana Dental Journal, July, 1898.

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STATUS OF THE DEGREE D.D.S. UNDER THE LAW.
By Dr. W. G. Chase, Philadelphia. Read before Union Meeting at Baltimore, June 2, 1898. In other words, to what extent may the holder of this degree lawfully prescribe medicines for his patients, to be taken by the alimentary canal or in the other usual ways of administering medicine? In all states there are laws purporting to regulate the practice of dentistry, some more stringent than others. I have yet to find one wherein the status of the D.D.S., or what constitutes dental practice, is defined. They all say a person must
either have a diploma or pass an examination before a state board, and in many states, in fact most states, both diploma and examination are required before a person can practice the profession of a dentist. Some states are more stringent in their requirements than others. It is not necessary for me to name the requirements of the different state boards or colleges, as you are all familiar with them; nor do I think they are more than is necessary to keep up the proper standard of our profession.

If you will examine the dental laws of the different states of these United States you will find in most, if not all, a clause which exempts a physician from offending in the extraction of teeth, etc. On the other hand, examine the laws relating to the practice of medicine; do you find any reference to the dentist? No; or, if you do, you have found more than I have. I have no objection to the M.D. extracting teeth (so far as I am concerned individually he can do it all), but this shows the laws of the two professions are not fully in accord. Nor do I wish to be interpreted as antagonizing the M.D., for I am not, for we often need him and badly, especially when a certificate of death is necessary; but fortunately we as dentists do not often kill our patients.

Notwithstanding that the laws regulating the practice of medicine say that a man must have the degree of M.D. in order to prescribe medicine, and that laws regulating the practice of dental surgery say naught on this subject, I have always advocated and practiced the prescribing of medicine in such cases as I was called upon to treat which, in my judgment, needed medicine internally. I believe I am fully within my rights as a dentist in so doing. Claiming that the degree of Doctor of Dental Surgery, as conferred by the colleges and universities chartered under the laws of the different states of these United States, gives the holder thereof, when properly approved by the state board wherein the holder intends to or does practice, the right and authority to administer anesthetics, drugs or remedies for the alleviation of such diseases as come under the dentist’s care, I also believe that in case he (the dentist) failed to so prescribe, or saw to it that the remedies needed were prescribed in case he felt himself incompetent (which would be a sad case), he would not be doing his duty.

Mr. Benjamin Alexander, an attorney-at-law of Philadelphia, says: “If it be discovered in the treatment of a patient that an
internal medicine is necessary to improve the part treated or operated upon, it is obligatory upon the dentist to prescribe. If unable to prescribe, he should immediately recommend the patient to a physician for the purpose of obtaining the necessary remedy. A failure on his part to attract the patient's attention to his condition would render the dentist liable.' I do not believe we as dentists encroach upon the physician's prerogatives. There are many conditions that it would be inexpedient as well as inconvenient for the dentist to treat that come under his care or notice, in which event it is our duty to refer the case to a physician; but there are diseases that come under the dentist's care that he should treat mainly from the fact that the M.D. knows little if anything of them or their treatment.

If the dentist's hands were tied through the law not giving him the right to prescribe, he would be forced to do one of two things—violate the law or say to the patient, "I know what to give you, but the law will not permit me. I will have to refer you to a physician. I can only fill your teeth or furnish you substitutes." This is not a pleasant picture, though I have drawn it imperfectly, and I am glad to say that I do not believe the law so hems us in.

If dentists had no legal or moral right to prescribe medicine for their patients, dental surgery would cease to be a profession; it would be merely a trade. We would have no need of colleges to teach it nor examining boards to regulate it. I do not believe it possible for a man to successfully practice the dental profession unless he is well grounded in pathology, materia medica and therapeutics, as well as in the other branches of the profession.

Judge C. G. Garrison, of the New Jersey bar, says a dentist may be defined to be one whose occupation is the care of the teeth when sound, the treatment of their deformities and diseases when unsound, and the adaptation of substitutes for them when lost by age, accident, or disease. He further says that this definition embraces the hygiene not only of the mouth but also of the general system, of which the teeth are a sensitive index, and includes operations upon the alveolar process and adjacent bone. In a case of caries, or necrosis of the jaws, without the knowledge of medicine and the lawful right to prescribe such remedies as the case demanded, the dentist most assuredly would not be able to do his full duty by the patient presenting such a case.
I also call to your attention an opinion given me by William W. Smithers, of Philadelphia, a lawyer of note. "A Doctor of Dental Surgery is neither a physician nor a surgeon, properly so-called. He is a surgeon of limited character and his skill must be exercised within the limits of dentistry. It extends to care and treatment of the teeth and the mouth in general. Obviously he can have nothing to do with a fractured leg or a case of indigestion. Independently of any treatment of the mouth or teeth, the dentist can neither perform a surgical operation nor administer medicine. But where the administering of medicine is subservient to the practice of dentistry, it is perfectly lawful. For example, the giving of gas or the prescribing of a drug to counteract the effect of a diseased or extracted tooth upon the stomach would be entirely proper. It must rest with the individual practitioner to use his judgment and say under the circumstances of each case whether the administering of the medicine is necessarily incidental to the practice of dentistry."

A different construction is given in England. The province of a dentist embraces the art of treating diseases and lesions of the teeth and supplying artificial substances in the place of these organs when lost. While it is recognized that many causes are systemic, yet the dentist cannot prescribe for the relief of his patient except he is a qualified physician or surgeon. All the dentist can do is to relieve local trouble.

While the subject of a national law is being talked of and hoped for, there should also be a law not only regulating the practice of dentistry, but it should at the same time define in a clear and concise manner of what the practice of dental surgery consists and what dentists' rights and privileges are. If you remember, when you received your degree the one upon whom devolved the duty of conferring it addressed you in language similar to this: "By the power in me vested by the charter and commonwealth of (naming state), I do confer upon you and each of you the degree of Doctor of Dental Surgery, and therewith all the rights, privileges and immunities of this degree."

It was not explained to me, nor do I believe to any of you, just what was meant, but all were left to interpret these words according to their own ideas. I have kept away from the old subject of dentistry being a specialty of medicine, as I do not care to get into an
argument on that subject. I believe we as dentists want to go hand in hand with the physician as brothers and equals, and not as inferiors. I unfortunately know no legal light in your section, so I cannot give you an opinion from this state or section. The opinions I have given are not based entirely upon local laws of Pennsylvania or New Jersey, but the gentlemen have tried to give a common law opinion, and I think under those opinions a dentist has the legal right to prescribe medicine for his patients for all diseases that come under the dentist's care.—Dental Cosmos, July, 1898.

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PHYSIOLOGICAL ANTAGONISM. By Dr. George E. Johnson, Ft. Wayne, Ind. Read before the Indiana State Dental Association. By "Physiological Antagonism" in the science of medicine is meant a balance of opposed actions on particular organs and tissues. I imagine I hear you say, "He is not a little sugar-pill man or a benedict of Hahnemann," although I do acknowledge that some diseases are cured by contraries and some by similars, but similars are contraries so far as they remove the causes of disease or abnormal function, so the law of antagonism still holds sway. Similia similibus curantur operates in only a limited number of diseases, so we cannot rely on treating or duplicating symptoms for restoring lost equilibrium, or pathological physiology. I cannot in the time allotted to a paper do more than treat the physical basis of the principle of antagonism and illustrate the mode of action and application of some of the remedies used in dental and oral diseases.

The basic principle of an opposition of action finds its strongest support in the mechanism of many functions. In the brain, the medulla oblongata and cord are centers which control every function of the physical body, whether it be voluntary or involuntary. In the great nervous systems, viz., the sensory, vaso-motor and the great sympathetic, we have a beautiful illustration of the division and union of labor, each having its office to perform, yet bound together in the bonds of sympathy, making one grand system working together for one high aim, the protection and preservation of the body of which they form a part. The opposition of forces to maintain the equilibrium is demonstrated in the spasm center of Nothnagel, which is a center of extreme reflex sensibility situated in the medulla oblongata, and just above it Setchenow's inhibitory center, with its correcting or restraining influence over reflex movements.
If there were no antagonist or governor for the spasm center, think of the very unpleasant reflex effects from every trifling peripheral irritation, but each is a great force, and when correctly balanced the nervous system sustains no unpleasant shock or results such as reflex neuralgia, lockjaw or tetanic convulsions. We have an admirable illustration of opposing forces in the cardiac and respiratory mechanism, producing order and rhythm. The movements of the large vessels are regulated by the largest of the cranial nerves, the pneumogastric (or parvagum), which, in turn, has its center in the medulla, and supplies the voice and respiration with motor and sensory filaments, and the pharynx, oesophagus, stomach and heart, with motor; and as the heart is also supplied from the recurrent laryngeal and the great cardiac plexus of the sympathetic, you will readily observe the opposition of forces and how the vascular tonus is maintained by the dilator and constrictor actions.

Perhaps the best illustration of opposing forces may be shown in the application of cold and heat in the following experiment: Lay the heart of a turtle or frog on a metallic plate, and if maintained at the normal temperature it will continue to act rhythmically for some time, but upon cooling the plate with ice you may slow or arrest its action; then on applying heat it begins to pulsate again, and still more rapidly as the heat is increased within proper limits. Another experiment: Drop a small quantity of serum containing a slight trace of muscarine on it, and the heart will be arrested in diastole, but upon applying a 0.2 per cent solution of atropia the pulsations begin again.

Reciprocity of action in the nervous mechanism regulates the blood pressure in the vascular system and thus prevents fatal results. Should the arterioles of the body dilate from local or constitutional cause, the heart increases its action automatically; on the other hand, should the arterioles contract or take on a spasm, the heart's action is as suddenly lessened, thus maintaining the equilibrium, and preventing breach or rupture of the vascular system. The same reciprocity of action regulates the respiratory movements and many other functions we will not discuss in this paper, as this will suffice to demonstrate the basic principle of opposing forces in their beneficence, and I shall now apply the principle in the treatment of inflammation, counter-irritation, tetanus, facial paralysis, hemorrhage, neuralgia and anesthetics or anodynes.
Taking it for granted you understand the pathology of the different stages of inflammation, I shall treat it from the science of physiological therapeusis. Either local or constitutional remedies, or both, should be applied or administered to antagonize the dilatation (or paresis) of the walls of the arteries and arterioles in the hyperemic stage, but this treatment in stasis or exudation would be a very serious mistake. Aconite and iodin as local and quinin and morphin as constitutional remedies will raise the tonus of the arterioles, check the amcebiform movements of the leucocytes and the outward diffusion of albumen, fibrin and salts, but chloral hydrate is especially useful prior to the stage of complete stasis, as it diminishes the heat, dissolves exudations, and has a hypnotic action to quiet restlessness.

Local applications of heat at first produce hyperemia by the dilatation of the arterioles (paresis of the sympathetic filaments), but continued application of heat stimulates the vaso-motor to increased nutrition and thereby removes the difficulty, if the heat does not greatly exceed the normal temperature of the body. While on the other hand, cold first produces contraction or spasm of the vaso-motor filaments (anemia), and if remitted will result in hyperemia, and if extreme cold is long continued will result in stasis and finally gangrene, by impoverishing the parts.

Counterirritation circumscribes itself by vesication, induces an afflux of blood, stimulates the filaments of the vaso-motor by paralyzing the end filaments of the sympathetic.

Tetanic convulsions proceed from peripheral irritation, a wound or a contusion, and you ask an explanation. This is an abnormal excitability or irritability of Nothnagel's spasm center, due to the functional inactivity of the inhibitory center of Setchenow.

What are the symptoms and how antagonize? A sudden deathly pallor which means contraction or spasm of the arterioles of the brain, next partial or complete paresis of the pneumogastric. What is the result? Suspension of respiration and next cyanosis as a result of suspension of respiration, and lastly paresis of the heart.

We now understand the exact pathological condition along the line from cause to effect. How antagonize? Relieve the spasm at the starting point and the symptoms will quickly disappear. Inhalation of nitrite of amyl, administration of chloral, bromid of potassium, physostigma, and gelsemium are indicated, the same
DIGESTS.

remedies being indicated in cases of poisoning by strychnia, as this produces the same functional disturbance. The reverse, viz., facial paralysis, strychnia and electricity are indicated.

Who in this age of medical science needs to resort to the medley of ancient astringents, brown paper, spiderwebs or pow-wow for hemorrhage or hemorrhagic diathesis? Relaxation of the vessel walls and the arterioles, and consequent acceleration of the heart action are the conditions to antagonize, and the best remedies are ergot, digitalis, bromid of potassium, veratrum, virid, etc., with tincture of chlorid of iron.

We now come to the most interesting section of my paper to very many—neuralgia and anesthetics, which I shall treat as pain and anodynes. Dr. Gross said, "If America had contributed nothing more to the stock of human happiness than anesthetics, the world would owe her an everlasting debt of gratitude." But to analyze pain, what is it? How prevent it? Or, how antagonize it? Pain is composed of several elements and degrees of intensity, and is the result of real or imaginary injury. I shall not treat this subject from a psychological point of view, but will simply say that it is a consciousness or realization of an injury, real or imaginary, reflected to and through the spasm center of Nothnagel, exalting or exaggerating this center to extreme sensibility. Hence those two great forces of the animal economy, inhibition and spasm, are thrown off their equilibrium by overpowering the inhibitory center; therefore it is apparent that whatever agent, with power of exalting inhibition or suspending reflex action, will prevent or relieve pain or restore lost equilibrium, and this may be accomplished by two methods, local and general analgesia.

Any remedy which applied locally paralyzes the end filaments of the sensory, prevents or destroys the transmission of sensation to the center; prevents pain. This action we have in aconite, chloral, cana-bis indica, cocain and many other drugs varying in effectiveness. Any remedy or combination of remedies which suspends reflex sensibility of the center without impairing other functions is the agent we have searched to find.—Indiana Dental Journal, July, 1898.

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I had the honor to address this society upon "the dangers arising from syphilis in the practice of dentistry." At the kind invitation of your distinguished president I shall try this evening to give a more practical value to the remarks then made by calling your particular attention to the mouth lesions from which infection can take place. Syphilis is a protean disease, not only capable of affecting every organ and tissue of the body, but also of imitating to a greater or less degree very many conditions and states depending on quite other causes. It is therefore no easy task to attempt to make perfectly clear its manifestations in the mouth—for it must be acknowledged at the outset that sometimes the appearances are so bizarre and curious that even the most skilful cannot be certain in regard to the nature of a particular lesion. It may be further stated that in order to diagnosticate syphilis surely it is often necessary to know the history and also to take into consideration very many signs and symptoms; it is not, therefore, always possible to consider and judge from a single lesion, whether it be in the mouth or on the skin, or in any other organ. It will be understood, therefore, in what may follow, that the diagnostic points indicated are but relative and partial, although the attempt will be made to indicate the salient points which may be of practical value.

In order to understand the danger from the manifestations of syphilis in the mouth and the means of averting it a few words must be premised in regard to the disease itself. Syphilis is a specific disease, due to the entrance of a special poison, which multiplies rapidly in the system and can affect every organ and portion of the body. It is by no means necessarily a venereal disease, but is constantly being acquired in perfectly innocent manners, which need not be dwelt upon here, except to state that a number of authentic instances are on record, by reliable observers, where it has been acquired in connection with the practice of dentistry; it has happened that both the dentist has acquired it from the patient and patients have acquired it through dental operations from poison which has been conveyed on instruments or otherwise from one suffering from the disease to another.

Soon after the entrance of the poison the person becomes syphilitic, and for a period is thoroughly permeated with the poison, so that the blood and certain secretions can again communicate the disease. The exact duration of the contagious period of syphilis
has never been determined, although it is known that after a considerable time the danger diminishes greatly, and after some years it is not communicable, even though the patient may have some of the late or tertiary signs of the disease, it may be, even in the mouth. The virulence of the disease is also modified greatly by efficient treatment.

During the first year syphilis is certainly very contagious, and operations about the mouth should be undertaken with the greatest caution. During the second year, as well as during the first, and especially in smokers, there are apt to be mucous patches in the mouth which give off a secretion which is abundantly capable of causing a chancre should it find a suitable opportunity. With each succeeding year, especially under proper treatment, the danger diminishes, and there are not many instances where infection has taken place after five years, although the disease is capable of hereditary transmission very many years later, showing that the virus does persist for even a long time.

The sources from which syphilitic poison may be received are four, and as all of them may at times relate to the practice of dentistry they may be mentioned. These are: (1) The initial sore or chancre in or about the mouth; (2) mucous patches in the mouth or on the lips; (3) syphilitic ulcerations, and (4) the blood. (1) The chancre. This is not very uncommon on the lips, and at the beginning is often thought to be only an innocent abrasion, or a "cold sore." But it will persist and gradually become a well-defined mass and give off a terribly virulent secretion, often remaining for months, and symptoms of constitutional syphilis will appear. Occasionally a chancre will occur on the tongue, as in the instance of a patient of mine, where the gentleman had been to the dentist to have a roughened tooth filed off; the dentist who did the work was undoubtedly exposed to the contagion, and without properly cleansing his instruments could have been the means of communicating the disease to others. Chancres are also not very uncommon on the tonsils, and also have been observed on the gums and elsewhere in the mouth.

(2) Mucous patches. These are slightly raw surfaces, of various sizes and shapes, which at one time or another are very apt to appear to a greater or less extent in the mouth in almost every case of syphilis. Mucous patches are a most fruitful source of syphilitic
infection, and are the lesions against which special care must be
exercised. The secretion from them, whether in a fresh state or
dried on instruments, napkins or any articles, gives rise to a
chancre and complete infection of constitutional syphilis. Mucous
patches differ so greatly in appearance and extent that it is difficult
to describe them accurately. When newly developed they are of a
redder color than normal mucous membrane, but later may become
of a grayish white; elevated a little at first, they may become
depressed by the loss of epithelial covering. They may be in oval
patches of various sizes, or in streaks, while sometimes it is very
difficult to determine their exact extent. They are always super-
ficial lesions, and often do not cause much annoyance, so that the
patient may readily attend to all the duties of life, and may go
through considerable dental manipulation while having an abun-
dant crop of mucous patches on the tongue, lips, or buccal cavity,
as I have frequently known to be the case.

(3) Syphilitic ulcerations. These are less likely to be met with
in the practice of dentistry, although I have known patients to seek
relief for troubles about the teeth when there were syphilitic ulcera-
tions about the mouth which could give rise to contagion. Gener-
al\ly they are so striking and painful that they would be noticed at
once, or the patient would avoid dental work from the pain in them.

(4) The blood. During the earlier stages of syphilis the blood is
certainly contagious, and if drawn in any operation it could convey
the poison in a cut or injury, or if left on instruments or apparatus,
and thus conveyed to another. In my former paper I quoted a very
striking case where chancre of the gum resulted from the operation
of tooth-drawing: the patient was undoubtedly inoculated by means
of blood or disease secretions left on an improperly cleansed forceps.

Such being the sources from which infection can come from the
mouths of persons who have acquired syphilis, we may briefly con-
sider some of the details in regard to the methods by which the
disease is communicated in dentistry, and the methods of avoiding
the danger; first, in regard to the dental operator, and second, in
regard to protecting patients. (1) The dental operator. Consider-
ing the well-recognized contagious character from mucous patches
in syphilitic mouths, it is remarkable that there are so few instances
on record of the infection of dentists, whose fingers are continually
bathed in these secretions. It is undoubtedly due to the great per-
sonal care of the hands necessary in the profession. Physicians and surgeons have been much less fortunate, and numberless instances are on record where they have acquired chancres on the fingers from mucous patches. I myself have had over a dozen thus affected under my care. It is to be remembered that an abrasion of the surface is necessary for infection, so that these and even hang-nails should be carefully guarded against. Illustrations have occurred where even momentary contact of an abraded surface has sufficed to acquire the disease, even where careful cleansing has taken place immediately afterward; too great care cannot therefore be exercised in having the hands free from any raw places through which the poison could gain entrance. (2) Guarding patients against infection. It may seem somewhat out of place to speak to such gentlemen as compose this society in regard to the simple matters of precaution about to be mentioned. But as some may not heretofore have fully recognized the dangers arising from the syphilitic mouth, it is best to err on the safe side, and to briefly present the cautions which come to mind from a pretty full knowledge of the subject, and in doing so it will be necessary to repeat some of what was said on a former occasion.

The secretion from mucous patches, and also from the chancre, is very sticky and adherent, and when dried on an article forms a delicate coat, hardly perceptible. Nothing is known in regard to the length of time during which the virus is viable, but from what has occurred in medical practice it is believed that days, weeks, or perhaps months after an instrument or article has become infected it may again give off the poison and communicate the disease. Simple washing may not be sufficient for proper cleansing, and special care should be exercised if there is reason to believe that there has been particular exposure to syphilitic infection. This can be accomplished by heat and certain disinfectants, antiseptics, or germicides. As in the case of surgery, heat is probably the safest and most convenient disinfectant, and thorough boiling, especially in a slightly alkaline medium, may be considered as an efficient prophylaxis against contagion. I will not take your time in discussing other measures of asepsis, with which all are familiar, but I will only urge that too great thought and care can hardly be expended in perfectly guarding against this poison.

Almost all the articles employed in connection with dentistry
could be the means of communicating the disease; for even a blunt plugger which had been in previous contact with a syphilitic lesion, and bearing the poison on its surface, might slip and cause a wound of the soft parts through which the poison on it could be absorbed. But some instruments would be more likely to be the conveyors of the poison than others, and among these may be mentioned burs and files; they are both more liable to retain the poison in their fine serrations, and also to convey it to the tissues by wounds inflicted. Also the articles connected with polishing the teeth; and I well remember, in times past, more than one dentist polishing my own teeth with pumice stone on a bit of wood, which had apparently been used for former patients. Rubber-dams and wedges, if carelessly employed a second time, could also convey the poison. Napkins would probably be efficiently cleansed by boiling.

I have now endeavored to go briefly over the subject of the manifestations of syphilis in the mouth, and to point out some of the dangers from them to the operator and to other patients, and the methods of avoiding the danger. A few words may be added in regard to the practical recognition of syphilis in the mouth. First it may be recalled that, as was remarked at the opening of this paper, syphilis is capable of imitating many states or conditions dependent on quite other causes; and there are many alterations of mucous membrane about the mouth other than those of syphilis, with many of which you are undoubtedly familiar. Time and space would fail in an attempt to give any detailed consideration to these, and I must be content with a few suggestive hints. Aphthous sores within the mouth will sometimes be strongly suggestive of syphilis, and, indeed, it is not uncommon to find them in the mouths of syphilitic patients, where the stomach derangement has been caused by the treatment given for the syphilis. Glossitis of various forms and degrees may also exist and be confounded with syphilitic lesions; the serpiginous form, often called "geographical tongue," will sometimes be very puzzling. In the mouths of smokers, especially, we often get lesions which much resemble the white mucous patches of late syphilis; this leucoplakia buccalis is very apt to come in streaks and on the sides of the buccal cavity, reaching down to the corners of the mouth. The tongue may also be much affected with this disease.

In addition to these superficial forms of mucous trouble we have
epithelioma of the tongue or buccal cavity, which often simulates syphilis very closely; lupus may also affect the gums. Abrasions and ulcerations from sharp or irritating teeth will also be found on the tongue, and may be very suggestive of syphilitic disease.

Thus we see that the diagnosis of syphilis in the mouth may not be an easy affair, and it is necessary when any of these many lesions are found to be extremely careful lest the true nature of the trouble be mistaken and infection occur when least expected, as is usually the case. Hence the necessity of perfect asepsis in connection with dental work.

One word in regard to the connection of the physician with the subject under discussion. I believe it to be the duty of the physician treating syphilis to acquaint the patient with the dangers to which he is exposing others, and if possible to prevent dental work being done, certainly during the early, contagious period of the disease. Should necessity arise for the aid of the dentist, the patient should frankly acquaint him with his condition and the dentist take suitable precautions. Should doubt arise, the dentist should consult the physician in charge of the case. If the physician in charge of a case of syphilis in the contagious period should have occasion to send a patient for dental treatment, he should acquaint the dentist with the dangers involved, just as he would inform the obstetrician, surgeon, or any other medical man who might be exposed freely.

In conclusion, I beg to say that I have not wished to excite unnecessary alarm in connection with the subject under consideration; but having seen a great number of cases of syphilis innocently acquired, and knowing that in a large share of cases the sources of contagion came from manifestation of syphilis in mouth, I cannot too strongly emphasize the danger and urge most careful attention whenever there is danger that the disease may be communicated from this source of contagion.—Dental Cosmos, June, 1898.

MORE ABOUT THE MAXILLARY BONES. By Dr. Edward M. Kettig, Louisville, Ky. Read before Kentucky State Dental Association, May, 1898. Those of you who attended the last meeting of this association, and saw the views of the internal structures of the maxillary bones, as exhibited by myself with the lantern, should have a very fair idea of this part of facial anatomy, and what
little I have to say on the subject here is only intended to lay more stress on two important conditions that play a part in our practice from time to time, and which I believe are not always fully understood by those attempting treatment of these parts. One of these localities I have selected is the opening from the maxillary sinus into the middle meatus of the nose, together with its relation to other openings and secretion of fluids and discharges. The other locality is the hard palate, conditions of cleft palate, in which I hope to explain how this abnormal condition occurs.

The Antrum of Highmore. As to the first proposition, I will say that the antral cavity is so constructed that its opening into the nose is situated at its upper and inner wall, and is often found in the roof of the sinus. This fact flatly contradicts the teachings of leading text books of anatomy, when they say that fluids from the antrum drain into the middle meatus of the nose, for our reason will tell us that if fluids or mucous should be found in the antrum more than enough to keep the surface moist, it would collect by reason of gravitation at the lowest part of the cavity, and in this way could pass only into the nose if the cavity should be filled to overflowing, and we would all be walking about with a water-bag in the hollow of our cheek. Fluids, then, I will say, pass only from the one cavity to the other in pathologic conditions where the antrum is filled to engorgement. Now while the antrum is constructed with a view toward preventing drainage, the other air-cells about these parts are so arranged as to form complete drainage, and while in normal conditions I do not believe that more fluid is secreted in the frontal and ethmoidal cells than suffices to keep the parts moist and lubricated, still we have all felt that sense of fullness about the anterior base of the cranium near the root of the nose when the mucous surface lining the frontal sinus and infundibulum become inflamed and undoubtedly secrete more than enough mucous, and it is discharged through the canal from the frontal sinus or infundibulum into the nose at the orifice of the maxillary sinus, in conditions ordinarily understood as "taking cold."

I do not believe that the mucous lining of the antrum takes on inflammatory action when congestion occurs, as in the case of taking cold, for it is the only cavity not provided with drainage, and would have no way of ridding itself of surplus fluids which the other air cells drain into the nose, and the nose through its natural outlets, an-
terior and posterior. While fluids from the antrum could pass into the nose in cases of engorgement, no fluids from the nose could get into the antrum, for the reason that the muciform process acts as a guard in front of the maxillary opening. It forms by its shelf-like process on the side of the middle meatus, the hiatus semilunaris, and protects the antrum from anything getting in from the nose. The infundibulum ends in this semilunar groove, and in pathological conditions might pass from the groove into the sinus, but only from the frontal and ethmoidal cells and not from the nose itself. With this supplementary explanation, in connection with the lantern slides as shown last year, I hope we will all more intelligently understand the treatment of antral troubles and its relation to the frontal sinus, together with possible complications of that cavity.

**Etiology of Cleft Palate.** Our second proposition was to explain how cleft palate occurred, and the changes found in the development of the maxillary bones under such conditions. We have all seen cases of cleft palate where such cleft deviated either to one side or the other with a usual tendency toward the left, and where one or more teeth were either found wanting or misplaced, without knowing just how the deformity was produced; for our text-books do not teach us these points, giving us no idea at all as to the developmental period of the palatal processes of the superior maxillary bones.

I have endeavored by means of the drawings to show the points of ossification in the palatine processes at times of development, but why a deviation from the normal during any period of gestation should occur, causing cleft palate, will always remain a matter of speculation and conjecture. The development of the superior maxillary bone commences so early and increases so rapidly that it is difficult to mark out its line of growth. It arises in membrane from four points of ossification. These are the orbital, nasal, alveolar and palatine. These appear about the sixth or seventh week of embryonal life and soon coalesce. Hence these parts are claimed by some to arise by one center. They form the lateral portion of the bone which contains all the teeth except the incisors, and is called by comparative anatomists the true maxilla. That portion of the bone which contains the lateral and central incisor teeth arises from a separate point of ossification, and is known as the intermaxillary or premaxillary. In many of the lower animals it remains distinct from the true maxilla throughout life. Where there is union be-
tween the two intermaxilllary bones in the median line, but no lateral union between them and the true maxilla, they form the intermaxilllary bones of lower animals. In man the intermaxillary bone soon unites with the maxilla proper by a suture which may be seen on the hard palate until about adult life. This suture extends back to the anterior palatine foramen.

In single or unilateral complete cleft palate, extending from the facial surface to posterior portion of palatine process, the premaxillary does not unite with parts containing other teeth, neither do the true maxilla and palatine processes of the palate bones unite. In double cleft palate the incisorial divisions may have united in the median line (forming a true intermaxilla), but not laterally with the true maxilla. In some of these cases the vomer can be seen protruding in the median line between the two halves of the hard palate.

We might say that fissure of the hard palate always follows an intermaxillary suture, of which there are five: One on the median line, one between each lateral and cuspid, and two additional between centrals and laterals. In early life there are four distinct portions of the intermaxillary bones, each portion carrying the germ of an incisor tooth. These parts all subsequently join the true maxilla by continuity of tissue, except upon the median line, where the two halves unite by suture. With this in mind, it is not difficult to account for the missing teeth in cleft palate cases.

The origin or causation of hare-lip and cleft palate are to be looked for among the prenatal influences, and are generally conceded to be faults in the developmental process. These influences to be operative must occur prior to the tenth week after conception. The formation of the maxilla begins at a very early period of intra-uterine life, and the extent of the fissure will depend very largely, if not entirely, upon the time at which the arrestance of development occurred; the earlier the period the more extensive the cleft, and vice versa. The fundamental influences, however, which underlie the causation of these defects in development have not yet been reached, but theory alone is our only guide in the matter. Faulty nutrition and heredity no doubt play an important part in these defects, but a condition known as "maternal impressions" is probably responsible for the greater majority of cleft palate cases. It is not resting to note in this connection that most women who are so
unfortunate as to give birth to deformed children, especially those with deformities of the face and mouth, feel very confident that it is the result of "maternal impressions" induced by fright, the sight or knowledge of a like deformity, etc. This may be true or not. When we know more about the influences which the nervous system exerts over cell life, the effects of the physical and mental conditions of the parents during the time of conception, and of the female parent during gestation, we shall be better able to consider the question from a scientific standpoint; till then it would be mere speculation.—*Items of Interest, August, 1898.*

**CONSERVATISM IN ORAL SURGERY.** By Truman W. Brophy, M.D., D.D.S., Chicago. Read before the Illinois State Dental Society, March, 1898. Surgery of the oral cavity and its adjacent parts, including facial deformities, will ever be of great interest to the surgeon, as it not only requires high skill of the diagnostician, but unusual delicacy in manipulation is demanded in order to obtain good results and avoid conspicuous cicatrices and other deformities of the mouth and face.

It is my purpose to briefly state some of the reasons why the surgeon who has been thoroughly educated not only in medicine, but dentistry according to the curriculum of the modern dental college, is especially well qualified to enter upon the practice of this branch of the healing art.

It is customary for the general practitioner of surgery, when operating upon the maxillary bones or in the performance of operations within the mouth, when of considerable magnitude, to make external incisions in order to gain access to and a full view of the field of operation. I hold that these external incisions, followed as they are by the formation of scars, are in a large majority of the cases in which they are made wholly unnecessary. For example, a patient suffering from persistent neuralgia of the second or third division of the fifth pair of nerves, having undergone internal medication extending over a period of many months with only temporary relief, is taken by the physician to a surgeon for diagnosis and treatment. The surgeon decides that a nerve lesion exists and that an operation is required or indicated. The patient is prepared, the operation is proceeded with, and an external incision is made in accordance with the location of the lesion. If of the inferior den-
ternal nerve, the incision is made along the border of the jaw, the tissues are reflected up so as to expose the external surface of the inferior maxillary bone, a mallet and chisel are made use of; the bone is chiseled away so as to expose the inferior dental canal, and the nerve removed. A saw is sometimes employed instead of a chisel for the purpose of removing the external layer of bone covering the canal. The wound is closed by suturing and the patient cared for antiseptically until the wound heals.

These external incisions are wholly unnecessary, as the operation may be successfully performed within the mouth with a moderate incision over the mental foramen, a small incision being made downward from the mental foramen, so that the canal may be entered with a silver probe. Then a drill, after the form of Gates' root-canal drill, exaggerated in size, may be carried into the canal and the contents thoroughly removed.

In order that the nerve may not redevelop as it is inclined to do, the canal may be drilled out so as to freshen the surface of the bone, thus causing the exudate to take place from the freshened bony surface, and the consequent filling of the canal with bony tissue. Experience has taught us, however, that the canal does not always fill with osseous tissue and the nerve will be reproduced in certain cases.

I am of the opinion that there is no more reason for making an external incision for the removal of the inferior dental nerve within the substance of the maxillary bone, than there would be to make an external incision through the cheek to obtain access to a third molar tooth for the purpose of entering the pulp-chamber and removing the pulp therefrom.

Abnormal conditions of the second division of the fifth pair of nerves, or the infraorbital nerve, frequently require surgical operations for their cure. It has been customary in performing these operations to make external incisions for the purpose of entering the infraorbital foramen and making exsections of the nerves. I have found that equally good results may be obtained by raising the cheek, making an incision over the cuspid tooth, dissecting up the soft parts, seizing the nerve with a tenaculum as it makes its exit from the infraorbital foramen, carefully dissecting out its branches distributed to the cheek, thence increasing the size of the infraorbital canal by means of a drill, seizing the nerve, drawing it
forward and dividing it, which accomplishes the same end that may be gained by making an external incision.

Operations for the removal of tumors of the oral cavity of various kinds may also be performed without external incisions. The tumor known under the name of epulis, occurring as it does about the margins of the gum, but having its origin in the periosteum and growing sometimes to an enormous size, may be removed in all cases within the mouth without external incisions.

The method of procedure in removing tumors of the superior maxillary bones has been to make an incision usually either through the median line of the lip to the septum of the nose, thence around the ala of the nose to the inner canthus of the eye, thence to the outer canthus of the eye, dissecting up the cheek, reflecting it backward; or to carry an incision from the angle of the mouth to a line midway between the lobe of the ear and the angle of the jaw, and then to proceed to remove the superior maxillary bone together with the tumor through the incision made. I have found that such a procedure in a large majority of cases is unnecessary. Tumors, especially of the sarcomatous or carcinomatous type, by no means always affect the bony tissue of the hard palate except by absorption of that bone by contact and pressure. Especially is this the case in the formation and development of giant cell sarcoma, a tumor so frequently met with in and about the oral cavity.

Three times during the past four months have I found growths of this character involving the nose, all the space occupied by the antrum of Highmore extending back into the sphenoidal fissure from which they often have their origin, and I have successfully removed them by making incisions within the mouth, over and immediately beneath the malar process of the maxillary bone, carrying them forward to the median line, dissecting the tissues away and thus reaching the great mass of the growth. With properly formed and suitable sized curettes these growths were removed, and the parts, so far as time would allow us to judge, have assumed a normal condition, as there has been no recurrence to date of these growths in any one of the three cases referred to. In one case in particular a marked absorption of the maxillary bones had occurred, leaving only the soft parts between the oral surface of the soft palate and the tumor lying upon its surperior surface. So extensive was the destruction of the bone in this case that that which was the sum-
mit of the vault was depressed or carried downward by the tumor so as to be on a line with the occluding surfaces of the teeth. In order to make this operation without the loss of the teeth, and without the loss of the palate, it became necessary to construct a splint of metal, made by swaging it with dies, so as to make it fit the surface of all the teeth of the upper jaw. This splint was cemented into place, the patient dismissed until the following day, when the operation was made of removing the tumor. The teeth were so loose that some of them might easily have been removed by the fingers. The split, however, supported and held them firmly in place, and the tumor was removed. While the cavity has not yet filled, the parts are in an apparently healthy condition and the teeth have become quite firm. This dependent part of the palate, caused by the pressure of the tumor, contracted and finally resumed its former shape. The palate is restored, and the articulation of the patient is in no sense impaired. If, however, the usual course of operative interference had been adopted, the patient would have been deformed through life.

In cases of osseous tumors, involving the greater portion of the maxillary bones, it is often expedient to remove them without external incisions. The superior maxillary bone may be removed within the mouth and without any external incision whatever. Necrosis and caries of the bones may be removed easily within the mouth. On several occasions I have removed one-half of the inferior maxillary bone without external incisions. In a case of necrosis I removed the entire inferior maxilla within the mouth. This, however, was a comparatively easy procedure as there were no attachments that were difficult to release. It is needless to say that tumors of the lower jaw may be more easily removed than tumors of the upper jaw, as better access to them through the oral cavity can be secured. It may be well to urge upon all the great advantages to be obtained in the treatment of fractures of the maxillary bones by the adoption of internal splints, and the dentist's ability to manipulate metals in the construction of regulating appliances, crowns, etc., is well adapted to the construction of apparatus or splints for the treatment of fractures of the maxillary bones. The application of external splints and bandaging, even skillfully applied, is very inefficient in accomplishing the work desired in securing a good adaptation of the fragments and restoration of normal occlusion of the teeth.—Dental Review, August, 1898.
RESTORATION WITH PORCELAIN IN FRACTURE OF THE TEETH. By Dr. L. Foster Jack, Philadelphia. Read before the Academy of Stomatology, March, 1898. I present a few notes and a diagram or two from which I hope to demonstrate the use of porcelains for the restoration of teeth that have been fractured. The method to be described is particularly directed in its application to those cases wherein the vitality of the tooth has not been disturbed—that is, where the pulp has been but slightly or not at all encroached upon.

The use of porcelains is especially called for in fractures occurring in the superior incisors, but they may be useful as far back as the anterior surface of the first molar. Preeminent stands the central incisor, most subject to fracture, either by a blow, a fall, or in ordinary use.

To be brief, we will turn to the diagram (Fig. 1). Here we have a left central weakened by decay on its mesial surface. The enamel, having been robbed of its support, is weakened and becomes frail. Its possessor bites upon something unusually hard, breaking away the corner, leaving an unsightly gap. (Fig. 2.) To remedy this defect now becomes our task. It is simple but tedious, for the parts are small, and it requires exactness to be rewarded with a good result.

The first step in the operation is to cut the irregular walls formed by the fracture and cavity in a direct line from the cutting edge to the cervix (Fig. 3), grinding at the same time both the labial and lingual walls to the same plane, thus making a flat and even surface, with the exception of the cavity in the upper central portion. This is accomplished with a corundum or carborundum disk, one side of which is flat.

The next step is the preparation of the cavity. After the removal of all decay and softened tooth-structure the cavity is extended as
far towards the cutting edge of the tooth as is compatible with strength, but is not made deep, care being exercised to avoid the pulp. The edges of the cavity are but slightly undercut. The floor should be nearly flat and convex if encroachment upon the pulp is feared. If the pulp is in danger it should be protected from pressure, which may be exerted at a subsequent stage of the operation.

The tooth being now prepared, we proceed to the formation of the porcelain counterpart. The cavity in the tooth is lined with platinum foil; this is carefully removed, filled with porcelain body, and the latter fused in the Downie furnace. After stripping off the platinum the porcelain body is then placed in the cavity and ground flush with the walls.

An all-porcelain tooth-crown of appropriate color, and corresponding in form and size as nearly to the natural tooth as possible, is selected. From this we cut with a disk that portion which is desired for substitution. This is ground on the lathe until it is sufficiently diminished in size to correspond to the absent part of the tooth. The grinding is done principally upon the straight side, and it is not necessary to cut the labial surface if the tooth-crown has been well selected.

The relation of the outer porcelain (a) and inner, or retaining porcelain (b), is obtained by temporarily fastening the two together with wax and fitting them to the tooth. The wax is then replaced by a thinly mixed layer of the porcelain body and the two parts are fused together in the furnace. The piece is cemented to place, finely fitted and polished.

Fig. 4 represents a case of fracture of the distal portion of a right central incisor, one which would probably only occur in a child from the result of a fall. In this case the preparation of the tooth is a simple operation. The line of fracture is made free from all irregularity and the curve trued. Two pits are drilled at the points a, o to the depth of one-eighth of an inch, in diameter large enough to freely admit No. 19 standard wire. It may be found necessary to enlarge them laterally at the opening to receive the retaining posts. The substitute is selected and cut from a tooth-crown as described in the foregoing case. It is then deeply grooved, with a diamond-shod disk, from the contact surface inward, forming an opening semicircular in form. Into this a piece of No. 19 stiff
platinum wire is fitted, the ends being allowed to protrude one-eighth of an inch. The groove is then filled with porcelain body and fused. It is then ready to be cemented into place.

Fig. 5 indicates a straight fracture involving the incisal third of a central or, more frequently, a lateral incisor. The procedure in the preparation of the stump is the same as in the case preceding. The porcelain tip is also formed as in the last operation, with the exception of insertion of the retaining posts.

For the case under consideration a diamond-pointed drill becomes requisite, for the purpose of forming two pits for the reception of the retaining posts. These are of platinum and are retained by fusing as was the wire in the previous case.

Bicuspids and molars, in which the mesial and a portion of the buccal surface has been lost (Fig. 6), can be restored in the way described for the proximate surfaces of incisors.

It must be evident to all that the chief advantage of the method, if it has any, is in the fact that the porcelains can be ground to fit perfectly without the hindrance of pins or posts. Also that the porcelains are not baked for individual cases, but are selected from tooth-crowns in stock, thus obviating the uncertainty in color; the method enabling one to select a shade and form as nearly perfect as possible. Crowns best suited for the purpose are those of a fine texture, as they can be ground and polished to fit any irregularity and because there is less color-change than in the more porous bodies. By this I mean that there is often a surprising change manifested in the color of a porcelain after it has been set, due probably to the reflection and absorption of light. In this connection the selection of cement is an important consideration, for the porcelain can be varied a degree or two in shade, either lighter or darker.—International Dental Journal, August, 1898.

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BRIDLE FOR THE CONTROL OF MOUTH-BREATHING.
By N. B. Jenkins, M.D., Knoxville, Tenn. Mouth-breathing is probably coexistent with 50 per cent of the diseases affecting the larynx or pharynx, and possibly with a greater per cent of catarrhal affections of the nose and middle ear. It plays a more important part in diseases of the respiratory, olfactory, auditory, and gustatory organs than casually might be supposed.

It may be observed that patients afflicted with adenoids, stenoses,
hypertrophied tonsils and turbinated bodies, ecchondroses, nasal polypi, and with other obstructions of the nasopharyngeal air passages, do not during sleep respire through the nose. In most cases a discontinuation of nasal respiration is an enforced alternative, there being present some form of obstruction. It may be due to a habit of breathing, resulting from some former temporary encroachment on the air passages of the nose and pharynx. On the other hand such obstructions often appear as the results of the non-use of the nose in respiration.

Let me describe a bridle which from successful experience is offered as a corrective of the above-mentioned injurious habit. This device is made of four strips of cotton webbing one inch wide and commercially known as "stay binding." It has but one fastening, which may be a button, safety-pin, buckle or knot. The bridle should be adjusted to the head of the patient by the use of pins and then removed and stitched as soon as fitted. The cost of this bridle is five cents. It can be fitted in two minutes. The fit should be sufficiently loose for comfort and after a few nights' use it may be tightened if necessary.

The primary result of the use of this contrivance is a noticeable change in the cleanliness of the mouth on awakening. This is largely due to the absence of the products of microorganisms in the saliva. When lodged in the secretions of the sleeper's open mouth they find favorable conditions for speedy propagation. In high dry altitudes the results are less marked, because of the freedom of such atmospheres from all forms of bacteria.

In nasal catarrh (provided there is no sinus complication) a perceptible decrease of the secretion will speedily follow the use of the bridle. The hypertrophied tonsil frequently resumes its normal condition, and adenoids occasionally disappear after the continuous use of this bridle for a few months. Catarrh of the middle ear is of frequent occurrence in mouth-breathers, and in many instances may be permanently relieved by the use of the bridle in connection with the customary treatment. Morbid conditions of the pharynx and larynx are always benefited by a resumption of nasal respiration. All such obstructions as enchondroses, polypi, deviating septa, exostoses, etc., claim the attention of the surgeon, and after his work with the knife the ordinary nasal detergents should be used for a few days prior to the wearing of the bridle. The metal dila-
tors of Dr. Lenox Brown, in such cases as they are recommended for, will greatly facilitate the acceptance of this mechanism and the return to nose breathing.

A mild carbolized solution of cocain injected with an atomizer into the nasal cavities before retiring will increase their caliber and may be used with good effect by the patient while becoming used to the bridle.

As a prophylactic measure against the contraction of pneumonia, bronchitis, and other respiratory diseases which attack the great masses who sleep in cold and damp bedrooms, enforced nasal respiration with the use of the bridle should prove valuable. No better demonstration of the injurious effects of an improper moistening and warming of the inspired air can be made than the study of exaggerated cases of hare-lip and cleft palate, which usually in early infancy contract some fatal form of respiratory disease.

The cosmetic effect of nasal respiration is not to be overlooked. In childhood the protruding jaw, thick lip, atrophied nose, and other facial deformities, can in many cases be relieved or prevented by the timely use of this bridle.—Medical Record, Sept. 10, 1898.

STUDY OF EUCAIN "B" IN STOMATOLOGY. By Dr. A. Legrand. Read before the "Societe de Therapeutique," Paris, June 22, 1898. The results recently obtained with eucain "B" in general surgery by Dr. Reclus, and communicated to the Academy of Medicine at its session of March 29, have led me to make important modifications in the use of that drug in stomatological work.

Instead of the 1 per cent I employ a 2 per cent solution; this is absolutely free from danger, and permits operation to be undertaken very quickly. Analgesia sets in immediately, and there is no necessity of waiting for five minutes, as is the case with the weaker solution. This is no slight advantage for the patient. Further, we can operate in the upright position without the least fear of trouble, and we can allow our patient to walk out immediately after the work is done, which is not possible with cocain.

The following points seem to me to be important enough to attract the attention of stomatologists. Without going into the technique that is to be followed in order to obtain proper analgesia, I will only say that the injection of 1 cubic centimeter (17 minims) i. e., 2 centigrams or 1/3 grain of eucain "B" is sufficient in the majority of
cases to permit the extraction of a large molar without the patient suffering any pain. If this dose should appear insufficient, there need be no hesitation in injecting a larger quantity of the anesthetic solution. Immediately after the injection the diseased tooth can be removed. Dr. Dumont and I have operated over sixty times by this method and our patients have never experienced any pain.

To study any postoperative troubles that might appear, our patients were made to walk up and down in the yard of the hospital immediately after the operation for from five to eight minutes at a moderate gait; then they were taken into the office and examined. We have never been able to find any change in their general condition, nor have we ever found them show that anxiety and pallor which is seen after cocain and more especially after holocain.

Our observations were made upon patients of both sexes and of all ages. Thus, in a child of 12 years we extracted the second molar of the left side of the lower jaw, after having injected into both sides of the tooth ¼ cubic centimeter (4 minims) of the 2 per cent solution of eucain "B." The anesthesia was perfect and no trouble followed the operation. We have done extractions upon hysterical women and nervous men without the occurrence of anything abnormal. In one young man, 22 years of age, we removed four roots at 1 sitting. Analgesia was obtained by injecting two syringe-fuls of the 2 per cent solution, about 4 centigrams (½ grain) of eucain. The patient experienced no discomfort, though seated, and felt none after he had taken the short walk that we prescribed. For the above reasons I agree with Dr. Dumont in considering eucain "B" in 2 per cent solution as the anesthetic of choice in stomatology.—*Revue de Therapeutique, July, 1898.*

**Defect of Boiled Water.**—We are often told that in making tea the water should be poured on at the moment of beginning to boil, if the vivacity of the infusion is to be preserved. The reason is that every moment of boiling disengages the fixed air in the water, in every bubble that rises and bursts on the surface, until the residuum is devoid of the inspiriting element, free oxygen, as well as of the useful element, nitrogen. An exchange says: "The proof of this may easily be seen. If fresh cold water be used, the first time it boils it will lift the lid of the kettle and conduct itself in an uproarious manner, boiling over and trying to put the fire out. It is when in this state that it is good for making tea. If you put it on the fire again you will find you cannot get it to boil over a second time, still less a third."—*Modern Medical Science.*
Dear Digest: BALTIMORE, September 12, 1898.

We have sometimes wondered why the preacher, the lecturer, or the teacher should consider himself a hard-worked man, but since our obligations to the Digest have matured so promptly each month, we are almost inclined to wish we were as prolific as a rabbit or a pigeon, that our offspring might go forth each month without effort. A little girl sent after milk returned with an empty can, and responded to the inquiry why no milk, "I guess the cow didn't lay any to-day." So we feel upon a survey of the field. Eggs are scarce and orioles are not leghorn chickens. Our Baltimore dentists have been scattered for the last two months in search of pleasure and health. While Baltimore with its numerous resorts is not a bad place in which to spend the summer, still we all look forward to and enjoy the reprieve from the calls upon time and patience which sap our energy and weary our fingers and brains. The bracing atmosphere of the last few days will bring us back with renewed zeal and the responsibilities of life will weigh lighter because of the outing.

The colleges are beginning to show signs of activity, students are coming in, and boarding-house keepers are sharpening the hash-cutters ($2.50 or $3.00 per week doesn't buy oysters and terrapin even in Baltimore), and altogether hash and the dressing that goes with it is not half so bad as hard-tack. So let us hear no fault-finding; this war has taught us many lessons.

With the coming of the candidates for hash and dental instruction one cannot but wish that their preliminary test were in the hands of some public official, such as the superintendent of public instruction, so that the temptation to admit those unable to fulfill the demands would be removed from the schools. Not that we attempt to say that men of meager attainments are absolute failures as dental students, but the standard which has been raised should not be deviated from for pecuniary reasons.

The training of American dentists in the past, when no preliminary requirements were exacted, has not been a cause of reproach
or shame to the colleges. The graduates of American colleges of dentistry have stamped their impress of superiority in all the countries of the world. Why? Not always because they were men of liberal education or culture, but because their practical training and instruction fitted them to do superior work. The book which created the greatest sensation in educational circles in France this year was a work by a Parisian editor, entitled "The Secret of the Superiority of the Anglo-Saxons." The comparison was between the Anglo-Saxons on the one hand and the French and Germans on the other. The "secret" alleged was the superior adaptation of English and American educational methods to form efficient and practical individuals. This has been the secret in American institutes of dentistry—the graduate is a dentist.

We note with sorrow that the Washington City Dental Society has by vote stricken from the roll of honorary membership the name of a man 87 years old, whose creditable record is indissolubly linked with the history of dentistry. As culture advances respect for age and honorable past should increase. What mean these vandals by defiling and destroying the landmarks of our profession? Fie! Shame upon such recklessness!

There is a screw loose in New Jersey; the moral and ethical tone of society work is lowered by the disgusting sanction of secret nostrums, and the whole State Society is about to be turned over body and soul to Homeopathy and Christian Science. Has the Jersey mosquito failed to draw off the excess of impurities generated in that climate, or has man with his ingenious inventions and love of ease planned to escape the provisions of Nature? We hope for better things from New Jersey in the future.

Cordially yours, Oriole.

PHILADELPHIA LETTER.

Dear Digest: PHILADELPHIA, September 20, 1898.

Among the events of the month were the meetings at Omaha of the National Dental Association and the National Association of Dental Faculties. The Faculties had a satisfactory convention and admitted three new schools, located in San Francisco, Denver and Pittsburg. They also extended the session to three years—one term of seven months each year—after this year.

The National got to work promptly on Tuesday, August 30, as
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arranged. A very hearty reception was tendered the body by the mayor of the city. This was responded to by Prof. James Truman, of Philadelphia, in his happiest mood, so of course it was well done.

The president's address was next in order and contained some timely suggestions and advice, and was referred to a committee for future report.

Every session heard some papers, but they were not much in evidence this year. Discussion was at times spirited and interesting, and although the session closed on Thursday instead of Friday, in consequence of the heat and its influence on enthusiasm, the meeting was not without profit.

One of the most pleasing incidents of the Omaha gathering was a dinner tendered Dr. H. J. McKellops on August 31, that date being his seventy-third birthday. This compliment was extended by Dr. C. E. Smith, of Omaha, who invited a number of Dr. McKellops' friends to participate, and among them were Drs. Taft, Peirce, Harlan, Barrett, Fillebrown, Crouse and others. There were some interesting informal talks given, and altogether it was a very graceful tribute to a worthy and faithful member of our profession. Dr. McKellops has practiced dentistry for fifty-four years, most of the time in St. Louis.

Another incident, which while lively was not so pleasant, was our attendance, by invitation of a local dentist, at the initiation exercises of a secret society—the Ak-Sar-Ben of Omaha. It was a hot evening and the rooms in which we were seated reciprocated. There was much hair-raising and we might say hair-splitting ceremony, and goat-riding seemed to be in the ascendancy. All whom we heard express themselves concerning it felt that it was lacking in dignity for professional men to participate in such exercises. We were surprised to see some of our good Chicago brothers and one from our own Quaker City going through the grotesque ceremony. They were fortunate not to have any bones broken and will certainly carry bruises about their anatomy for some time to come.

There were a number of Philadelphians present at the Association meetings, prominent among whom were Profs. Peirce, Truman and Guilford; more should have been there and thus shown interest in professional affairs. New York City was very slimly represented and the editors of the Dental Cosmos and Items of Interest were conspicuous by their absence.
Another matter we particularly note this month is a contribution by Dr. E. K. Wedelstaedt in the *Items of Interest*, criticising Dr. Clapp's chapter in the American Text-Book of Operative Dentistry. This criticism relates principally to methods of practice and terminology. The former are largely deserving, we think, but as to the terminology it seems to us Dr. Wedelstaedt "strains at a gnat" a great many times, and his endeavor to be nice and precise is frequently humorous. Dr. Ottolengui effectually answers his paper in the editorial columns.

Since our last letter we have carefully gone over Prof. Barrett's new book on Oral Pathology and Practice. It is written in his wonted manner—clear and concise—the author being one of the clearest thinkers and writers in the dental profession. We cannot agree with Prof. Barrett in all his theories, especially those on "Diseases of Dentition," but taken all in all we think it is the best work on the subjects treated for students' use now extant.

Cordially,

The Spectator.

NEW YORK LETTER.

*To the Editor of the Digest,* New York, Sept. 19, 1898.

Mr. Editor: *The Dentist,* London, gives a dig at the veteran dentist who advertises to sell out his practice after many years of active devotion to it. "A good opening for a young man, terms cash."

Cotton cones are good things and we have used them for many years, and lately mentioned the fact in the *Dominion Dental Journal.* We notice a fellow dentist in the same journal tells how nice his cotton cones are.

For nearly seven years we have used cocain solution, locally applied to the soft tissues with our finger, and have never seen the slightest difficulty occurring. Dr. Harlan's case must have been idiopathic.

A new practice is being advocated—dental decay dealt with by medicines—this may be possible.

Dr. Biro's resumé, found in the September *Items of Interest,* of the work of Drs. Black and Williams, is really refreshing. We Americans are hardly able or willing to deal so fairly with each other's work, but we are not to be left without witnesses of fair treatment of what men put forth with honest purpose. How few men keep back their true dispositions in dealing with one another.
We call attention to Dr. Kirk's article in the August number of the *Cosmos* concerning abscess on teeth with living pulp, a subject as yet but little written upon. We first notice his remarks concerning the phenomena attending the evolution of this condition. He states that inflammation is somewhat modified as to violence. While this is frequently true in the initial disturbance, often it will become intensely violent. The truth of this is confirmed by personal suffering and by a goodly number of cases in practice. Here we would call attention to Dr. Nash's views of the initial manifestations by a slight uneasiness at the apex. He has given much suggestive thought concerning the early uneasiness of the tooth, and Dr. Kirk has made some use of his terms and line of thought. The term "auto-intoxication" is brought forth and he goes largely into what makes up this form of self-intoxication, mentioning the excessive use of coffee, tobacco, etc. Dr. Kirk says that a storage of toxic conditions takes place, and not being eliminated frequently produces serious effects. He leans strongly toward the gout theory, taking the ground that it is the disturbance of the synovial fluid, and this produces an erosion. He concludes that the "line of least resistance" often produces an outlet at the gum margin. We think this is sound reasoning, and have gone on record that the initial disturbance is formed in the pulp tissue, originating from many kinds of nerve disturbance. More such papers as Dr. Kirk has given us will stimulate intelligent and much-needed thought on this subject. With our present enlightenment there is not much necessity of removing a tooth found affected with this particular affliction.

One conclusion is settling down upon our minds—that we are coming to the truth regarding the formation of the so-called pocket or sinus. While this will conflict with much former belief, it is gratifying to relinquish any idea if we think there is a truer one. We are satisfied that the formation of the sinus or pocket is produced by pulp irritation, but always only at the apex, yet we believe that the irritation commences in the pulp-chamber. With destruction of the pulp the difficulty is at an end, certainly so far as pain is concerned, and with favorable conditions the firmness of the tooth is secured. Our method of procedure has been after destroying and removing the pulp, not to rest there, but to make an opening through the foramen and force cauterizing medicine through. This finds its way along the track that the pus has followed, and as can be
readily seen, secures a definite application of the remedy to the disordered parts.

What can be said concerning dental parlors? Are we a liberal profession? Can there be claims for being professional? We hear so much of legislation; knowledge is of greater power for success with patients than any substitute.

Let the man who defames such a useful practitioner as the late Dr. Evans be buried in oblivion, even though he does get his privilege through the columns of the *British Dental Journal*.

Drs. Spaulding and Barclay of Paris, and Dr. George Field of London, were in New York during September.

We learn that there is to be no code of ethics in the new National Dental Association. We think this true progress.

We see so much regarding the dividing line of medicine and dentistry. Nonsense! No one can practice dentistry without practicing medicine, if done intelligently.

A bequest of one million and a half dollars for a medical department in connection with Cornell University, to be established in New York, is attracting much attention, and there seems to be prospect of a sort of teaching which we have emphasized, namely, teaching small classes over the patient. We marvel that some one at least of our schools does not adopt it. Is it possible, as has been charged of late, that our schools are in bondage to commercial competition, and stand in fear of each other? We see a little hope that the late Dr. Evans' estate will ultimately develop the above mentioned plan. Cordially, New York.

**Epithelioma of the Face Successfully Treated by Swabbing with Arsenious Acid.—**At the Society of Dermatology, March 10, Dr. Hermet showed a patient who in October, 1897, was found to have epithelioma of the face. Arsenious acid was applied, the surface of the ulcer being left exposed to the air after the method of Czerny. The new growth was destroyed by the early days of January, 1898, and cicatrization was completed by February. The patient had previously been treated with chlorate of potassium without the slightest benefit. Czerny's method, employed by Dr. Hermet, consists in using three solutions of arsenious acid in equal parts of water and ethyl alcohol. The first solution, of the strength of 1 to 150, is applied to the ulcerated surface. The second and third solutions, which are stronger, are applied to the scab. The ulcer is swabbed with the solution every day and excessive pain is kept in abeyance by hypodermic injection of morphine. When the scab falls off the raw surface is treated as an ordinary wound.—*Lancet*. 
The Dental Digest.

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Where All Communications Should be Addressed.

Editorial.

FIRST ANNUAL MEETING OF THE NATIONAL DENTAL ASSOCIATION.

Considered from any standpoint the recent meeting can hardly be called a great success. The attendance was as large as could be expected when it is remembered that Omaha is a long distance from any large center, but the impression was quite general that the hotel accommodations were inadequate, and this incorrect rumor probably kept many from attending. The chief cause of the poor attendance, however, may be safely ascribed to the war and the hard times attendant thereon, for the entire country has been at a standstill, business, literary work and every interest being affected, and the section work was therefore much neglected. Although the executive committee sent letters to the officers of the different sections, calling attention to the fact that it was expected of them that reports would be ready, and notwithstanding the fact that the chairmen of many of the sections made special efforts to obtain material for reports, the responses were never so meagre. Taking into consideration the intense heat and all the drawbacks which were present, the only wonder is that the meeting turned out so well as it did.

After surviving all it did in its first convention, the National Dental Association will surely prosper under the more favorable conditions which are in store for it in the future. The greatest good must come through the work of the sections, and while time and space will not permit us to discuss the question here, we intend to devote a series of editorials to the need, scope and possibility of section work.

REMOVAL OF THE DENTAL PULP.

This month we publish an article upon this subject by Dr. B. Holly Smith, who deals largely with what he terms the evil effects of arsenious acid for devitalization of the pulp. A careful perusal
of the paper will show that the author attributes pericemental disturbance to the effects of arsenic. He quotes from an experience of sixteen years, during which time he has not seen a case of pericemental inflammation or abscess where the pulp has been removed without resorting to the use of arsenic. To avoid this pericemental disturbance the author abandons the use of arsenic and uses cocain applied with a current of electricity—cataphoresis. In the discussion several speakers gave their experiences and methods, some using cocain without cataphoresis and others employing various schemes to extirpate the live pulp. The weight of argument agreed with the proposition that arsenious acid is the cause of pericemental disturbance in pulpless teeth.

It is always gratifying to find the profession looking for the best method of procedure, and while this discussion was not new and most of the points had been given before, the several views were not offered in so dogmatic a manner as has characterized most of the previous discussions on this subject. We now wish to comment on the theory there propounded, as we do not agree with it. In an observation of over twenty-five years we cannot trace a case of pericemental disturbance which could be attributed to the action of arsenic at the end of the root. We have, however, had severe pericementitis where some of the arsenic escaped from the cavity and came in contact with the membrane at the cervical margin of the cavity. We could safely attribute the disturbance to the arsenic, there being certain evidences of its action on the gums. Other than this we have never had a case where the pericemental trouble could be traced to arsenic. In fact, the cases which have given the most trouble have been where arsenic was not used, but where the pulp had previously died and the sepsis resulting has caused varied degrees of inflammation.

If after the pulp is destroyed by arsenic it is carefully and entirely removed, some antiseptic being used in connection with the operation, and the root immediately and very thoroughly filled, the filling so placed as not to irritate or cause inflammation, there will be an absence of any pericemental disturbance or abscess.

We believe one fertile source of trouble is the use of gutta-percha for root-filling, both the dissolved and the points which are now so generally used and which are apt to cause irritation at the end of the root. The disturbance from the use of gutta-percha is due to
two causes—forcing air ahead of the filling, which is not allowed to escape because of the plasticity of the gutta-percha, and forcing particles of gutta-percha through the apex. We have heard of methods of procedure with this material described, evidence that it had gone to place being indicated by a slight pain felt by the patient, when in reality the compressed air will produce an equally disturbing symptom, and so such evidence is entirely worthless.

We have also seen acute inflammation caused by the air forced ahead of the gutta-percha, the trouble dating from the time when the filling was first inserted, and when evidence that something had gone to the end was distinctly given by the patient. A careful examination afterward revealed the fact that the gutta-percha had not reached to within one-quarter of the end of the canal. In other cases we have had positive proof that the operation of filling had been so thorough that some of the gutta-percha went through the end of the root, and the tooth thus treated had been a constant source of trouble from no other cause than the irritation of this material protruding through the apical foramen.

While the pulps of the six anterior teeth can be anesthetized and painlessly removed without the use of arsenic, such procedure is not applicable to the molars nor scarcely to the bicuspid. We believe even the single-rooted teeth can be treated quite as safely with arsenic, and that when trouble arises it is usually traceable to other causes.

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A RETROSPECT.

"One of the dramatic things happened at Omaha when Dr. J. N. Crouse placed his resignation as a member of the executive committee before the meeting. He said that the president told him he ought to resign, and therefore he did it. Some one moved that the resignation be laid on the table, which was done. Not more than four or five voted out of thirty-five or forty present. We think he should have persisted and resigned. There are others fully competent, and they are not running dental depots. It is a very embarrassing position for a dental dealer to be directing the business affairs of a dental association; and we wonder why the doctor does not step aside. Such a feeble endorsement as he got at Omaha is not very encouraging. No one is more willing to accord praise to him for his work in the D. P. A. than the writer, but now that he has personal, public interests in the dental supply business he ought to leave the matter to the judgment of his friends and retire from such conspicuous society work and stay in the ranks. We feel sure that the asso-
ciation would do better to have an outsider do its business. The
meeting this year was not a success numerically or from a literary
standpoint, due, as we have said, to the dilatory methods of the
executive committee. If the next year is not better managed or
advertised we will feel called upon to criticise the executive com-
mittee more severely than we have in the past. We are for the suc-
cess of the National Dental Association first and last, and men can
take care of themselves."—Editorial in September Dental Review.

We ask our readers to carefully study the above, not that we care
for the personal criticism, but because there is a vital question
involved. For some time there has been much vicious falsifying
and misrepresentation in regard to our connection with the supply
business, and it is therefore important that the men who honestly
desire to see the best possible things done for our profession should
understand the true situation.

The facts are as follows: While we are actively engaged in the
practice of dentistry and this is our sole means of livelihood, we
are at the same time attempting to band the profession together in
an organization which shall have the elements of greater perma-
nency than are possible in the Protective Association alone.

Without going much into detail regarding the plans of the Dental
Protective Supply Co., suffice it to say that it is our earnest and
honest conviction that this movement is destined to be of the great-
est possible benefit to us as a profession, giving us independence
and a commanding position not faintly understood as yet by the
great majority of dentists, and making it possible for us to control
our supplies and legitimate inventions, and to stop the patent abuse
and many of the objectionable business methods now in vogue.
Greater than all other considerations, it will band us together as can
be accomplished in no other way, because of the material interest
and ownership each member will possess. This cooperative supply
movement therefore presents possibilities of the greatest importance
for the betterment of the dental profession, and although only in its
infancy its influence is already working much good.

From the fact that such an enterprise interferes with the interests
of those who have had full sway and who now see a menace to
themselves, a strong and organized opposition has been waged
against it, and all sorts of slanderous stories and malicious false-
hoods have been told about us personally to the individual practi-
tioners throughout the land.
EDITORIAL.

Despite the fact that we have gratuitously given our best energies to this work and have furnished a large per cent of the necessary capital, thereby demonstrating to the profession the genuineness of our sentiments and the feasibility of the undertaking, the editor of the Dental Review sees fit to style our labor "personal, public interests in the dental supply business," and advises us to retire from "conspicuous society work and stay in the ranks," because he "feels sure that the association (National) would do better to have an outsider do its business."

It should be remembered that Dr. Harlan is a paid editor and is employed by H. D. Justi and Son, who are one of the leading firms in the combination. Members of the Dental Trust naturally do not wish this cooperative movement to succeed, and so of course Dr. Harlan must do their bidding. We think our readers will readily see that he is not voicing the sentiments of the profession, but is merely one of the mouthpieces for the trust.

As regards our resignation from the executive committee, we fear Dr. Harlan is not wholly disinterested in his good wishes for the success of the National Dental Association. We resigned some years ago, being weary of the duty, and assisted in having Dr. Harlan elected chairman of the executive committee in our place. It soon became evident, however, that he had a serious misconception of his duties, and thought the only important thing was to secure his railroad transportation to the place of meeting. We therefore were forced to help arrange for the meeting that year, and ever since have been kept in office against our personal inclination. So soon as we find one who is willing to serve the National Association unselfishly and with ability, for much self-sacrifice is required, we shall be only too glad to relinquish our duties to him.

The last part of the editorial is the only thing which gives us any great concern, and we confess to being much depressed over the severe criticism which may be in store for us. No doubt the other members of the executive committee are alike terrorized, and for fear that the whole body may become so demoralized as not to be competent to properly perform their duties, we would entreat the self-appointed censor of the dental profession to draw it mild.

GEORGE B. RICHMOND, a dentist, who died at Lansing, Mich., Aug. 3, aged 49 years, was the original inventor of the electric telephone which was in use before the Bell patent was filed.
**Book Reviews.**


The author is eminently qualified for such a work, as he has for many years been a contributor to our literature and has been a teacher nearly all his life.

While it is written from the standpoint of a teacher, and is therefore especially adapted for the needs of students, it will be found a valuable manual of treatment for those who have been long in practice, since it adds much to the field of the dentist that has been too often relegated to the general physician.

The book is exclusively devoted to one subject, it attempts nothing save the consideration of the treatment of oral diseases with their pathology. It is made as concise as possible, and the author has defined his aim in the preface. He believes there has been too much of an attempt to cover the whole of dentistry in one volume, and thinks it is time to teach different branches separately and to have distinct and individualized text-books. The language used is clear and concise, and the whole system of practice taught is consistent and modern. The author has not blindly accepted the assertions of any one, and has not hesitated to call in question and differ with much accepted practice. Having no long quotations from other authors the size of the book has been kept within moderate compass.

A complete and comprehensive index places all the topics at immediate command. The price is moderate, and we would urge all our readers to secure a copy of the same.

**Notices.**

**NEBRASKA STATE DENTAL SOCIETY.**

The officers for the ensuing year were elected as follows: President, T. J. Hatfield, of York; Vice President, C. R. Teft, of Lincoln; Secretary, George S. Nason, of Omaha; Corresponding Secretary, B. F. Fisher, of Omaha; Treasurer, H. J. Cole, of Norfolk.
ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Illinois State Board of Dental Examiners will be held in the rooms of the Chicago Business College, 67 Washington street, Sept. 27, 1898.

J. H. Smyser, Sec'y.

NORTHERN ILLINOIS DENTAL SOCIETY.

The Northern Illinois Dental Society will hold its annual meeting in Rockford, Oct. 19-20, 1898. A good program has been prepared and the profession are cordially invited to be present.

JAMES W. CORMANY, Sec'y.

SOUTHERN CALIFORNIA DENTAL ASSOCIATION.

At the first annual meeting of the Southern California Dental Association, held at San Diego, Sept. 1 and 2, 1898, the following officers were elected: W. A. Smith, President; H. R. Harbison, Vice-President; C. W. Sylvester, 2d Vice-President; L. E. Ford, Secretary; J. M. White, Treasurer. The next meeting will be held at Los Angeles in March, 1899.

E. O. KINSMAN, Sec'y.

NORTHEASTERN DENTAL ASSOCIATION.

The fourth annual meeting of the Northeastern Dental Association will be held in Hartford, Conn., October 19-20, 1898. The meeting promises to be one of unusual interest. The executive committee have made extensive arrangements for a fine exhibit of dental goods, and the clinics and papers will be worthy of attention. We confidently expect a large gathering.

MINNESOTA STATE DENTAL ASSOCIATION.

The fifteenth annual meeting of the Minnesota State Dental Association was held in St. Paul, Sept. 6-8, 1898. The following officers were elected for the ensuing year: President, L. P. Leonard, Waseca; Vice-President, G. S. Munson, St. Paul; Secretary, H. L. Cruttenden, Northfield; Treasurer, H. M. Reid, Minneapolis; Chairman of Executive Committee, G. H. Goodrich, St. Paul; Master of Clinics, W. N. Murray, Minneapolis. The next annual meeting will be held at Northfield, subject to the call of the executive committee, which will probably be some time in August.

H. L. CRUTTENDEN, Sec'y.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The officers were elected as follows: President, Dr. D. J. McMillen, Kansas City; Vice-President, Dr. B. Holly Smith, Baltimore; Secretary, Dr. J. H. Kennerly, St. Louis; Treasurer, Dr. Henry W. Morgan, Nashville, Tenn. Drs. Kennerly and Morgan were re-elected by acclamation. Executive Committee, Drs. J. Taft, Cincinnati, Theodore Menges, Chicago, and S. W. Foster, Atlanta. Ad. interim Committee: Drs. James Truman, Philadelphia; W. T. McLean, Cincinnati, and G. V. I. Brown, Milwaukee.

The next meeting will probably be held at Niagara Falls in 1899, the time and place being left to the executive committee.
NORTHERN INDIANA AND SOUTHWESTERN MICHIGAN SOCIETIES.

The new officers elected at the meeting held at Elkhart, Ind., September 21, 1898; are: Indiana Society, C. G. Keehn, Ligonier, President; T. A. Goodwin, Warsaw, Vice-President; W. O. Vallett, Goshen, Secretary and Treasurer. The next meeting will be held at Warsaw, Ind.

Michigan Society, F. H. Essig, Dowagiac, President; C. B. Hanson, Niles, Vice-President; C. E. Burtsfield, St Joseph, Secretary; A. C. Runyan, South Haven, Treasurer. The next meeting will be held at Cassopolis, Mich., in April, 1899.

COMMITTEE ON THE INTERNATIONAL DENTAL CONGRESS APPOINTED AT THE RECENT MEETING OF THE NATIONAL DENTAL ASSOCIATION.

A. W. Harlan, Chicago; A. H. Fuller, St. Louis; H. J. McKellops, St. Louis; J. Taft, Cincinnati, H. A. Smith, Cincinnati; W. W. Walker, New York; James McManus, Hartford; W. C. Barrett, Buffalo; T. W. Brophy, Chicago; B. Holly Smith, Baltimore; Frank Holland, Atlanta; W. E. Griswold, Denver; C. L. Goddard, San Francisco; L. L. Dunbar, San Francisco; H. W. Morgan, Nashville; E. C. Kirk, Philadelphia; J. D. Patterson, Kansas City; Thomas Fillebrown, Boston; T. E. Weeks, Minnesota.

EXECUTIVE COMMITTEE OF THE NATIONAL DENTAL ASSOCIATION.

A meeting of the executive committee of the National Dental Association was held at Omaha, Sept. 1st, with the following members present: G. V. I. Brown, C. S. Butler, J. Y. Crawford, J. N. Crouse, M. F. Finley, V. H. Jackson, J. D. Patterson. On motion, J. N. Crouse was elected chairman and C. S. Butler secretary of the committee. The chairman appointed the following divisions: First Division, Committee of Arrangements, J. N. Crouse, G. V. I. Brown and C. S. Butler; Second Division, Credentials and Auditing, M. F. Finley, V. H. Jackson and J. D. Patterson; Third Division, Committee on Voluntary Essays, J. Y. Crawford, L. G. Noel and H. A. Smith.

C. S. BUTLER, Sec'y.

NATIONAL DENTAL ASSOCIATION.

The following officers were elected at the recent meeting of the National Dental Association at Omaha: President, F. J. Burkhart, Batavia, N. Y.; Vice President from the East, S. H. Guilford, Philadelphia; Vice President from the West, Thos. E. Weeks, Minneapolis; Vice President from the South, B. Holly Smith, Baltimore; Cor. Sec'y, Emma Eames Chase, St. Louis; Rec. Sec'y, George H. Cushing, Chicago; Ass't Rec. Sec'y, W. E. Walker, Pass Christian, Miss.; Treasurer, H. W. Morgan, Nashville. On the Executive Committee, G. V. I. Brown, Milwaukee; C. S. Butler, Buffalo, N. Y.; J. Y. Crawford, Nashville. Publication Committee, C. N. Johnson, Chicago; C. N. Pelre, Philadelphia. Local Committee of Arrangements, C. S. Butler, Buffalo; D. F. Bentley and M. O. Cooley, Niagara Falls. Next meeting at Niagara Falls, N. Y., first Tuesday in August, 1899.

W. E. WALKER, Ass't Rec. Sec'y.
LATEST DENTAL PATENTS.

29,219. Toothbrush, design, Julia F. Ufford, Boston, Mass.
609,843. Sprayer, De Wane B. Smith, Deerfield, N. Y.
609,875. Electrode for medical purposes, Marian N. Clarke, Wilkes-Barre, Pa.
609,982. Hypodermic syringe, Benjamin T. Winchester, Baltimore, Md.
610,214. Dental engine, John D. Wilkins, assignor to J. N. Crouse, Chicago.

TRADE-MARKS.

31,936. Soaps, perfumery, extracts, and face and tooth powders, excluding perfumed waters, Court Perfumery Company, New York City.
31,950. Disinfecting, antiseptic, and asepticizing preparations, firm of Carl Raspe, Weissensee, Germany.

(List furnished by John A. Saul, patent attorney, Washington, D. C.)

PEACE JUBILEE CELEBRATION.

On October 18 and 19, 1898, the citizens of Chicago expect to celebrate the declaration of peace which ends the long strife between our country and Spain, a strife which has caused the loss of life and health of many of our brave countrymen.

To raise the required funds for these festivities, a committee was appointed to solicit donations among dentists in the same manner in which other professions were being canvassed. It is so seldom that professional men are asked to assist financially in any patriotic celebration, that the finance committee of the National Peace Celebration are justified in expecting the hearty support of the professions.

We understand that the legal and medical professions are offering excellent financial support, and as in a matter of this kind the public is apt to judge the profession as a whole, instead of its individual members, it is hoped by the dentists' subcommittee that their fellow-practitioners in this city will contribute to the full extent of their ability.

The object of the committee is primarily, of course, to raise funds for the noble cause, but we wish also to place our procession at the head of the list if possible. A good share of the money collected will be distributed among the poor families of some of our soldiers, and we would urge that every dentist give something.

The checks should be made out to E. G. Keith and directed to H. H. Schuhmann, Columbus Memorial Bldg. Kindly send them in at once, as an additional list of subscribers is to be published in a few days.

T. W. Brophy,
C. N. Johnson,
C. P. Pruyn,
H. H. Schuhmann,
E. D. Swain, {Committee.
News Summary.

“Personal, Public Interests.”—Will some one interpret this for us?

New Dental College in Des Moines.—The Des Moines College of Dental Surgery has filed articles of incorporation. G. W. Miller, R. A. Patchen and C. A. Bishop are the incorporators.—Des Moines Capital, Sept. 12, 1898.

New Dental College in Chicago.—The following was licensed to incorporate Sept. 19: Von Folde College of Dental Surgery, Chicago; capital, $15,000; to teach dentistry. Incorporators, A. W. Feltman, J. Henry Feltman, John S. Taylor and Herman Meyer.

Traveling Dentist Sued.—Samuel Bowman, of Clarks Mills, Pa., has caused the arrest of C. B. Garvis, a traveling dentist, in answer to a $5,000 damage suit for breaking his jawbone while extracting a tooth. It is said the dentist has no diploma.—Meadville (Pa.) Republican, Sept. 8, 1898.

Missouri’s New Dental Law Upheld.—A dentist at Warrington was convicted of violating the law by practicing without a license and was fined $50. The case was a test one, non-certificate-holding dentists combining to fight it. Four similar cases are pending in other parts of the state.—Kansas City Medical Index, July, 1898.

Wills Teeth to a Church.—George A. Ward, of Rochester, Ind., who died some time ago, left a will with the provision that his teeth, which had been worn for a number of years, should go to the Congregational Church. The gold around the teeth was accordingly sold, bringing $37.00, and same was applied on the pastor’s salary.—Chicago Record.

Dr. James S. Gilliams died of pneumonia Sept. 9, 1898. He graduated from the Pennsylvania College of Dental Surgery in 1863, and had practiced in this city since that time. He was the son of the late Dr. Jacob Gilliams, one of the founders of the Academy of Natural Sciences and a prominent citizen of Philadelphia.—Philadelphia Ledger, Sept. 12, 1898.

Cocain and Gas Too Much.—A woman recently went to a dental parlor in Cincinnati to have some teeth extracted and gas was administered. After several teeth had been extracted she partly revived, but suddenly fell back and instantly expired. At the inquest her daughter stated that her mother had frequently applied cocain to the gums and teeth to relieve the pain, and that she had done so just before going to the dentist. The coroner therefore exonerated him.

Western Dental College Sued.—D. L. Doering has sued the Western Dental College for $2,500, because it refuses to issue him a certificate of examination. There are three terms in the course and the second one was taken at another college. The Western refused to recognize the other college term and will credit him with only two. He tried to compel the college to issue a certificate by writ of mandamus, but failed.—Kansas City Star, Sept. 10, 1898.
To Remove Tar from Glass.—Make a paste the consistency of cream of pulverized aniseed and extract of licorice. Rub it over the tar thoroughly with the hand, wash with soap and water and dry with a soft rag.

An Influenza Baby.—While the influenza was at its height in New York some time ago, in a family where all were suffering with the disease a boy baby was born, and by unanimous consent was named Agrippa.—American Hebrew.

Causes of Death.—According to an English weekly journal it is estimated by a competent foreign authority that only 900 persons out of every 1,000,000 die from old age, while 1,200 succumb to gout, 18,400 to measles, 2,700 to apoplexy, 7,000 to erysipelas, 7,500 to consumption, 48,000 to scarlet fever, 25,000 to whooping-cough, 30,000 to typhoid and typhus, and 7,000 to rheumatism. The averages vary according to locality, but these are considered accurate as regards the population of the globe as a whole.

From Experiments on Rabbits, Dr. T. Oliver concludes that risk of death from asphyxia after inhaling a mixture of air and acetylen is not so great as from a similar mixture of air and coal-gas. The time taken to produce toxic effects is longer in the case of acetylen, and the symptoms are free from the nervous or respiratory excitement seen with other narcotic vapors. Provided asphyxia has not gone too far, recovery is rapid after exposure to fresh air. The subject is receiving further investigation.

Celluloid Bandages.—Celluloid has been suggested as a substitute for plaster of paris, its weight being less than one-fourth. It is readily cleaned, has a smooth surface, and is impervious to urine and discharges. Cut into small pieces, celluloid is dissolved in acetone. This solution is rubbed into each layer of gauze bandage or jacket, a kid glove being worn to avoid the celluloid drying on the skin. Ten layers are necessary. Three or four hours are required in drying. Small holes may be punctured for ventilation.

Dental Society Circumvents Sharper.—During the first week in September a young man giving his name as H. W. Willard called at almost every dental office in the city, had his teeth examined, and made a date to have work done. At a meeting of the city dental society the matter came out, and after comparing notes the dentists reported the matter to the police. The man disappeared however without fulfilling any of the engagements he made. He observed everything about the offices closely, and it is thought was planning to rob them.—Evansville (Ind.) News.

How High Is Your Chair?—Some curious experiments have been made by a Harvard professor to prove what is really the best height for the chair you sit on and the desk you write at. Every person, it appears, ought to have a chair specially made to suit his or her height, and the seat of the chair should be exactly one-quarter of your height from the floor. Thus, if you are six feet high the chair seat should be eighteen inches. The width of the seat should exactly equal its height, and it should slope backward three-quarters of an inch to the foot. The back should be a trifle higher than the seat and sloped slightly, not too much. Finally, your desk should be two-
thirds as high again as the seat of your chair. Thus, if your chair seat is twenty-four inches, the desk should be forty inches in height. When you have attended to all these little details you can sit and write all day without feeling that backache which comes from chairs and desks that don't fit you.

—Boston Traveler.

Toothache Drops Bring Death.—Creosote applied to relieve a toothache was accidentally swallowed by Mrs. Alice Mee, 165 Huron street, yesterday morning, and a few hours later she died at the county hospital. Mrs. Mee was discovered unconscious by her husband soon after swallowing the poison.

—Chicago Record, Aug. 3.

A student recently asked the president of Oberlin College if he could not take a shorter course than that prescribed by the institution. "Oh, yes," was the reply; "but that depends upon what you want to make of yourself. When God wants to make an oak he takes 600 years, but when he wants to make a squash he takes six months."

Intranasal Synechia is very apt to follow galvanocauterization, but is can be entirely prevented by cautering with a few crystals of chromic acid melted on the tip of the probe. The scars thus produced act as insulators, and the process is but slightly painful, much to be preferred to the metal plate and celluloid plates recommended for the purpose.—Jour. des Soc. Med. de Lille, June 18.

"Information" for patient and dentist, a monthly magazine devoted to dental and oral hygiene, and general information regarding noteworthy things throughout the world. The object of this new magazine, which will be issued next month, is to instruct patients and the public regarding oral hygiene and dentistry, and to convey useful information to the dentist.

It is designed for the reception-room table where waiting patients can pick it up and in a few minutes obtain valuable information.

In each issue there will appear articles on some phase of oral hygiene or dentistry, prepared specially for the instruction of patients by the most prominent men in the dental profession.

A department for boys and girls will contain instructive articles on hygiene, about the teeth, etc., written in a simplified style (perhaps in story form) and designed to be read to children in the school or home.

Then, here and there will be a brief suggestion regarding oral hygiene, dentistry, etc., for patients, and an original short story by some prominent author will be published in each issue.

The remainder of the magazine will be filled with short articles of interesting and instructive information regarding things in general throughout the world. This miscellaneous arrangement, while leaving the special dental articles the most prominent, will attract the reader's attention and interest him. This will not only be a valuable magazine for patients, but the dentist will find much in it to interest and instruct him.

Every dentist will be benefited by subscribing for this magazine, the price of which is $1.00. If you subscribe before October 20 you get it at a special rate of 75 cents. Dr. L. P. Bethel, Kent, Ohio, is editor and publisher.
FILLING MATERIALS, WITH SPECIAL REFERENCE TO AMALGAM.

By J. N. Crouse, D.D.S., Chicago.

At the present time there are but two preparations which come under the head of permanent filling materials—amalgam and gold. B-sides these, however, gutta-percha, tin and zinc are useful in many cases; but the zinc preparations are so universally acted upon by the secretions of the mouth as to destroy their permanency; and while gutta-percha is valuable under some conditions, it is applicable only where strength is not required. The same may be said of tin. A superior filling can be made if the force of mastication does not come much in contact with it, but when subjected to this pressure it does not possess the necessary strength. Furthermore, the labor of making a tin filling is about as great as that required for gold, so there is but little tin employed.

Amalgam is the most commonly used of all filling materials for three reasons: First, because of the supposed ease and readiness with which a good filling can be made; second, because it has sufficient strength to resist fairly well the force of mastication, and third, because it is less expensive and so within the reach of the masses. I shall endeavor to prove that the first two of these characteristics are overestimated.

As generally used amalgam is easily manipulated, but the results are faulty in the extreme, and I wish to emphasize this proposition—that to make a perfect amalgam filling is a very difficult task, even more so than with gold, although not consuming so much time. With the alloys in common use it is impossible to make perfect margins, for they are what are called "easily manipulated," and possess the characteristics of being plastic. An alloy which when amalgamated with mercury is soft and plastic, and easily crowded into the cavity in large masses, and furthermore is slow to set. can-
not be so packed into an ordinary cavity as to make a perfect filling, because the mass will shift and draw away from one part while being packed in another, and the only condition under which a fairly satisfactory filling can be made is when the cavity is in a convenient position so that the mass can be pushed into place with thumb or finger, or some instrument, to bring force equally on the entire mass at the same time. Even if well packed it is very apt before getting hard to be shifted by other forces, such as removing the dam or being displaced by the teeth in chewing. If I could induce each operator to make a few amalgam fillings in teeth out of the mouth and examine them with a magnifying-glass, my explanation would be more readily understood, and thereafter those operators would put in better fillings and would never claim ease of manipulation or perfection of filling.

In addition to this difficulty, it must be remembered that most of the amalgams in use shrink enough while setting to make them quite defective and often useless, so far as arresting decay is concerned. To illustrate this point I produce photographs showing enlarged sections of two amalgam fillings in steel tubes. Fig. A represents a perfect filling, made from an amalgam which does not shrink; and Fig. B shows a filling from an amalgam which always shrinks.

A factor second only in importance to shrinkage, which must be included in the causes of failure, is what has been termed by Dr. Black "flow," by which is meant the tendency of an amalgam after becoming hard to change form under pressure when in cavities where heavy force of mastication falls. The mass bends, pulling away from the walls and often bulging considerably out of the cavity on one side or the other. This gradual change in the form of an amalgam filling used to be called spheroiding. In this connection I show four blocks: Figs. 1 and 2 are made from the same alloy. Fig. 2 shows the original block, and Fig. 1 the same block after it has been subjected to a pressure of sixty lbs. for one hour, during which time it changed its shape 50 per cent—that is, it flattened out to just one-half its original thickness. Figs. 3 and 4 represent blocks made from another alloy. Fig. 3 shows the original block, and Fig. 4 after it has been submitted to sixty lbs. pressure for one hour, during which time it changed its shape only one-half of one per cent. These blocks were made in the same dies,
and in exactly the same manner, but blocks 3 and 4 were made from an alloy which is a quick setter, requiring a large amount of mercury and a great deal of trituration before the mass is thoroughly smooth and free from granulation. Its setting rapidly allows of heavy hand

Fig. A.

and mallet pressure without any free mercury being given off. Blocks 1 and 2 were made from a soft alloy, one which sets slowly and becomes plastic with very little mercury. Owing to its slow setting, heavy pressure cannot be used, and it gives off much free mercury under moderate pressure.
Following is an article from a recent number of the British Journal of Dental Science, which I publish in full because the author entertains such radically different views from those I hold:

SHRINKAGE OF AMALGAMS. By Thomas Fletcher, F.C.S., Warrington. "The way this ancient bugbear still crops up is curious. The persons who waste their time on this subject have not yet been able to see that the greatest shrinkage of the worst amalgam is a drop in the ocean as compared with the damage done by alteration of form or so-called spheroiding which occurs. One persistent experimenter, whose writings are well known, told me that one of the amalgams he tested had twisted so much that he could not measure it, and instead of discarding it as worthless, he actually clamped it down in his mould and gravely published the shrinkage. Any amount of reasoning would not make him see that if an amalgam lost its shape after hardening, the publication of its shrinkage was not a matter of national importance. The most curious experience I have had of this kind was with a non-shrinking amalgam. I engraved a monogram on an ivory box, with good anchorages, filled it with a non-shrinking amalgam, and polished all level after hardening. In six months this was "humped up" everywhere, although the anchorages held good. The amalgam was distinctly above the level of the ivory, and had apparently expanded upwards, but only at the expense of the sides, which parted from the ivory.

"If an amalgam shrinks it will naturally shrink in all directions, and therefore, if a plug is inserted in a glass cavity it will leak all over. It is very well known that this is not the case; the leakage occurs only near the top where the amalgam is not confined, it is always worst at the top edge, and rarely if ever extends more than half way down in the worst cases. If it were shrinkage only, the leakage would be equal all over the sides and bottom of the plug. It is surprising that so well known a fact should not have led experimenters to consider the matter more closely, and to recognize where the weak point really is. The method of proving the change of shape was published by me some twenty-five years ago, and has never been questioned by anyone who has made any careful experiments. I have not the slightest hesitation in saying that a micrometer as at present used is of no more service than a penny whistle for testing the working value of any amalgam.

"If those who waste so much time on the shrinkage question would devote a little of it to studying the retention of form, their work would be of some service. No shrinkage tests will give any idea of the actual value, and those amalgams which do not alter in shape are the only ones which are really permanent in the mouth."

From a careful reading of this article I am led to the conclusion that the author does not believe that any amalgam shrinks, or that
if it does, the worst case is not worth noticing. Figs. A and B are a good reply to his statement. Furthermore, that the altering of form which he calls spheroiding is the damaging property of amalgam. I am inclined to think that Dr. Fletcher errs because his tests were made in cavities in materials which were subject to change of climate, or hygrometric conditions. This is especially true of the ivory experiments of which he speaks. The fallacy of using this material was shown by Dr. Black some years ago, as he proved that ivory is saturated with moisture, and after the cavities are filled
and the ivory allowed to remain in the dry atmosphere of summer, exactly the same thing occurs which Dr. Fletcher cites as spheroiding. It is nothing more nor less than the moisture drying out of the ivory and causing it to shrink.

I have seen many amalgam fillings in teeth in the mouth which showed an evident bulging of some portion of the mass, but this change was clearly due to the pressure exerted by the opposing teeth, owing to the amalgam being malleable. The blocks before shown, Figs. 1 and 2, which flattened out, were made from a popular amalgam, yet it is faulty in all cases where subjected to irregular force. I have never yet found an amalgam which would not change its shape under sixty lbs. pressure in an hour, the various kinds ranging from one-half to fifty per cent.

The worst thing that an amalgam can do after being placed in a cavity is to expand and then shrink back twice as far as it has expanded.

Even where the mass expands only \( \frac{5}{10000} \) of an inch and then shrinks back to the original measurement, the margins will always be wide open, and the gap will increase in proportion to the amount of shrinkage beyond expansion. Many amalgams expand and then shrink, or shrink and then expand, for several hours after insertion in the cavity, and this double movement is always very objectionable.

For the sake of absolute accuracy in making tests, and to be in accord with other experimenters, I have always used cavities in tempered steel blocks. Dr. Fletcher's statement that the greatest shrinkage of the worst amalgam is not a drop in the ocean, etc., is a remarkable proposition, and although I have not used glass tubes, I think his statements in regard to tests with glass are equally erroneous. Many fillings of various alloys in steel tubes, the walls
of which are perfectly perpendicular, will shrink enough to drop out of the cavity, and I am confident the same would be true of fillings in glass if accuracy could be obtained with that material, but it cannot be.

Without going into the minute details of Dr. Fletcher's proposition, suffice it to say that I have not the slightest hesitation in stating that the micrometer is of the greatest service in testing the working value of any amalgam, and with it expansion and shrinkage can be shown to be one of the chief causes of failure of amalgam to arrest caries. The exact amount of shrinkage or expansion which any amalgam possesses, whether it has the dual movement of expanding and shrinking during the process of hardening, just how much change takes place, etc., can be accurately told.

The other important instrument in testing the qualities of amalgam is the dynamometer. With this it is possible to prove what combination of metals will make an amalgam that will change its shape the least under pressure, and will require the greatest amount of force to crush, or in other words, will have strength where it is most needed.

What then constitutes the best amalgam? One that does not shrink while or after setting, that requires a large amount of mercury to make it plastic, and that will not give up its mercury under heavy pressure, i.e., a combination which when thoroughly plastic can be put into the cavity and forced to place under heavy pressure without giving off mercury, and is stiff enough that pressure on one portion will not cause the entire mass to shift and draw away from the edges. This is what we call a stiff, quick-setting amalgam, and is thus distinguished from one which is mushy and slow-setting, as the latter cannot be packed perfectly and is liable to further damage by being shifted if packed with only moderate force. Furthermore, all soft, slow-setting amalgams change shape too readily under force of mastication, while a stiffer, quick-setting one, requiring heavy pressure in packing, is of course less likely to shift or break, and so will resist the forces of the mouth most perfectly.

The tendency of one part of the mass to shift while the other portions are being packed should be kept prominently in mind, also the fact that under pressure the part exposed will bend or change shape, for this makes it very important that all walls should be perpendicular and no thin portions left which are not thoroughly
anchored. This is one of the most frequent causes of failure. Take for instance the cervical margin, where so often there is a line of partially disintegrated tooth substance which is shallow and very inaccessible, extending from one side to the other, bucco-lingually. Unless the walls of this portion of the cavity are well prepared and well anchored at the remotest parts, failure will generally result from the fact that the amalgam at the shallow places will bend or change its shape just enough to let in moisture, and it would seem in time as if shrinkage of the amalgam had taken place, when in reality the fault was in the preparation of the cavity. I have had failures in just such cases, where I left shallow surfaces and did not get that part of the filling well seated, and if I had not been positive that the amalgam used did not shrink, I should have abandoned it as being faulty.

On account of the tendency above alluded to of the mass to shift, the matrix is especially valuable when the cavity involves both the approximal and occlusal surfaces, or when there are not four walls. If it is used heavy hand pressure, or what is still better, heavy malleting can be employed, and thus perfect margins and much greater strength more safely insured. To illustrate this point I would again refer to the dynamometer tests. Blocks packed with heavy mallet pressure while setting will resist almost double the force before breaking, and will have much less flow than the same blocks made with only moderate pressure. Another surprising fact is, that if a block of amalgam some weeks after setting be subjected to a pressure of sixty lbs. for an hour, and then crushed, it will resist fully one-third more force before breaking than a block of the same amalgam which has not been subjected to this pressure. While I have not made this test with all the alloys on the market, and so would not state positively that all amalgams can be condensed and made stronger if subjected to steady and even pressure some weeks after they have set, of those tried there has not been an exception and the characteristic will probably hold true for all.

In conclusion, is amalgam as good as gold for arresting decay of the teeth. Where there is not too much contour required, and all precautions necessary for the best results are taken, as good a filling can be made with a reliable alloy as with gold. Where great strength is required however, and thin walls need protecting, or where color of filling is an object, gold is to-day without a rival.
SUGGESTION IN NOMENCLATURE—"CAST" AND "MODEL."


In the discussion of the report of the Committee on Nomenclature of the American Dental Association by the Academy of Stomatology of Philadelphia, in June, 1896, Dr. S. H. Guilford, the chairman, said: "A great deal of confusion surrounds the two terms cast and model. Some years ago I asked the son of Hiram Powers, the sculptor, what distinction sculptors drew between a cast and a model? He answered that a model was something that was copied; a cast was a body formed in mould. An arbitrary distinction has been suggested, so far as dentistry has been concerned, by making model serve as the title for a plaster cast which is to be reproduced in metal; cast to be applied to the plaster not so reproduced. The distinction is not fully accepted; the practice of calling all plaster casts models appears to be more acceptable. The committee therefore recommended that the use of the word cast be discontinued.

This recommendation does not appeal favorably to my judgment. That a distinction should be drawn between the cast and the model has been made very evident to me, not only in my relations with my laboratory assistant, but more especially in connection with college work, and it has been found advantageous to impress the distinction upon the minds of the students in this wise: The first step after the preparation of the mouth is the impression. This forms a matrix into which is poured the cast. It may be a metal cast which, if for swaged work, would be called a die, but if a plaster cast for the construction of a vulcanite, celluloid, or cast denture, the cast never becomes a model of anything, being simply a cast of the mouth. If, however, it is decided to make a die for swaged work by obtaining a matrix in sand, it then becomes necessary to make a model, by so shaping this cast with wax or plaster that it will accurately represent the die which is to follow; in which case the cast undoubtfuly becomes a model of the future die. The successive steps and products are therefore represented as follows: 1st, impression; 2d, cast; 3d, model; 4th, matrix; 5th, die; 6th, counterdie. The consecutive series, cast, model, die and counterdie, is easily fixed in the mind and thenceforth there is no confusion surrounding the
terms, since each one represents a definite stage in the production of an artificial denture, and is clearly before the mind's eye as a well defined object, to which neither of the other terms in the series could properly be applied. If I hand my assistant an impression and tell him to make a plaster cast, he makes a cast in the ordinary way for vulcanite or celluloid work; but if I tell him to make a model, he wraps paper around the impression so as to make the cast thick enough to be trimmed into the proper shape for a model of the die which is to follow. It therefore appears to me that we should at least hesitate before adopting the word model to the exclusion of cast.

COMPARATIVE METHOD OF TEACHING DENTAL ANATOMY.


While many branches of science have been placed under contribution for material for the special education of those who are to enter the ranks of our profession, the advantages of the collateral branch of comparative dental anatomy, for the side lights it throws upon human odontography, have not been fully recognized.

In the old days dental anatomy was taught by the study of the human teeth alone, and not much of that, the limited human denture comprising the whole range of the subject of odontography taught by our books and in our schools. The teeth of lower animals were regarded as mere dental curiosities which had nothing to do with a knowledge of the teeth of man. His teeth were studied as were other organs of his body, as if he were a special creation, totally independent of and separate from other forms of life.

But all this is now changed; science and the method of study have been completely revolutionized. All life is now regarded as a unit: Man is but a part of the great realm of nature. He is but a fraction of the great aggregation of living beings upon our planet. He is not a special creation, but an animal like other animals of high and low degree. He has not a separate kingdom of his own, but is a vertebrate like other vertebrates. He has no exclusive class of his own, but is a mammal like other mammals. He has no order of his own, but is a primate and shares this distinction with the apes and monkeys, and the sub-order of the Anthropomorpha includes not only
man but the higher apes as well. Cope says that the skeleton of the higher apes resembles that of man more than it does that of the monkeys below them. This is true also of the molar teeth, as those of man and the apes are more alike than those of the apes and monkeys.

The organization of man being thus closely related to that of lower animals, it is but proper and rational that the organization of the latter should be studied in connection with that of man, for the benefits of the illumination to be obtained by the comparison of different though related types of structure. This has been fully recognized in other fields of human anatomy and physiology, which have become truly scientific only through the comparative method.

The study of the structure and functions of the organs of lower animals from the lowest to the highest types has thrown much light upon our knowledge of the various organs of man. The paths of their evolution have been marked out and their life histories are now well understood. The comparative method has thus been indispensable to a proper understanding of the life history of man and of the wonderful structure of his organs and the mysteries of their functions.

The phylogeny of man, i.e., the history of the evolution of his type from the lowest forms, has been made possible only by the comparative method. In his ontogeny, i.e., the development of the individual in the embryo, we have also learned much by the study of the embryo in comparing the various stages of growth with similar stages of development of lower animals, some of which remain permanent in them. It is well known that the human embryo, like that of the vertebrates, recalls types of lower forms at various stages of its development. So it is also with the various organs which have a course of development and a life history leading from the lowest to the highest types, and by careful comparison much is learned of the evolution of their structure and their functions.

As the comparative method has been scientifically applied to the study of other organs, we claim that it is but rational that it should also be employed in the study of the teeth of men. By observation of the teeth of lower animals we can learn much of the phylogeny of the human teeth along with those of other animals, and also acquire a better knowledge of their functional offices.

The life history of the teeth is of special interest to us as dentists and we must contemplate it from the scientific standpoint. We must
first note that the teeth, like other organs, were developed for a functional purpose—the reduction of food preparatory to digestion, and that this function is of stupendous importance to the economy. As the physiologist begins the study of the lungs or the liver or heart in the lowest organisms in which a suggestion of these organs may be found, and follows their development and the increasing specialization of their functions up through the various phyla to the highest forms of life, he obtains a scientific knowledge of the phylogeny of these organs and of their functions. He is thereby better equipped to understand these organs and their functions in man. The life history of an organ and the evolutions of its functions cannot be learned by the study of the organ in man alone, but our knowledge must be amplified and illuminated by the investigation of the same organ in other animals. This is the method that should be applied in our study of the teeth of man in order to make our knowledge of them scientific.

By the investigation of the teeth of lower animals we learn many things concerning the origin and development of these organs. We learn first that the teeth are morphologically mere dermal structures and appendages modified and elaborated for food-reducing purposes. This is well illustrated in the sharks, where the transition from scales to teeth is complete. The typal form of a tooth is a simple cone, which is exemplified in the fishes and reptiles. The process of eruption and succession of the teeth are illustrated in the varieties they present in different animals. The great variety of jaw movements found in different animals is important in the influence that this force has upon the form and size of the jaws and the masticating apparatus, and especially the tremendous effect it has upon the forms and position of the teeth. We notice also the philosophy of tooth forms in the evolution of types from simple to complex, and the relation that these types bear to the various functional offices that the teeth are called upon to perform in the work of food-reduction and mastication.

The adaptation of tooth forms to the various kinds of food employed is most wonderful and beautiful when studied throughout the whole realm of animal life. The various types illustrate in a peculiar way the variations in the forms of the teeth of man as adapted to their varied functions. We notice that his teeth are divided into different series, each one of which performs a distinct division of the general
functions of mastication. Thus the incisors were developed for and are adapted to cutting purposes. In our comparative studies we trace the cutting teeth back to their origin and then follow the evolution of the type down through the various phyla of animals to that of man.

We then take the prehensile teeth, the canines; and beginning with the earliest appearance of this form of teeth and following it downward through the various stages of their evolution, we have a most interesting study in observing the extraordinary forms that this tooth presents in various animals. In man the canine is much reduced, but its phylogeny is remarkable.

Next we take the molar series, and beginning with the earliest appearance of the crushing and masticating teeth follow them down through the different phyla of animals and study the many forms of molars as adapted to various kinds of foods. The development of the molar teeth from simple to complex types is a most fascinating study, for here great biological problems bearing upon the origin of our species have received illumination. The phylogeny of the human molar has been there made out, and through such discoveries light has been thrown upon the phylogeny of man.

In this connection we should study also the evolution and mechanism of the jaws and of jaw movements as illustrated by lower animals. And right here we must say there is no one branch of this important subject that is so much in need of illustration as that of occlusion, for its philosophy and mechanism are but imperfectly understood, and perhaps worse than imperfectly taught in our colleges. The student cannot acquire more than the vaguest conception of its most simple principles, and yet a thorough knowledge of occlusion is of vital importance to us in our everyday operations. Our lack of knowledge of this great principle is due to the fact that our studies have been confined to the human jaws, which as we well know are very rudimentary compared with the jaws of many other animals. We need therefore to go far afield to learn something more of the mechanism of the jaws from animals in whom it is more highly elaborated and specialized.

The relation of tooth forms to jaw movements is an interesting branch of the subject when worked out in a scientific manner by the study of the teeth of different animals. In all of them we find that there is an exact relationship between tooth forms and their-
functions, and jaw movements. The principle is capable of easy demonstration although little investigation has been given to it. Years ago in an essay that has become classic among dental anatomists, Dr. John Ryder propounded his favorite theory of the mechanical genesis of tooth forms, showing how the forms of teeth were developed by jaw movements of a definite nature. The essay was a masterly presentation of a great but simple principle, and the wonder is that so little has been done in the further elaboration of the idea. It is a field that offers great possibilities of discovery for the student and investigator.

**TAKING IMPRESSIONS WITH MODELING COMPOUND.**

By Chas. W. Crawford, D.D.S., Spencer, Iowa. Read Before the Northern Iowa Dental Society, July 5-8, 1898.

While it may not be a welcome admission, I think I am safe in saying that the general public's estimate of the dentist depends largely upon his ability to make serviceable and attractive artificial dentures. This obtains at least in a country practice. Such being the case, the subject of impressions of the mouth is the foundation of the structure, and upon its accuracy depends the success or failure of the whole undertaking.

Whenever the subject of impressions is mentioned, the whole matter is usually settled by the almost universal declaration that plaster is the proper material, in fact the only material which should be used. Like the famous precept which governed the practice of many in days gone by, that "any tooth worth filling was worth filling with gold," the statement that plaster is the only safe material for impressions has obtained, but I hold that the latter statement is as erroneous as the first. We are all aware of the aversion of our patients to plaster, for many and bitter are the complaints against "the white mud," and in my efforts to find some substitute I began to study modeling compound.

A few facts concerning this material may be of interest. Modeling compound is composed of gum kaurie and sterin, incorporated with French chalk in the proper proportion, and coloring matter added to give the desired shade. Gum kaurie is an exudation from the tree or shrub Drummar Araustralis, and is dug in large quantities from the soil in New Zealand. It is an amber-like substance, of a cream-white or amber color. That which is found on the surface
of the ground is worthless, because exposure to the air hardens it and destroys its value, but the accumulations under the surface are soft and pliable.

My method of taking impressions is as follows: Seating the patient in a straight-backed chair near the cuspidor, I instruct him to rinse his mouth thoroughly with cold water, continuing until I am ready to take the impression. Meanwhile I soften the compound in a bowl of hot, not warm, water, and the impression-cup, which has been previously built up and shaped to approximately fit the mouth, is cooling under the faucet. Now the hot compound is quickly molded with the fingers into thoroughly cooled cup, inserted in the mouth, pressed to place firmly and steadily, and so soon as the compound is hard under the lips the impression may be removed.

The impression should not be pried up and down, front and back, to work it loose, but should be pulled down in front with steady pressure, the lip and cheek raised and lowered with the fingers, and the patient instructed to cough, the pressure meanwhile being steadily downward. The impression will presently loosen with a gurgling sound and is then placed under the faucet and thoroughly cooled. After this it is dried with a napkin, and the air-chamber or relief is cut or shaved with a sharp knife from the impression, when it is ready for the plaster to be poured into it for the model. For this purpose I use the ordinary builder’s plaster or stucco, to be obtained at any lumber-yard. For many years I have used this material for models and investing with perfect satisfaction and considerable saving of money.

The complaint of some dentists that the compound crawls or changes its shape is due to the fact that it is not used hot enough. It must be used very hot to overcome this tendency to crawl, and with the mouth and cup previously cooled as I have described, there is no danger of burning the tissues.

In case of extreme absorption, where the ridge is only a flabby rim of flesh, an impression is taken as described, the groove made by the bent-over ridge is scraped out a little, and a thin batter of impression compound or plain plaster is poured into the impression and again pressed to place. This gives a more accurate impression than can be obtained with the modeling compound alone.

Value of Life.—A patent-medicine wag says “whether life is worth living depends upon the liver.”
DIGESTS.

VOICE AND ENUNCIATION. THE SINGING VOICE AND SPEAKING VOICE AS INFLUENCED BY IRREGULARITY OF THE TEETH. By Robert Eugene Payne, M.D., D.D.S., New York. A lisp in the speaking voice or any restraint, to disguise a deformity of the natural teeth, results in a loss to the singer. A lisp may be caused by so slight a disfigurement as the malposition of one or two teeth. This condition also blights eloquence due to imperfect enunciation, and prevents the full effect of words and gestures, in an effort to cover up a deformity, though that deformity be slight. The three cases reported below are adults, neglected in early youth. The teeth involve conditions not often corrected in the manner described in this article.

Case No. 1. Miss A., age 26, the possessor of a contralto voice of unusual quality. A lisp was very noticeable in the speaking voice and this was carried into the singing voice. The two superior laterals were inside the arch, as shown by Fig. 1. Both malposed teeth were dark, because it was impossible to reach them with a toothbrush in their crowded condition. They were disfigured by two large approximal gold fillings that were always in evidence, as shown in Fig. 1. The position of the laterals caused a space between the upper and lower teeth, where the laterals should have occluded when the jaws were closed. The letter "s" was imperfectly sounded, in an effort on the part of the patient to close this space with the tip of the tongue, and a very pronounced lisp was the result.

Treatment.—See Fig. 1 at the beginning, Fig. 2 and Fig. A from photograph when case dismissed. The four front teeth were large. Their crowded position accounts for the approximal cavities and gold fillings. By separating the teeth slightly with a bow separator
and removing approximately about the thickness of a piece of writing paper from both sides of each of the anterior teeth, twelve surfaces, I gained enough room to bring the tooth in position, and at the same time thoroughly clean out the spaces, removing all stains and reducing the width of the teeth, and thereby the fan shapes. I bound the two bicuspids and cuspid together with D silk twist, and then

by running a thread from the two bicuspids, over the cuspid, and under the malposed lateral incisor, I drew the two laterals in position, one at a time. The three side teeth, being bound together, gave me strength, and the leverage over the cuspid, combined with the shrinking of the twisted strand, was sufficient to move the lateral a little every day. The threads were renewed about three times a week. It is always necessary to tie square knots, and the thread must be
taut. Both teeth were in correct position in less than sixty days. At the beginning of the treatment I placed a very thin spring plate in the mouth, extending back as far as the first molar to support the side teeth, and this gave me still more strength and leverage to move the front teeth forward. I took out two large gold fillings and replaced them with enamel inlays, the half-moon English inlays put up in all sizes, that taper to a point, so that a cavity may be fitted accurately by cutting off at a point that will approximate the size of the cavity. The laterals were securely locked in position by slightly increasing the size of some small gold fillings in the anterior teeth at their lingual approximate surfaces. Note the result in Fig. A. The teeth have a clean, glistening appearance, are regular and symmetrical. There is an entire absence of the lisp.

Case No. 2. Miss B., a singer famous on both continents. The patient tried many times to induce her family dentist to correct the position of a lower central incisor projecting beyond the normal arch, but he always evaded the case and soothed her by calling it a "character" tooth. This one tooth being out of position resulted in the appearance of a number of teeth being out of position.

Treatment. See Fig. 3. I reduced the size of the four lower incisors slightly, as described in the first case, and drew the tooth in position in the arch in three weeks by means of fine silk thread, C and D silk twist. The two bicuspid were bound together on each side for strength. I then passed the thread around the second bicuspid, brought it between the lateral and central inside and carried it over to the opposite side of the second bicuspid. To tighten the thread, I bound it by cross threads to the teeth on either side, thus drawing the thread out of the way of the tongue and tightening it. After the central incisor was drawn in position in the normal arch, I ground the tops of all the lower teeth, using a fine stone in a stream of water, then rounded up the corners with a fine disk, bound them all in position by means of double oo silk and held them there for thirty days, renewing the
threads probably every ten days, tying low on the bicuspids and high on the anterior to bind them all securely in position. At the end of this time I securely locked the central incisor that was moved into position by putting in a small gold filling in the labial approximal aspect of the adjoining lateral incisor. The result is shown in Fig. 4. The charm of the face is enhanced by the regularity of the teeth, the restraint she has labored under is gone, and there is perfect freedom.

Case No. 3. Miss B., age 25. Projecting front teeth shown in Fig. 5 and Fig. B, from photograph. The patient had been suffering from chronic alveolitis for a number of years; the upper left cuspid had been extracted in childhood by mistake. The tooth had erupted high up, the upper jaw contracted or did not develop fully after its extraction, and the lower arch being full, forced the upper teeth out of position until the protrusion was so pronounced that the teeth could not be covered by the lip. Pus discharged from five or six pockets. Notice in Fig. 5 that the bicuspids on the left side struck outside the arch, and the two central incisors were not only pushed forward, but to the right. There was no evidence of serumal calculus about the roots; three of the teeth were quite loose.
Treatment. This case was corrected by replantation, transplantation, implantation and amputation. Further the case was treated by devitalizing the pulps of three molars and treating the pus pockets with lactic acid, carbolic acid and resorcin. In the surgical treatment of this case I proceeded as follows: The two left bicuspids were discharging pus copiously and were so far out of position that it was useless to try and draw them into the arch by any regulating appliances. I extracted both bicuspids, reamed out the sockets lingually, and after removing contents of the pulp-chamber and filling the crown and root, I replaced one in the arch so that it would occlude with the lower teeth in the normal manner. In place of the first bicuspid that I extracted I transplanted a perfectly sound
cuspid, bringing it in the arch in proper position by reaming out the socket lingually. The left superior lateral was in normal position, but the left superior central projected forward and to the right in a very much distorted position. This tooth I devitalized and cut off even with the margin of the gum, cut out a V-shape piece to permit the crown of this natural tooth to be fitted to its own root in the mouth at the proper angle. The crown cut off and the root in the mouth were united by fitting a gold wire in the root, bending it to right angle and cementing the natural crown back on its own root in the normal position in line with the adjoining lateral. The right superior central was so loose that I extracted it, treated the socket and allowed it to entirely heal. At the end of sixty days I used the
palatine root of a sound mature molar, fitted a Logan central incisor to this root and implanted it in the space. I cut two flaps, the anterior long and posterior short; the long flap was brought forward to fill up deficiency due to shrinkage of the process. In order to thoroughly imbed a root, I use a small one to make it as lasting as possible; I use a mature hard tooth, extracted from a patient fifty to sixty years of age; they last much longer than young, soft teeth. Note the result in this case, Fig. 6 and Fig. C from photograph at the time the patient was dismissed. She positively refused to wear a bridge or a plate, and insisted that her own natural teeth must be preserved. The plan of treatment I followed was the only way to secure this result.

_Precautions in Implanting._—By the use of a two per cent solution of cocaine the operations were quite painless, and I have a record of many cases of implantation, transplantation and replantation of several years' standing, perfect in color, serviceable, comfortable as any teeth in the mouth. In all these cases the teeth have a fair chance for years of usefulness if every precaution is taken at the time of operating. Splinting by means of gold bands, plates, etc., is useless and the teeth become infected. There is only one way to ligate these teeth, and that is by means of fine silk thread. If you tie low on the adjoining teeth and high on implanted teeth, tie square knots, or a surgeon's knot and two granny knots and draw the thread taut but not too tight, it will hold the teeth securely in position. It becomes rigid, held by gomphosis, a pseudo-ankylosis, a close adaptation, not by actual bony union. I say every precaution should be taken; I mean every surgical precaution to prevent infection in the new socket; instruments, hands, tooth and all should be sterilized. Mature firm roots must be used and always smaller than the original root extracted.

After the extraction of a tooth shrinkage of the process always takes place to a greater or less extent and the space or socket will never be large enough to permit the return of a tooth or root of the original size, consequently a smaller root must invariably be used. I prefer to select a lateral root or the palatine root of a molar in nearly every case, and by cutting off the natural crown and fitting a porcelain I am enabled to shorten the root without cutting off the end, and when implanted it is completely surrounded by bony tissue. No gum should be cut away. Two flaps must be cut in every case
and the gum laid back, after injecting it carefully on both sides with a two per cent solution of cocain, or what is better, eucain.

Proper drills must invariably be used, and the roots of the adjoining teeth taken as a guide as to direction in cutting the socket; great care must be taken that the thin labial or lingual plates are not cut through. Many implantations look all right when the tooth is in position, but you will find on careful inspection that a V-shaped space has been cut, either in process or bone, anteriorly or posteriorly, or both, and the tooth is simply pushed up in the V-shaped space, the lingual or the labial part of the root implanted being simply covered by gum. It looks all right but it simply forms a pocket for infection at some future time. If the socket is cut in the bone, the tooth snugly fitted therein and securely ligated by means of silk thread, it will become firm if there is no infection, or if infection takes place it can be corrected by sterilizing the socket.

Once a tooth has become firm and rigid, if it is not allowed to occlude with the lower teeth to cause traumatism, it may be firm and useful for years. The chances for success are greatly in favor of single spaces, where one tooth is to be replaced, and where a plate or bridge would be disfiguring.—*Items of Interest, Aug. 1898.*

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FATALITIES FROM ANESTHETICS. It is with great difficulty that figures relative to mortalities from anesthetics are obtained, because neither the local nor general government makes any effort to especially chronicle the deaths from anesthetics; and in many instances the death is attributed to some other cause. Dr. Ernest Hankel in his recent book, "Handbuch Der Inhalation Anesthetics," states that he has made a very careful investigation into the merits of the several sleep-producing agents, and his research yields the following statistics:

- Pental in 213 cases, one death.
- Chloroform in 2,039 cases, one death.
- Ether in 5,090 cases, one death.
- Ethyl Bromid in 5,228 cases, one death.
- Nitrous Oxid in 500,000 cases, one death.

GUM ARABIC IN SOLDERING. To prevent the solder from moving or dislocating while using the blow-pipe, add an equal amount of powdered gum arabic to the borax powder. The gum will not interfere with the function of the borax, and it insures
stability to the pieces of solder. When you desire to limit the solder to portions of the gold, paint the gold with a coat of rouge.

CREOSOTE AND SUNLIGHT. If you hope to retain the full strength and medicinal properties of creosote, it must be kept in a bottle of white glass, sealed with a glass stopper, and placed where it may receive the light of the sun. If placed in dark bottle and hidden from daylight it deteriorates and loses its desired qualities — Trans. by Dr. B. J. Cigand, from Zahnarztliches Woch. July, 1898.

ARSENIC IN DEVITALIZING PULPS. The severe pains accompanying applications of arsenic to the dental pulp may be considerably lessened if an equal amount of antipyridine is used in connection with the arsenical paste. The antipyridine reduces the blood supply and hence prevents the congestion which invariably results from use of arsenic.

PLASTER MODELS. In order to produce plaster models which are dense, hard and will remain in perfect continuity when exposed to atmosphere, the Heidelberg Plaster Company has added to the water a liberal addition of Ammonium triboricum. The firm has had this simple method patented in all European countries, and it is claimed that statuary designs made from this composite material endure the abuse of transportation and exposure without damaging the device. Such plaster might be especially serviceable in moulding features to demonstrate the progress of correcting abnormal dental or facial outlines.—Translated by Dr. B. J. Cigand from Zahntechnische Reform, September, 1898.

STUDY OF DENTISTRY IN FRANCE. By I. St. Just, M.D., Paris. The laws have been modified at frequent intervals and new changes will probably be made again. No one can practice in France without a diploma from the French Government. Until recently a foreigner producing a diploma issued by a foreign faculty could easily obtain from the Secretary of Public Instruction a temporary or even a permanent permit to practice his profession, but this privilege is no longer granted.

In medicine the practitioners are divided into Doctors of Medicine, Officers of the Health, Pharmacists of the first and second class, Midwives of the first and second class, and Surgeon-Dentists.
A foreigner not only cannot practice, but he has not the right to affix the title of Doctor to his name, unless he specifies the foreign faculty who issued his diploma.

As to graduation in medicine, the law requires four years of studies, but the student is compelled to produce his diploma of Bachelor of Letters and Bachelor of Sciences (natural and physical). This is hard for the foreigners, as it requires eight to ten years to acquire such diploma from the Faculty of Letters and Sciences.

The School for Dentistry was established only in 1886. The period of study is three years, and the student must produce a diploma of Bachelor, or a certificate of high studies.

A foreign dentist can practice in France after passing the examination, or he may be excused from part of the lectures. An American dentist is seldom refused the privilege of practicing, and this is due to the late Dr. Evans.—St. Louis Med. Brief, July, 1898.

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CONTRIBUTORY CAUSES OF ANTRUM DISEASE. By Dwight L. Hubbard, M.D. Read before Central Dental Association of Northern New Jersey, May, 1898. The antrum of Hingham should be considered as one of the most important structures in the face, liable to many distressing affections, many times not recognized, and bearing an important relation to chronic catarrhal difficulties which render life miserable. I would not magnify unduly the affections which are liable to attack the mucous membranes continuous with the antrum as well as the antrum itself, but I do desire to call attention to the fact that trouble in this sinus is very much more common than is supposed. It is of simple inflammations that I wish particularly to speak. That pain in the teeth contiguous to the antrum may exist without real trouble with the pulp or any of the different parts of the tooth structures is a demonstrated fact, and I speak of these difficulties from the standpoint of a rhinologist, rather than from that of the dentist or oral surgeon.

"Protect us from our friends" is an old saying, but it is particularly applicable here. Toothache in this region does not always signify that the tooth should be interfered with. I would, before the tooth is opened, have you investigate other conditions and ascertain whether an extended inflammation from the nasal membranes to the mucous membrane of the antrum through the ostium is not a contributing cause. It is not necessary that the tooth socket should
project through the alveolar process as far as the antrum in order to have pain with antral inflammation. Sympathetic or reflected pain may be reduced in a first or second molar by means of an intense inflammation of the antrum, though it be only the result of irritation through nerve anastomosis or by ganglionic reflex. Pain in these teeth does not always signify the presence of pericementitis or other local difficulties. In such a case no results would follow the use of the usual treatment, but (experimentally) pain will be relieved at once by means of a 2 per cent solution of cocain sprayed into the nasal cavity and the chambers thoroughly and antiseptically cleansed and treated, both locally and constitutionally. I do not speak of the use of cocain as a means of treatment, but to illustrate the fact that by its effect upon the vaso-motors of the turbinated bodies of the nose the antrum will be exposed, thus permitting an easy access to the antral cavity; and also to demonstrate the fact that in a state of acute inflammation the sinus is closed and the products of inflammation are pent up within it, thus preventing not only exit of the products of inflammation, but any possibility of the aeration of the cavity, which I believe to be a necessity to the proper restoration to a healthy condition.

Relation of Antrum to Contiguous Territories. Let me illustrate the relation existing between the nasal and all the continuous and contiguous membranes of these fossæ and cavities. Headache is caused generally by a vaso-motor disturbance producing stasis, congestion, hyperemia, etc. Whether it be caused by intra-nasal pressure or not, the use of cocain will, by contracting the blood-vessels locally, as also acting generally upon the whole circulatory system, relieve the consequent headache in the two ways indicated, viz., by reflex action from the intranasal relief and by its general effect. Headache of the ordinary congestive type will be relieved in this way when there is no congestion of the nasal membranes. So much the closer then is the relation between these membranes and the interior of the antral cavity. I take this means of illustrating this principle because it at the same time proves the pathological relation-ship between them. Teeth have been sacrificed because this fact has not been recognized. It is quite as important to investigate the nasal fossæ for etiological factors in cases where the tooth structures are in a healthy condition, as it is to ascribe the obscure cause to a neuritis or to trouble within the tooth which
it is supposed has not manifested itself in inflammatory disturbance in the contiguous structures.

It is too often stated that antrum disease must be of a suppurative nature in order to be serious or to cause disturbance in other parts, either reflexly or by direct absorption and infection. A common coryza means that the antrum membranes are also involved, because the structure is continuous and communicates by means of the ostium maxillar. It is to this everyday affection that I would call your particular attention and to point out some of the methods by which we may be able to prevent results which would otherwise become serious, not only in the antrum but in the teeth.

Coryza is a symptom and not a disease. The disease which causes the coryza is an infective inflammation of the mucous membranes of the head cavities, resulting in congestion, hyperemia, stasis, hyperplasia and hypertrophy, and the final outcome of repeated attacks may be induration, addition of new material forming benign tumors, or by certain disturbances in their structures, forming tissues foreign to the natural cellular elements and organizing into malignant growths. So we see that the results of simple colds often repeated are not so trivial as to excuse our neglect, but should receive our careful attention. A patient often applies for relief, stating that he has taken cold "in his teeth." You treat the tooth which appears to present reasons for being disturbed. It is well to correct any variation from the normal, but do we always think of the possibility and the probability of the trouble in the parts above? Under these simple circumstances trouble in the antrum is often set up, disturbing the tooth during the acute attack when it is not the cause. However meritorious or essential it may be to correct the difficulty, it is the part of broad conservatism to recognize the possible existence of other causes, and to postpone our treatment of a condition which is not a cause until the danger of disastrous results of the interference has passed. The point may seem far-fetched, and the argument will be brought forward that in the normal condition of anatomical structures there is no communication between the tooth-socket and the antrum. But if the histological structure of the alveolus at this point is studied it will be found to consist of very porous bones abundantly supplied with all the conditions which make capillary communication not only a possibility but a probability. "But the floor of the antrum is protected by mucous mem-
brane." So much more is it liable to absorption of purulent material, on account of the absorbents being located in the sub-mucous layers and in the areolar tissue underlying all mucous membranes.

Abnormalities in Nasal Cavity. With a view to the methods of treatment, I wish to speak of the abnormalities often found in the nasal cavity, the existence of which would direct our attention to the only rational treatment for cure. Let us follow the principle that it is never admissible to effect relief by indirect methods when we can use those which are direct. To illustrate: It would not be admissible to enter the antrum from below by means of extracting a molar tooth, when hypertrophy of the middle turbinated body is of such magnitude and nature as to block the ostium and cause pressure upon adjacent structures, thereby confining the products of inflammation, whatever they may be, within the cavity. As I have stated before, repeated colds are largely responsible for much damage to the antrum, when constitutional dyscrasias are of such a nature as to promote hyperplasia, followed by hypertrophy with all its consequences. If it should become purulent, degenerated to an atrophic condition, suppurative or necrosed, we will certainly relieve the temporary difficulty by going in through the alveolus. But do we thus surely remove the possibility of return of difficulty in the future? By no means. The recurrence of an acute attack will cause fresh trouble, and we have done only what relatively we would accomplish in mitigating the sufferings of a headache by giving antipyrin. When the middle turbinated is in the condition stated it is a foreign body, and there is as much reason for its removal (that is, that part of it which may be an offense) as for the removal of a bean or other foreign body which may have been accidentally introduced. By this means we make drainage a possibility and irrigation of cavity of the antrum easy. It is a principle in surgery that we should always drain at the most dependent point. Sometimes there are good reasons why this should not be done, and we are dealing with one of the instances now where it may be safely done in another way. Upon the removal of the portion of the middle turbinated which is the means of blocking the ostium, the congestion in the mucous membrane of that canal and of the whole of the antrum will be relieved. Thorough irrigation can be effected and drainage made possible by making the ostium the lowest dependent part in the position of the head for that purpose. Lying on the side will
make the ostium the lowest point. The slight inconvenience is better than the sacrifice of a tooth which might have been saved, as also the unnecessary surgery, which is the nightmare of the sufferer. The operation of removing the offending portion may be made painless and is much more necessary than removing the tooth and drilling through the alveolus, inserting a canula and tedious or prolonged treatment. We accomplish two things instead of one—curing the disease and preventing the atrophic shrinkage of the nasal membranes, which is almost sure to follow such interference with nasal circulation.

Above I spoke of the different results of inflammation. These results are manifested in many ways, some of which are as follows: Benign nasal myxomata, commonly called polyps, which not only often spring from the middle turbinate body, but from the interior of the antrum; fibroid degeneration of the mucous membrane; hyperplastic enlargement of the inferior turbinate body, blocking the inferior meatus of the nasal space and interfering with the aeration of the antrum, as well as damming up the secretions; thickening of the mucous membrane of the nasal septum, in turn causing hypertrophy of the turbinated bodies otherwise normal; spurs on the cartilaginous and bony parts of the septum, causing an excessive flow of acrid mucous, which gives rise to chronic catarrh, making infection of adjacent membranes probable; syphilitic disease of the ethmoidal and sphenoidal sinuses, a direct infective medium for trouble in the antrum; purulent ophthalmia, causing degeneration of the orbital cavity; and sometimes necrosis of the orbital plate which so thinly divides that cavity from the antrum, and many others which are direct causes of antrum disease. It is not my purpose to discuss these, but only to point out the dangers arising from them, and to remind you that they should be considered in connection with any disease of the maxillary sinus, no matter what the cause may be.

I wish to call attention to the often unnecessary operative work performed upon the antrum. Like all parts of the body, nature repairs better at times when it is not interfered with. All surgery and therapeutics are simply the means of assisting nature in her beneficent work. Further than this the rule should be "hands off." The warning signals should be heeded, but before we strike the enemy watch the movements and observe the tactics. Circumvent with stringent measures when being worsted and do not wait until
the breastworks are broken down before the artillery is brought into action.—*Items of Interest; August, 1898.*

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DOUBLE RESECTION OF THE LOWER MAXILLA. By Edward H. Angle, D.D.S., St. Louis. In the last issue of the Dental Cosmos was published an account of the double resection of the lower maxilla of a patient in this city—probably the first operation of its kind. As the writer was first to suggest this operation, and has for four years been discussing with surgeons its prognosis, some suggestions as to technique and plans of fixation may not here be amiss, especially as he believes that if the operation be properly performed it may become of considerable use and importance, for in those extreme types of malocclusion, where the upper teeth are greatly receded and the upper lip consequently much sunken in, which are familiar to every one, the proper functions of the teeth have become almost wholly impaired, as well as speech greatly interfered with, and the appearance of the patient transformed to marked deformity, constantly attracting attention and comment, and a source of humiliation to the patient; and if he be possessed of a sensitive nature his condition becomes truly pathetic. Any orthodontic procedure is powerless to render improvement, and double resection becomes the only resort. If then the operation can be made practicable, certainly it must soon take its place among the useful operations of modern surgery.

The plan of operation which I would suggest in these cases is that careful photographs be first taken of the patient, and two accurate models made of the lower dental arch and one of the upper which will show as much of the gums and form of the jaws as possible (which was not done in the case reported.) One of the plaster models of the lower jaw should then be sawed through and the sections removed. The positions and extent of these sections must be carefully experimented with until the three remaining sections of the plaster model can be made to best harmonize with the upper arch, and the teeth be in best possible occlusion with those of the upper jaw. These sections of the plaster model should then be cemented or waxed together, and over this reconstructed model a vulcanite or metal splint should then be formed, and by careful comparisons and measurements of the reconstructed model with the uninjured model; the exact size and form of both sections of bone to
be removed should be determined, so that there may be no guessing as to the relations of the bone, and complete apposition of the ends be made possible.

As there is more or less lingual inclination of the lower incisors in all of these cases (most pronounced in some), it is certain that the sections of bone to be removed must not be parallel on their sides as they were in the case reported, but wedge or V-shaped, if we would gain the best positions and consequent occlusion of the incisors, as well as appearance of the chin.

The teeth having been thoroughly cleansed just previous to the operation and the splint in readiness, the sections of bone corresponding accurately to those determined upon, as already described, should be removed, the anterior section placed in apposition with the posterior sections, and the splint placed in position and cemented upon the teeth with thinly mixed oxyphosphate cement; and if the operation has been skillfully performed it will be found that the most rigid and immovable support is given to the reconstructed jaw, a plan far more efficient and in keeping with modern plans of aseptic surgery than is possible with that crude, unstable, and unmechanical plan of wiring the ends of the bone together which was employed in the operation reported.

It seems remarkable that surgeons will persist in ignoring the natural and stable attachments which may be given through the teeth for the fixation of jaw-bones, and will still continue to wire the ends of the bones together in the treatment of fractures of the maxilla, notwithstanding the innumerable failures to gain union which have been reported and which are constantly occurring, not to mention the faulty occlusion established as a result of this method of fixation. The plan of making wounds which must become septic, on each side of the wound designed to treat, might have been excusable in the days of Buck and Kinloch, but modern surgery demands better methods.

Had the plan of treatment indicated been followed in the case reported, the writer believes the occlusion of the teeth would have been far better; the bones would have become united as speedily and with as little inconvenience to the patient as we know is possible and now so commonly gained when an ordinary double fracture of the maxilla is properly treated. Two points, however, of much importance have been established as a result of this operation. First,
that union of the bones will take place; and second, that the vitality of the teeth in the anterior section of the bone was not impaired. These are the questions most often raised by dentists in discussing the practicability of the operation.—Dental Cosmos, August, 1898.

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TREATMENT OF CERVICAL BORDERS. By Safford G. Perry, D.D.S., New York. Read before the Academy of Stomatology, April 26, 1898. From whatever point it may be considered, the cervical border presents the weakest portion of every approximal cavity. It is inaccessible, anatomically weak and, most important, is from its position most vulnerable to the insidious agents that destroy the teeth. In considering this border, then, we have to contend with the most difficult conditions ever met with in the care of teeth, for it goes without saying that proximal cavities as a class are the most troublesome in the mouth.

Logically, the first thing to consider is the preparation of this border for the reception of whatever filling material may be used. Here we meet at once with an anatomical condition that must receive most careful attention. I refer of course to the increasing thinness of the enamel as the cavity extends towards the root of the tooth. Of course we must cut until we have reached solid structure, no matter how far we have to go, but here we are met by the question, What is solid structure? Strictly speaking we might cut up on the root, even above the border of the enamel, and not find it. It may be answered that we had better do so if we cannot. To this I assent in most cases, but not by any means in all, for some teeth are in a condition that a solid border could not be found without going far under the gum, and then the cavity could not be filled and finished in such a manner that the gum would ever again remain perfect along this border. I am convinced that ruthless disturbance of the gum is given little heed to by most operators—by many who still with a separating file destroy the perfect contour, in spite of all that has been written and said against this practice during the last twenty-five years, and by others who are such radical contourists that they cannot rest until they have cut even small cavities up under the gum and made large fillings that shall have free edges, and that along the cervical border almost invariably leave a slightly disturbed condition of the gum, which bleeds readily when the floss-silk or toothpick and sometimes even the brush is used.
DIGESTS.

More than twenty years ago, in an article on the treatment of the proximate surfaces, I advocated in some cases this free cutting of even small cavities, but I never supposed the system would be applied generally and to teeth of good structure. I have repeatedly seen cases from the hands of extreme contourists, where every filling on the approximate surfaces of bicuspid and molars ran far under the gum, and where that tissue at the cervical border was ready to bleed freely at the slightest touch. I will grant that such fillings are safe—none could be safer—but in many of the cases I have seen the teeth of such good quality that I did not consider such radical operations necessary, for the teeth would have been safe with a filling that did not reach under the gum, and there would have been no disturbance of that tissue, and besides all this, there would have been less display of gold and infinitely less work and pain in performing the operations. In cutting therefore along the cervical border I believe it to be good practice to avoid going under the gums if the teeth are of good quality and the general conditions in the mouth are not destructive.

Then in cutting the diminishing enamel must be considered, and in cutting a little more in the hope of getting a better border there is danger of reaching such thin enamel that it may be a question if there has been any gain by this more thorough cutting. It seems to me there is no ordinary operation where nicer care and judgment are called for than in the preparation of this cervical border. In the preparation of it for gold there must be more thorough cutting than for any of the plastics, because the force required in condensing the gold might check and disturb an enamel border which might be firm enough to receive a plastic. Then the preparation must also depend somewhat upon the gold to be used. If cohesive gold is to be used there must be made one or two retaining points, or a retaining groove must be cut across the whole cervical border. If soft gold is selected it may be that no retaining point or undercut will be needed. Any dentist of experience would be glad if he could be free from the necessity of ever making a retaining pit or cutting a retaining groove in any tooth to be filled with gold. Then would be saved the devitalization of the border of the cavity caused by cutting the fibrillae, the filling of a pit or groove which is likely to be imperfectly done, and the greater danger of crushing an enamel edge which has been weakened by the making of this pit or groove.
But there must be retaining grooves in every cavity to be filled with gold.

Luckily they need not always be at the cervical border, since the introduction of the matrix, making the fourth wall, becomes a great help in holding the gold in place, so that the retaining pit or the groove can be dispensed with in starting the filling, and when this is the case the mallet can be used without fear of crushing the enamel edge, and with the certainty of making a perfect adaptation of the gold. But if the pit or groove is omitted, there must be great watchfulness lest the gold may move after it has been condensed along the cervical border. I have had failures at this border years after when I felt certain that the gold had moved slightly without my notice before I had it securely keyed in by packing against the side walls of the cavity.

In a cavity which has been prepared along the cervical border without a pit or retaining groove, a mat of soft gold can be laid, extending a little beyond the cavity, and a matrix applied, pushing the protruding gold towards the neck of the tooth, and having the effect of holding the mat in place and making it possible to get perhaps a more perfect adaptation of the gold to the extreme enamel edge of the tooth.

If one can have both hands free, so that the gold can be held rigidly in place for the upper third of the cavity, or until there is no chance of its moving from its place, the absence of retaining pits or grooves along the cervical border may be a clear gain. This may involve the need of an attendant to hold the rubber out of the way, reflect the light, and perhaps use the mallet. If the operator prefers to use the mirror in packing the gold, or to reflect the light and select a matrix that can be fixed to the tooth, a pit or groove at the cervical border may be necessary, since the left hand is not free to hold the first pieces of gold in place.

In what I have said thus far I have in mind the use of a soft gold, which by slight annealing becomes cohesive enough to be packed as cohesive gold, and yet without entirely losing the soft quality. A gold of this kind answers the purpose so perfectly that I never use a strictly cohesive gold along this border. The introduction of the mat gold lessens the need of retaining pits, as this form of gold stays where it is placed better than any other, and can be used with less care in holding the first few pieces in place. Examination of the
surfaces of fillings made of this gold shows an accurate adaptation, and it may be that it may yet prove to be most suitable along the cervical border. It is really curious to notice how long a time is required for our profession to become conscious of the fact that the walls of even good teeth are frail and very destructible and that cohesive gold is a very hard and unmanageable substance to use against them.

In the beginning I spoke of the inaccessibility and vulnerability of the cervical border. There is a qualifying condition which I have never heard mentioned. In every approximal cavity, in beginning the filling, the end of the plugger forces the gold squarely against the cervical border, and as the instrument is applied at right angles the gold can be most easily and accurately adapted to the tooth with least force. As the curve of the cavity is reached on either the lingual or buccal aspect, this directness of application of force is lost, which doubtless accounts for the fact that so many failures commence at this point on either the buccal or lingual sides of the tooth. By the time the cavity is about one-third filled and until finished the instrument is packing along the sides of the walls instead of squarely against them. This natural position is the redeeming feature of the cervical border and has made it possible for many poor operators to make fillings that were successful at this point. I am under the impression that some operators, appreciating this fact of the square application of the instrument along this border, use thicker mats or masses of gold than they are able to condense thoroughly, even though considerable mallet force is applied. I have repeatedly seen fillings that were solid and fine in other parts, yet along this border were soft and even imperfect. In fact I think we are all inclined to work too rapidly in packing the gold here, and also that we use the gold in too large masses. To obviate this I have devised and used for many years plugger points which are adapted to bring pressure on the edge of the cavity, and which, being made flat on the side which rests against the matrix, insure a very perfect adaptation of the gold. These are made for cavities on the anterior and posterior sides of the teeth respectively.

There has been much said for and against a loose-fitting matrix, that is, one that stands off from the tooth somewhat so that the gold can be packed a little beyond the cavity, thereby insuring a
better adaptation at the edge. There is some reason in this, and yet it may be an open question if the time spent in finishing such a filling were given to packing the gold in smaller pieces, and with the instrument just described against a close-fitting matrix, an equally good edge would be secured. The peculiar "rake" of these points makes it possible to secure a perfect edge if one will be patient and careful. Of course, it is assumed that the matrix is bulged to conform to the natural shape of the tooth. If an equally good edge can be made with a close-fitting matrix, and as quickly when the whole operation is considered, there is a gain in saving the patient the disagreeable task of trimming the gold, which generally results in disturbance of the gum from the use of files or chisels and the dreaded sand-paper strips. In the early years of the matrix I was shy of it, fearing bad margins, but since having the plugging instruments described, my use of the matrix has increased, while my dependence on the separator has lessened.

A word more in reference to the cervical border. If gentleness and close care in filling are to characterize our method, and some soft or semi-soft gold is to be our main reliance, then I think we need not cut so radically in the preparation of this border. Of course this will be for the purpose of avoiding the encroachment upon the thin enamel, and to save the disturbance of the gum, as well as to make the operation easier for both patient and operator, as before stated.

I now come naturally to the consideration of plastics in their relations to this border. I selected this subject partly for one particular purpose—to emphasize the danger in using oxyphosphate of zinc at this border without preceding it by some insoluble and indestructible substance. It may be that it is not generally used in this place, but my observation is that it is, and without being preceded by any other indestructible substance. I am sure there is not one of us who would not to-day be crippled in our practice by the withdrawal of oxyphosphate of zinc, and at the same time there are not many of us who fully appreciate its danger. In the beginning I said that the cervical border was the most inaccessible and most vulnerable of any cavity border in the mouth. If against this border you will use a substance so liable to chemical disintegration as oxyphosphate of zinc, you will have intensified the conditions of danger, and although you have delayed the evil hour of the tooth's destruction, you have established a set of conditions that in time will bring it about with
almost scientific certainty. It would not be easy to estimate the number of pulps that have become exposed by the treacherous washing out of this material at the cervical border, thus allowing decay to go on quietly, without giving any intimation of its existence until too late. And the same may be said of the copper amalgam which was so much used a few years ago, and which dissolved at the cervical border in nearly the same manner.

What material shall we use, then, at the cervical border, if we have decided to put an oxyphosphate filling on an approximate surface? It depends upon the teeth. If in the front teeth it should be gutta-percha or gold. If in the bicuspids or molars it should be gutta-percha, amalgam or gold. I do not include tin, as that will be mentioned later. The need of any indestructible substance is not so great in the front teeth as in the bicuspids and molars. The teeth are not so broad, the cervical border not so sheltered, and the conditions taken altogether are not so treacherous. Gutta-percha is quickly applied to all these cervical borders and has the great advantage of being safe. Though in a few years after expanding and bulging out so that it must be trimmed off, it will finally rot and have to be renewed. It is a very safe substance to use, however, as any bulging and rotting will be detected, owing to the fact that the oxyphosphate placed on it will wear away and have to be renewed in two or three years at the longest, and at each renewal the exact condition of the cervical border can easily be ascertained.

This combination for very badly decayed teeth, particularly bicuspids, becomes in my judgment a very wise one to adopt. There will be generally two or three renewals of the oxyphosphate to one of gutta-percha. Teeth treated in this way may not increase one's reputation, because when the oxyphosphate wears away patients will come in saying the filling is out, but the operator can hear this undisturbed, because he knows at the cervical border it is safe and sound. With it a perfect adaptation can be made to the walls of the tooth, and it has the preservative quality.

For several years I have in many cases protected the gutta-percha from wear by covering it with amalgam instead of oxyphosphate of zinc. In such cases I have filled the cavities nearly full of gutta-percha and then covered them on the grinding surface only with a rather thin filling of amalgam. I have known such fillings to last many years, but there is one danger, namely, that of the expansion of
the gutta-percha causing the thin walls of the tooth to split off. This
danger is not so great, however, if the amalgam is used only on the
grinding surface and the gutta-percha is left free on the whole
approximal surface. * * * Gold can be used along this border
to great advantage in many teeth so badly decayed that it could not
wisely be used for the complete filling.

You will understand that I am speaking of these three substances
—gutta-percha, gold, and amalgam—only as foundations at the
cervical border for oxyphosphate of zinc. I have not included tin,
for while in some places I consider it the most perfect of all filling-
materials, I do not trust it in sheltered places on proximate surfaces,
for the reason that it undergoes chemical dissolution. For this
reason when it was advocated many years ago as well suited, pure
or rolled with an alternate leaf of gold, for use along the cervical
border, I distrusted it and used it but little. The few teeth that I
ever filled in that way were afterwards repaired by replacing the
softened tin with either gold or amalgam. If tin can be packed near
the edge of enamel, and gold placed over it so that no tin is left
exposed when the filling is finished, a durable filling may be
expected. This is now done by Dr. Shumway, who finds that gold
adheres to tin when rubbed onto it with ivory points. He rolls the
tin in a compact roll and, cutting it in short pieces, anneals it over
mica nearly to its melting point, and after packing in the cavity he
burnishes the surface with an ivory point and then rubs cohesive
gold onto it. He claims the union between the metals is sufficient
to make a fine filling, the tin being protected from wear or disin-
tegration by the veneering of gold. To be successful, he says the
tin must be annealed and the filling protected by the rubber-dam
from even the breath.

This is a proper place to add a few words in reference to the
repair of gold fillings that fail at the cervical border. Purposely I
did not allude to it while speaking of cavities that were to be filled
with gold throughout. I have no means of knowing what is the
general practice in these cases—whether it is removing the whole
gold so as to get access to the defective place, or simply cutting out
the decay and repairing with gold or amalgam, or even with gutta-
percha. My own practice has been almost invariably that of
repairing the defective place, if the body of the filling is good.
If the gum in such cases cannot be held away by the rubber-dam, it
can be by a suitably shaped instrument, so that access can be had to the cavity from both the buccal and lingual sides, and the operation becomes a very simple one either for the use of gold or amalgam.

If a large gold filling requires repairing at this point, it is more satisfactory to do it with gold if it can be done accurately; but if the defective place is inaccessible, a thorough durable operation can be made with amalgam. The result is somewhat like that attained by using amalgam in the upper half or two-thirds of the cavity, and finishing with gold at the same sitting. The repairs I have in mind are only slight, however, and do not let the amalgam come in sight. The ability to make these repairs very easily is one reason why I am not as ready now as formerly to cut the teeth away so that each cavity on the proximate surface shall go under the gum. There may be objection on the part of some to the use of amalgam for these repairs. I think the inherent objections to amalgam do not apply with the same force in these cases as when used for large operations.

I have now a word to add in reference to the illumination of the cervical border. On dark days I concentrate the light by the condensing lens, held by an adjustable rod attached to an upright, screwed into the iron frame of the movable bracket attached to the chair. This intensified light when possible is reflected into the cavity by the ordinary mouth-mirror held in the left hand or by the attendant. Sometimes I reflect this concentrated light or ordinary daylight by a little mouth-mirror held by a rod attached to a weighted standard, which sets on the tray. The mirror is attached by a ball-and-socket joint, so that it can be set at any angle. For one who has no attendant this is convenient, as it leaves the left hand free to hold the gold in place in commencing a filling. These devices are somewhat in the way, but if one can become accustomed to them they are a real help. I have also used the electric light, but I have thought it rather trying to the eyes.

In closing, I wish to call attention to a certain form of matrix which I have found indispensable in the use of plastics at the cervical border. It is one which I call a hand-matrix, as it is attached to a handle which is to be held in the left hand. The matrices are made of thin steel with a lug soldered on the end which is to be placed on the lingual side of the teeth, and the handle soldered on the other. Some of them I have made from a single piece of
steel, as the soft solder is affected by the mercury in amalgam filling and they sometimes become unsoldered. If hard solder is used, so much heat is required that the temper of the steel is lost, and they do not keep their shapes as well as when they retain their spring temper. Those made from a single piece of steel are very durable. It is not, however, easy to make them wide enough for some cases, therefore I have some of them made by soldering both with hard and soft solder. I have tried various metals, but I find that steel having a spring temper is best. The only objection is that in using oxyphosphate of zinc there will be some corrosion of the steel, but this can be partly overcome by touching the surface of the matrix on a sponge charged with oil before using. These matrices have one advantage over all others I have ever seen. Being held by the left hand the operator has perfect control of them. The lug resting against the adjoining tooth near the gum secures a close fit at the cervical wall of the tooth to be filled, and by means of the handle the upper side of the matrix can be turned out and away from the tooth in such a manner as to give access to the cavity. After the filling is partly in, the matrix can be turned up to the tooth so that the contour can be kept. This adaptability of the matrix through the medium of the left hand makes it, in my practice at least, indispensable. The manner in which it opens up the cavity to light, as well as for the reception of the filling, must be seen to be appreciated. By pulling on it the lug draws it closely down at the cervical wall and holds it there firmly, and at the same time it can be turned off at the upper edge so as to reach the adjoining tooth, even though it is some distance away.

For this reason it is invaluable in cases where it is desired to exaggerate the contour of a tooth in order to close up a space. It is applied in an instant, and can be taken out and put back at any time, even though the filling is only partly in. For plastics it is almost perfection, and for gold it is also of great value. I have become so used to it that I use it for many of my gold fillings, in fact for nearly all where I can spare the left hand to hold it. It is so adaptable to the will of the operator that, having once become used to it, I cannot understand how it could be given up. I presented this matrix with the illuminating devices described above, before the New York Odontological Society in 1893, and they were illustrated in the International Dental Journal of that year. They
have never been manufactured for the profession and are therefore but little known.—*International Dental Journal, Sept. 1898.*

EXPERIENCE WITH A FEW HOMEOPATHIC REMEDIES IN DENTAL PRACTICE. By William I. Wallace, M.D., Glens Falls, N. Y. Read before New Jersey State Dental Society, July, 1898. The teeth, though of a different structure from other tissues of the body, are still under the same general law of nutrition and growth. For that reason they are subject to the law of healing with those other tissues and organs, and the application of the law is limited only by the ability of the physician to select the appropriate remedy. In dental practice use is made of tangible and material substances, as gold and the various metals, acids, salts, alkalies, etc., in their pure concentrated forms. In the use of medicines, and especially homeopathic remedies, for the cure or relief of sickness and suffering, we deal with the vital processes which are visible and only discernible by symptoms presented of change in the various parts and tissues of the body.

The point upon which emphasis is desired to be placed is, that while everything is being done in a mechanical way to combat the effect of caries and other forms of disease, and restore the teeth to their normal condition, assistance of a very practical nature can be rendered by the appropriate remedy. This is especially true in such conditions as neuralgia, ulcerations of the bony tissues, etc.

Aconite and iodin are known and used probably by all dentists for the relief of threatened inflammation of the nerve or pericementum, acting as a counter-irritant. I have found aconite concentrated tincture applied in a cavity, where a paste of arsenic, carbolic acid and cocain completely failed, because of the excessive pain produced, to soothe in a few seconds, and after being sealed in for a few days to have devitalized the pulp, rendering the remaining treatment and operative procedures entirely painless and very satisfactory. This is because aconite is homeopathic to congested and hyperesthetic conditions.

*Aconite.*—Neuralgia of the fifth nerve is caused by cooling too suddenly when warm and perspiring, or from exposure to cold air, such as riding against a strong north or northwest wind. A few doses of aconite the third potency about half an hour apart will relieve very promptly, producing a gentle perspiration. Such
patients frequently come to the dentist thinking a decayed tooth may be the source of the trouble.

Belladonna.—In the earlier stages of pulpitis, in fact as soon as you are liable to be consulted, complaint is made of throbbing and sharp pain in a carious tooth. The face will be flushed, pulse rapid and strong, eyes more bright than usual, and pupils dilated. A few doses of belladonna 3 will soon cause your patient to thank you for the speedy relief.

Mercurius.—If the inflammation has been of longer duration and there is evidence of pus forming, yet extraction or evacuation is impracticable—a frequent experience in country locations—the tooth will be complained of as feeling too long; "it strikes its opponent before the others" and seems a little loose. Mercurius corr. subl. 30, a dose every hour until better, will prove far more satisfactory than any other aid you can render and the tooth may receive operative treatment at a future appointment with much less suffering. These cases get worse in the evening, having quite large cavities, and patients suffer agonies before midnight, yet experience little annoyance through the day.

Chamomilla.—Children are the greatest sufferers from toothache, probably because their teeth receive little care; also because of the excessive eating of sweetmeats. If you find them restless and fretful, quiet only when being held and petted, flatulent colic and diarrhea in young children, chamomilla 30 will quiet them and enable you to gain their confidence. Of course this applies only to the aching from caries even if extensive, but not to pulpitis; in such belladonna should be used, sometimes in alternation with chamomilla.

Creasotum.—A remedy daily used in almost every dental office, and of great value, is beechwood creasote. Its virtues are known to all present. Perhaps all may not know of the beneficial effect of the homeopathic preparations as 12 or 30 potencies. A patient, probably a child or youth, comes with cavities forming at the gingival line, the dentin wherever exposed excessively sensitive even to the explorer, showing acidity of the saliva. Also in the deciduous teeth of young children, sometimes a few months after they are erupted small cavities will form near the neck which soon will perforate and cut off the tooth; perhaps all of the incisors. In such cases creasotum 30 will produce wonderfully satisfactory results.
Charles B., aged between three and four years, was brought in one day with superior incisors gone even with the gums, pulps putrescent, gums inflamed and purulent. The root-canals were cleaned and thoroughly rinsed with calendula tincture, then temporarily packed with absorbent cotton, part of which was saturated with creasote, gently forced to apices of canals, the balance saturated with chloro-percha. The child was crying and suffering severely, so I could not be so particular as with older persons. The dressings were changed once or twice at later visits, then the canals were filled with gutta-percha. Creasotum 200 was given internally for a few days after first call. He experienced no further trouble, the gums became smooth and healthy, and caries that had started in other teeth was arrested, which I think demonstrated that the internal use of the remedy had marked effect. I did not think extraction advisable if possible to save the roots, as the space should be preserved for the permanent set when they developed. Results prove my course correct. An attack of neuralgia later caused by a cold yielded promptly to a few doses of chamomilla 30. No trouble has occurred since.

Caries Prevented by Internal Remedies.—May I present a little theory at this point. You who were present at that inestimably valuable lecture by Dr. Williams before the Odontological Society of New York City will remember the illustrations and statement of the process of caries; how intertubular cement substance of the enamel was first attacked and dissolved, thus loosening a few of the enamel rods or disks. This process steadily continuing causes the cavities. The saliva which almost continually bathes the teeth is of an alkaline reaction in healthy persons normally, but ill health or fermentation from sweetmeats will change the reaction to acid, which quickly acts upon the cement substance, dissolving it, and in those who are in poor health, or showing this improper condition of the saliva continuing for an indefinite time, the process of dissolution is more rapid and extensive. In such cases creasotum in the potencies, carried by the circulation to the salivary glands restores the normal reaction of the saliva, acting as a systemic antacid if you so choose to call it, and prevents the further destruction of the cement substance, thus preventing caries. To those who are unfamiliar with the theory of homeopathic potentizing, may I state that the division of the molecules of remedies by
that process renders their absorption more prompt and rapid—

osmosis being the method—the finer the molecules the quicker it is

accomplished. One more remedy should receive attention.

Silicea.—Alveolar abscesses are a frequent source of annoyance
to dentist and patient alike. Sometimes these cases will present a
history of slow development and be found very difficult to properly
 evacuate and heal up. The pus will be thin and watery. The
patient will show signs of low vitality, cold extremities. Perhaps
 previous attacks have occurred and a fistula has formed with fre-
quent recurrence of swelling and discharge of pus; ulceration of the
alveolar process may be present. The usual treatment would be to
open the gum, thoroughly expose the diseased surface if possible
and scrape it, then apply antiseptics and cause healing by granu-
lation. In these cases try a few doses of silicea 30, and giving only
free vent to pus will be necessary.

Dentistry has made wonderful advances in the past quarter cen-
tury, yet if we can prevent an abscess forming by giving a few doses
belladonna 6 as soon as it is discovered is it not better than the
most skillful surgery? If a few doses of creasotum 30 will prevent
extensive caries, is not its administration better than large contour
fillings to restore the destroyed tissue?—Items of Interest, Sept. 1898.

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PSYCHOLOGY OF HYPNOTISM. By Mr. F. N. H. Myers.

Read at British Medical Association. The author said he under-
stood what was desired was some attempt at a coherent psycho-
logical presentation of the multifarious and perplexing facts now
commonly grouped under the name of hypnotism, which facts
physiology was not as yet able to explain. If a somewhat closer
approach could be made on the psychological side, this must needs
be by bringing into comparison a great mass of cognate life-
phenomena, such as hysteria, ordinary sleep and somnambulism.
The analogies and differences between hypnotism and hysteria were
particularly instructive. Both in hypnosis and hysteria there were
disaggregations of the personality, at first apparently similar, after-
wards seen to be governed by quite different laws. To understand
what happened in either case it was convenient to picture to oneself
human personality as in a certain sense stratified, part of it lying
above and part of it below the threshold of consciousness, the level
above which thought or sensation must rise in order that it may
enter into our waking life, or become subject to our voluntary control, or find a place in our chain of memories. Now the characteristic trouble of hysteria was that fragments of faculty, of power, of sensation or motion, which it was desirable to retain above the conscious threshold, were apt to sink down below that threshold and thus become useless to the hysterical patient. For instance, the patient would suffer from hysterical paralysis, say of one leg, or from a diminution of her field of vision, while yet there was no perceptible organic injury to brain or leg or eye. What was thus lost could not be recovered at will, but might nevertheless be suddenly restored for a time or permanently by some shock, as when a hysterical paralytic patient recovered the use of her limbs in the terror of a fire, or was able to discern a terrifying object such as a stuffed mouse when it was brought into that part of her normal field of vision of the use of which hysteria had deprived her.

With the hypnotized subjects, on the other hand, the case was quite different. They were able to recall at will from beneath the threshold any faculty or sensation which they might have lost through hysteria, so that in just the ways in which hysteria could destroy, hypnotism could fulfil, and they were able also to send down beneath the threshold and dismiss from consciousness sensations which they wished to get rid of, even such insistent sensations as the pain of an operation or of childbirth. The next point of great psychological importance was the analogy between hypnotism and sleep. The essential fact of sleep was the shutting off of the subliminal life—the life concerned with facts above the conscious threshold—and the consequent increase of inward subliminal recuperative power. Hypnotism in the first place made our entry into this regenerative phase of our personality easy and certain. It did more than this, for in hypnotic trance the subliminal plasticity was more marked than in ordinary sleep and the subliminal control intenser, so that hypnosis sometimes seemed to be to sleep what sleep was to waking. Indeed, the leading facts of hypnotism, both for physician and for psychologist, the facts which called most pressingly both for explanation and for development, were those profound sanative regenerations which had now so often transformed the dipsomaniac and the morphinomaniac into self-controlled and useful members of society. But how, after all, was this further control over subliminal plasticity—over the vis medicatrix naturae—actu-
ally reached? The consensus of hypnotists now declared that the secret lay in suggestion. But what was suggestion? Did the hypnotizer infuse power or merely evoke it? The speaker believed that in some cases there was actually a transmission of power, of some subliminal power akin to what he termed "telepathy." But in many cases there was manifestly no such transmission; the hypnotizer merely taught the subject to start self-suggestions of his own. What it was that made those self-suggestions effective, that helped him to take hold, no theory could at present tell us. We might learn something by observing prevalent forms of self-suggestion outside the doctor's consulting-room altogether. One of these popular self-suggestions was the fountain of Lourdes, another was so-called Christian science or mind-cure. Both of these took advantage of deep-rooted beliefs, although expressed with a superstition or an extravagance repulsive to the scientific man.—Lancet, Aug. 1898.

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WHAT IS THE BEST OPERATION FOR ADENOIDs? The diligent reader of rhinological literature can hardly have failed to notice that for the removal of the masses of lymphoid tissue in the naso-pharynx, commonly termed "adenoids," very different operative procedures are advocated. Galvano-cautery, the cold snare, curetment, forceps, each has its supporters. Some operators seldom use an anesthetic, others invariably do. The position of the patient is as various as the operative features, some surgeons preferring the sitting posture, others what might be termed the recumbent semi-prone, and others again to have the vertex dependent, etc.

The use of Gottstein's curet as the main dependence appears to prevail as against the use of cutting forceps, though many operators combine their use. Dependence upon the curet alone appears to be irrational, and in fact has been deceptive in its results by reason of the structure of the lymphoid growths. The lymphoid portions of these are held together and attached to the vault by fibrous and vascular tissue, forming sessile pedicles and septa, a sort of placenta, varying much in its extent and firmness. Now, when this fibrous tissue prevails and the growth is therefore termed "tough" and fibrous, it is not reasonable to expect that an instrument like Gottstein's forceps, which scrapes rather than cuts the growth, will thoroughly remove it. A small, strong, sharp forefinger-nail, such as is possessed by some surgeons, is eminently superior to Gottstein's
instrument, especially in curreting out the narrow recesses on the wall of the space anterior to the Eustachian prominences and at the entrance of the choanae, yet it is well known that the portions of fibrous pedicle and lymphoid tissue left after its use often lead to a return of the growth. These cannot be thoroughly removed by even a very strong finger-nail, much less by a curet scraping over the surface. Some form of cutting forceps is necessary. Such forceps undoubtedly require more care and skill for their use than the curet, but skill, care and deliberation are far more necessary for the proper performance of the operation than is generally supposed.

With many operators ignorance is bliss, for after a hasty operation with the curet, during which the phenomenal hemorrhage encourages them to believe that they have been heroically thorough, they fail to explore the cavity a week or two later, and to discover that close to the choanae a considerable mass yet blocks the way and nasal breathing is still obstructed.

Haste in operating is mainly due to the very free hemorrhage and its menace to respiration. Hence it appears wise to place the patient semi-prone with the head sufficiently dependent, and to proceed quickly but without haste. This of course necessitates complete anesthesia, and sufficiently profound to insure the quietness of the patient, say from five to eight minutes, during which time the finger-nail and curet can be rapidly used, to be followed by the proper cutting forceps guided along the left forefinger, which (surgeon on the right of the patient) hooks forward the soft palate and constantly touches the sharp edge of the vomer.

The only fairly practicable way of telling whether all the vegetations have been removed is by palpation, and this must be carefully done or otherwise portions will escape detection. There appears at present to be too much stress laid upon rapidity of operating and brief anesthesia, and too little upon the difficulties and dangers attendant upon the complete removal of some of these growths. No matter how complete the operation appears to have been, a careful examination of the naso-pharynx should invariably be made a week or two afterwards.—_The Laryngoscope, June, 1898._

To CLEAN RUSTY INSTRUMENTS.—Fill a suitable vessel with saturated solution of stannous chlorid (chlorid of tin) in distilled water. Immerse the rusty instruments and let them remain over night. Rub dry with chamois after rinsing in running water, and they will be of a bright silvery whiteness.
LETTER FROM THE SOUTH.

ATLANTA, GA., October 17, 1898.

To the Editor of the Dental Digest,

DEAR DOCTOR: The somewhat provincial flavor of our environment will necessarily circumscribe the efforts of a regular correspondent, and we must therefore be indulged the liberty of discussing questions of the day irrespective of latitude or longitude.

Our first observation is that dentistry is just now passing through a history-making epoch. Within the last twelve months the contributions to what is destined to become permanent literature have not been equaled in point of number and superior excellence in the same period of time since the first text-book made its appearance. Black, Kirk, Marshall, Barrett, Thompson and Burchard have contributed the greater portion of this literature and are justly the recipients of the plaudits of an appreciative constituency.

In this day of isms and fads it is a hopeful sign of genuine progression when men of this calibre ignore all set forms and precedents and blaze out a path of their own. The only discordant note we would sound in this connection is one of surprise and regret that southern men are conspicuous by their absence from the list of authorship.

During recent years the profession has passed through the cocain, Herbst, copper amalgam, antiseptic and cataphoric epidemics, respectively, and is on the eve of wrestling with still another problem, the ultimate solution of which, however, gives promise of results far exceeding in value and prominence those enumerated above. Indeed, we shall be greatly surprised and chagrined if Dr. Jenkins' recent exhaustive experiments in inlay work fail to prove the crowning achievement of the century, for such it would be.

In the event of such a glorious consummation, what a deadly blow it would be to the advertising gold builders; and yet, since "the world is still deceived with ornament," the so-called ethical will have many opportunities to display their wares duly embossed with their monograms.

What has current dental literature to do with the application of a questionable theology to everyday practice? Nothing whatever, yet
it has shown its teeth in certain quarters, and unless summarily suppressed will prove a disagreeable, not to say dangerous theory. The profession is full of cranks already, but should this new craze seize hold of them, its poisonous breath would soon blight the very foundation principles which have been crystallizing for nearly a century. If the impression once obtains among the laity that the dental profession has embraced the Christian Science idea as a panacea for all pain, it at once invites ridicule. The work of years is destroyed in a day.

Isms, especially those of a religious character, are very insidious and usually attractive in form, and for this reason, if for no other, should not be seriously discussed in respectable dental journals whose clientele have shown in late years a ravenous tendency to delve into the intangible and mysterious.

Shakespeare, with a marvelously prophetic vision, very properly characterized these latter-day isms and their proclaimers when he said,

"In religion,
What damned error but some sober brow
Will bless it and approve it with a text,
Hiding the grossness with fair ornament?
There is no vice so simple but assumes
Some mark of virtue on its outward parts."

Yours cordially,

JUNIUS, JR.

NEW JERSEY LETTER.

To the Editor of The Digest, Newark, October 19, 1898.

MR. EDITOR:—The summer has passed; vacations are ended, and the business-end of the average New Jersey hornet has begun to act, and that too with no uncertain sound or wavering tendency.

The Central Dental Association held its first meeting of the winter last Monday. In the afternoon a clinic was given by Dr. Ottolengui on porcelain inlays, using the new Jenkins' furnace and bodies. An excellent operation was performed, to the satisfaction of all who witnessed it. In the evening Dr. Ottolengui read a paper on the same subject and explained in detail the method of manipulation. It was very interesting and profitable and a most decided advance in porcelain art.

Too much prominence cannot be given this subject, nor too much
written and spoken about it. It is more important that excellence in this art be developed, as those on the other side of the big pond are beginning to study it with earnestness, and we cannot afford to be behind them in this matter, since we are not in any other branch of dental art. Furthermore, our people are calling more and more for something to replace the unsightliness of gold, and we are in duty bound to give them any substitute which approaches nature's work.

Dr. Head of Philadelphia also referred to a system and method of porcelain work which he has been developing, and we wait with much interest to hear what he may have to say about it, and hope his paper may not be long deferred.

About one hundred members and guests were present at the banquet, and the menu was made up in honor of the various states which sent delegates from their examining boards to the meeting. We therefore had "Chicken Gumbo—Alabama Style"; "Connecticut Spinach"; "National Association Cigarettes"; "Maryland Lobster"; "Roquefort a la Georgia," etc.

The meeting was a decided success, more especially as a number of delegates from the sessions of the National Association of Dental Examiners in Washington came up to be present as guests of our society. We understand they are to visit the New Jersey Board in their examinations this week at Elizabeth. Have heard nothing about it, but feel sure they will not be allowed to depart without another example of Jersey hospitality in the shape of a special banquet.

Dr. Riley, president of the C. D. A., in his opening speech to the members and guests mentioned his visit to Washington to attend the meeting of the N. A. D. E. He spoke of the large number of delegates present and their interest in the work; the large amount of labor bestowed by the committee on colleges; the prominent part taken by the New Jersey Board on all the work; the fact that the work was tremendous in amount and possessing much value to the profession; and that this would be more appreciated in the future than at the present, as it would be viewed in the light of history and of undivided opinion and preference.

A number of colleges have since the last meeting come up to the required standard for admission into the Association. The meeting next year will be held at Niagara Falls, before the meeting of the National Dental Association.
LETTERS.

Great indignation has been aroused in the state society by the action of a certain denticifice company for obtaining the report of one of the state committees, which had mention of this company's preparation, and publishing the same. A large special meeting of the society has been held, a prominent Newark lawyer retained as counsel, and a temporary injunction obtained to prevent the company from publishing or in any way using the report of the committee. A decision has not yet been rendered upon the permanent injunction, and will not be for two weeks, but it is not thought that it will be refused, as the vice-chancellor immediately granted a temporary one upon hearing the facts as presented by our counsel.

Yours fraternally,

Hornet.

NEW YORK LETTER.

To the Editor of the Digest, New York, Oct. 22, 1898.

MR. EDITOR:—To take the day boat to Newburg and be out on the Hudson these autumn days is something to be greatly appreciated, and this trip includes nearly all the magnificent river and mountain scenery. We followed this course and met with the Second District Society of New York city. The members are composed of dentists from Brooklyn, Long Island and some five other counties. There was a good attendance from Brooklyn, but the New York men who were prominent in the organization of this body, in '64 we think, were noticeably absent. For this season the society seems to have been left in the hands of the younger men, with two notable exceptions, Drs. Straw and Allen. The former is a genial veteran, and when we congratulated him on growing old so gracefully and retaining his magnificent set of teeth, he informed us that he was the youngest man present. Dr. Allen is a successful practitioner, socially and otherwise, and has devised many useful articles in connection with our practice.

The season of societies is now open and we shall doubtless soon be made acquainted with their purpose of action. We forgot to mention that formaldehyde had an airing before the Second District, but the two discussing the question absolutely disagreed. Dr. George Weld gave an unusually intelligent exposition of his method, and it seems to be coming more into favor.

Nothing seems to daunt the attempts of science to ameliorate the ills which human flesh is heir to. As an example we will briefly
describe an operation which was performed the early part of this
month at Passaic, N. J. It is the first of its kind in this country
and the eighth in the world. A young man fell from the window of
his hotel and crashed through a glass skylight. The only serious
injury was that a large piece of the calf of one of his legs was torn
completely away by the glass. Preparations were made to amputate
the leg, owing to the great danger of lock-jaw, but as the wound
began to heal nicely the operation was not performed. The danger
of tatanus seemed over, but a few days later it suddenly developed.
Tatanus antitoxin serum was injected into the body, but proved
ineffectual and the jaws remained firmly set. Despairing of the
young man's life the surgeons adopted heroic measures. The skull
was trepanned on both sides, so as to expose both lobes of the brain,
and the antitoxin was then directly injected into the brain tissue.
Almost immediately there was a noticeable relaxation of the muscles
and the improvement has since been steady. The patient is now
able to masticate food in small quantities and his recovery seems
almost certain.

Unexpectedly we were invited to attend the Northeastern Dental
Association meeting at Hartford and it proved a very enjoyable
gathering. There were about two hundred in attendance and we
must say that we have never been at a better managed meeting.
The most fraternal spirit was manifested; there were good papers,
full and intelligent discussion of all subjects, and excellent clinics.
We mention only one paper, although nearly all were excellent,
Dr. D. D. Smith of Philadelphia, in a paper on Prophylaxis, particu-
larly emphasized the polishing of teeth, beginning with the decidu-
ous ones. Few men have any idea of the value of this practice and
if tried it would be a revelation to them.

Dr. Strang of Bridgeport, Conn., was chosen to preside for the
coming year and will do honor to the office. An example worthy
of a large following is the quiet manner of electing officers by a
nominating committee and a single vote of the Society as a confirma-
tion. We congratulate the executive committee which was able to
carry out so good a program so harmoniously.

The Odontological Society has held its opening meeting and
clinic. Dr. George Evans gave a talk and demonstration of his
method of placing anterior crowns so as to avoid any conspicuous-
ness. The subject of the evening was "Conspicuousness of Gold
Crows and Fillings, growing so common in these days and more particularly true of gold crowns. The people will have them however, and men will furnish them for so much apiece. What can we do? Legislation does not stop it. Cordially,

New York.

Baltimore Letter.

Dear Digest:

Baltimore, October 17, 1898.

Man is born to trouble as the sparks to fly upward! How true this saying is, and if true of man, how much more so of birds. One might wonder why orioles are not so plentiful as black-birds; but to judge from this one's experience they never will be.

The mutterings of resentment for his discordant notes, and the threats of punishment of a most disagreeable character, all make him think that he is in danger of being shot on sight, or shut up in a horrid cage. When will folks get used to an oriole's song, and why will they object to his nest being closed at the top? The nest is constructed for protection and concealment; he tries his discordant note to increase his range of voice. Who knows but that he may learn in time to sing in the clear, sweet notes of the canary, and then decide to build his home on the sand as does the whip-poor-will. Friends, put up with Oriole yet a little longer—let him live, he may be a better bird.

Last month Oriole called the Washington society sharply to task for dropping a patriarch from their honorary roll, and as a consequence Washington to a man is up in arms and all gunning for Oriole. They'll surely get him, some of them; Oriole is frightened and oh! how sorry. He had no idea those Washingtonians were so sensitive, or such clever and crafty hunters. Digest, please hide this bird till he has time to make peace. He is convinced that according to a strict interpretation of the code, the Washingtonians had ample ground for their action, and they were unjustly called vandals.

The mournful and distressing exhibition of proofs forces us so to conclude. Washington had grounds; her action is supported by the law, and the culprit of eighty-seven years has been punished. No matter that his recollection of the travail and early struggles of our profession might be interesting. No matter that his voice has hitherto been raised in professional counsel in condemnation of the course that now, in his second childhood, has
been the cause of his downfall. No matter that his professional brethren saw fit some years ago to honor him with a patriarch's dinner. No matter that poverty and misfortune have crowded fast and furiously upon him in his declining years, and in the hour of temptation and weakness he yielded; he joined the ranks of that great and iniquitous army, whose tramp can be heard in crowded thoroughfare and busy mart, whose flaming banners catch the eye of the passer-by and cry to all for trade. Would to God that like the stalwart giant he is physically, his professional spirit might have weathered the storms of adversity, and his long and honorable career might have stood like the great oak, a refuge and a source of pleasure, happiness and inspiration to those who passed that way. But alas! prone he lies. The first stone is cast, and all save one with one accord cast stones. That lonesome man held the garments of the others and now wishes he had shied a few stones himself.

This painful duty over, let's look to ourselves; burn up the stock which has been presented to us in the patent nostrum company; trim down our descriptive cards; remove our plates from the hotel registers, and live like peaceful servants of the Lord whose work is a labor of love.

Speaking of trees, they have always interested us, even if they do not obey the laws of conventionality and grow with symmetry and uniformity. We once forced a little pebble into a slit made with a pocket-knife in a chestnut tree, and years afterwards saw a great gnarled piece the size of our hand as the result. If trees are thus sensitive to obstruction, who can say they should not assume manifold shapes and expressions. 'Tis so of men. What influences change their lives and character? Who but like to see portrayed in their work individual traits and peculiarities?

Have you read Bonwill's letter in the International? How like him it is. He isn't afraid nor abashed, though all Europe stare at him. When he passes away we shall all remember him as a proud, haughty, self-opinionated, interesting and clever man. For our part he is welcome to all his self-esteem, for we right heartily esteem him ourselves. There is only one, there never will be another; can't control him, can't lick him; he sometimes seems impossible; he's just Bonwill and he's done lots for dentistry. May he live long to enjoy the reward of his labors.

We are proud to hear that New Jersey will come out from under
her cloud at the National next year; we never thought she was guilty as charged in the indictment. Her men have done too much good in a professional way to have their reputation smirched, and they won’t stand it. The Hornets are beginning to buzz and their stingers are being sharpened, so look out for them.

Our local board of examiners are attending the national meeting this week in Washington. The colleges are in full blast, and the rest of the dentists are digging for a living.

Cordially,

Oriole.

PHILADELPHIA LETTER.

Dear Digest: Philadelphia, October 20, 1898.

Philadelphia has long been recognized as the center of professional education, not only owing to the excellent history of our many educational institutions, but from the fact that hundreds, indeed thousands of men and women come to this city every year for education in some of the learned professions. Our dental colleges are now open and in operation for another season and the matriculates in these schools alone number over twelve hundred. The population of this city of brotherly love is therefore increased during the college terms by a cosmopolitan student element numbering several thousand.

For a number of years a marked interest has been shown by the public in the personal welfare of these temporary residents. In fact, students are here treated royally. They are given receptions and teas, are furnished with wholesome reading matter, special invitations are extended to them from most of the churches, and many privileges offered to make their social life as well as their college training of lasting benefit.

Not least among the features of student life in Philadelphia is the intercollegiate branch of the Young Men’s Christian Association. This work has grown to be of such importance to the young men that a branch has been established in every professional school in the city. One of the most interesting meetings of the season is the public reception tendered the students each autumn, at the auditorium of the Y. M. C. A. building. This large hall being divided into sections, each college is assigned to one sufficiently large to seat its respective students; after which each section is draped in the several college colors. At an appointed time the students from each college march in a body to the hall, and here they vie with
each other in college yells, etc. Some public official usually presides at the meeting and for the city offers the boys a hearty welcome. The program of the evening is made up of short speeches from members of the faculties of all the institutions represented. These meetings are always a great success. We accepted an invitation to be present this year and feel that it is a most excellent work, this bringing the students, teachers and public together in a social way.

At the reception held a few nights ago Ex Governor Beaver presided and was an admirable chairman. Short talks were given by some representative of each college, as stated, and notable among them were our Professors Peirce and Guilford. General Beaver showed his never failing interest in young men by coming from Washington (where he is serving on the investigating board appointed by President McKinley) to preside at this reception and talk to the boys, and the women too, for the Women's Medical College was out in full force, and one of their faculty, a woman, spoke from the platform.

Knowing that the Digest reaches many teachers and students throughout the country, we speak of this that they may know some of the reasons why students always carry away a warm place in their hearts for Philadelphia and Philadelphians.

Some time ago we spoke of the admirable address of Prof. Wilbur F. Litch before the Penna. State Dental Society. We have recently received a printed copy of this essay and have found renewed pleasure in its perusal. It is a pity our profession has so few men with such a thorough mental equipment as Prof. Litch.

In speaking of commercialism he says, very truly, the fact cannot be ignored that our professional good fame is being seriously threatened by the gross commercialism which characterizes certain phases of dental practice. The advertising dentist, the doctor adds, was never more in evidence than to-day, and his violations, not only of professional propriety but of common decency, never more audacious, persistent and shameless. Dr. Litch makes a plea for some form of legislation by which disreputable men can be stopped from practicing, as the courts debar a man who cheats his clients. It is certainly a scandal upon the profession which cannot be accepted with indifference.

It is said that when Dr. Bonwill sets the wheels in motion the
cogs never get clogged, and it is only by some friend rushing to his aid that he can stop. Did you read his "Reminiscense" in the current International? We thought it very lengthy, even for Bonwill, as we read page after page, but behold, as we come to the close of the last page it says "to be continued."

On Saturday evening of this week Dr. H. C. Register, one of the most highly respected dentists of the Quaker City, entertains the Philadelphia "Dental Club," with some personal friends, in his palatial home at Ardmore, Pa. It goes without saying that everyone will have a thoroughly good time, for as an entertainer Dr. Register excels. Cordially, The Spectator.

BOSTON LETTER.

To the Editor of the Digest, Boston, Oct. 21, 1898.

Dear Doctor:—Since returning from the National Dental Association meeting recently held at Omaha, we have been more strongly impressed with the importance of more members of our state organizations being sent as delegates to the National, and thereby becoming permanently identified with the latter association. We earnestly hope that the Massachusetts Society will send delegates to the next meeting.

No doubt the intense heat at Omaha had much to do with the flatness of the meeting, but only a few good papers were produced, and after so long a journey across the continent the best of material should have been presented. Routine business in future should be disposed of at the close of each day and not at the beginning, thus enabling papers to be read and thoroughly discussed. Let us hope that the selection of that world-famed and healthful spot, Niagara Falls, may increase the attendance at the next meeting, especially from New England; and with the new and young president, who resides in that district, to inject new energy and life into the convention, we may in confidence expect a rousing meeting which shall start this organization well upon the highway of success and future usefulness.

A word relative to the Dental Protective Association may be of interest. In our efforts during the past two or three years to induce dentists to join, we find that ninety per cent take refuge behind the excuse that "it is not necessary," as they get the protection without expense or liability. They are not abashed by the argument that
such is a selfish way of looking at it, for like the trusts and combinations in commercial lines, so long as they get all the benefits, what care they about others. Since the members have been and are receiving protection against fraud and imposition, it seems about time that the association form a trust for its own protection against non-members by not granting protection to them.

The Harvard Dental School has opened with sixty freshmen and fifty each in junior and senior classes an increase of about twenty per cent in total over last year.

We learn that the Boston Dental College has sixty-five students in the freshman class for the coming season. This school was disciplined by the Faculties' Association at the recent meeting for suspension of dissection in the curriculum, and we learn that the faculty have made arrangements with Tufts' College Medical School to receive the Boston students as specials in dissection.

We are sorry the proceedings of the last meeting of the Massachusetts Dental Society have been so long delayed, and that you have been unable to secure them for publication. The stenographer who took the proceedings was taken suddenly ill soon after the meeting and has been in the hospital ever since. He is now convalescent however, and will soon be able to transcribe his notes.

The Harvard Odontological Society at its regular monthly dinner discussed a paper by Geo. F. Grant, D.M.D., on "Manipulation of Phosphate Fillings." The author referred to the fact that a phosphate filling should be rapidly manipulated and packed quickly, and when thoroughly condensed into the cavity and given a polish with a smooth burnisher, he considers it reasonably safe in its efficiency. Dr. E. H. Smith always uses the matrix at the cervical margin when using any cement, but most of those discussing the paper used gutta-percha at the cervix in all cases for cement fillings.

A man bled to death recently in New York after having several teeth extracted, and physicians are puzzling their brains over the case. They do not seem to be aware that there is a certain class known as "bleeders" who have serious and frequently fatal hemorrhages after extraction of teeth.

On the 19th and 20th of this month the Northeastern Dental Association held its fourth annual meeting at Hartford, Conn. This body is the outcome of the union of the New England Dental Soci-
eternity and the Connecticut Valley Dental Society, both of which had been in existence for about thirty years. The meeting was very successful as regards attendance, papers, clinics and exhibits, the latter feature being the largest in the history of the society. Only two dentists were present from Boston, and this is a shame to the profession which claims to be active in the pursuit of knowledge and to take an interest in society matters. Men came from all over New England and New York, more from greater distances being present than from near and accessible towns and states. Every paper was read by the author himself, and almost every clinic given. The venerable Dr. Palmer of Syracuse, N. Y., was present and contributed an interesting essay. Resolutions were passed approving of the efforts to bring about a uniformity of dental laws throughout the United States. The following officers were elected for the ensuing year: Dr. C. W. Strang, President; G. F. Harwood, Vice-President; A. J. Cutting, 2d Vice-President; E. O. Kinsman, Secretary; F. M. Wetherbee, Asst. Secretary; J. T. Barker, Treasurer; F. T. Murlless, Jr., Librarian; Chas. McManus, Editor.

Fraternally, Boston.

To Remove a Foreign Body from Under the Nail.—Alternately soften the nail with the end of a match dipped in caustic potash and scrape with a piece of glass until the object is reached.—Journal de Med. de Paris, July 3.

Incubation of Infectious Diseases.—It is so important for the general practitioner that he should be prepared at a moment's notice to state the usual period of incubation of the specific infectious diseases, that the following table may be found of service. It is based on the exhaustive investigation of the committee appointed by the Clinical Society. For all practical purposes these diseases may be divided into two groups, viz., those having a long period of incubation and those with a short one.

In the following table is given, in days, the usual, the shortest, and the longest period of incubation:

I—The Long Group.

<table>
<thead>
<tr>
<th></th>
<th>Usual</th>
<th>Shortest</th>
<th>Longest</th>
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</thead>
<tbody>
<tr>
<td>Mumps</td>
<td>21</td>
<td>14</td>
<td>25</td>
</tr>
<tr>
<td>German Measles</td>
<td>18</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>Enteric Fever</td>
<td>12-14</td>
<td>5</td>
<td>23</td>
</tr>
<tr>
<td>Typhus</td>
<td>12-14</td>
<td>2</td>
<td>21</td>
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<tr>
<td>Varicella</td>
<td>14</td>
<td>13</td>
<td>19</td>
</tr>
<tr>
<td>Variola</td>
<td>12</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>Measles</td>
<td>10</td>
<td>4</td>
<td>14</td>
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II—The Short Group.

<p>| | | | |</p>
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</thead>
<tbody>
<tr>
<td>Scarlet Fever</td>
<td>1-3</td>
<td>Less than 1</td>
<td>8</td>
</tr>
<tr>
<td>Erysipelas</td>
<td>1-4</td>
<td>&quot;</td>
<td>?</td>
</tr>
<tr>
<td>Diphtheria</td>
<td>2-4</td>
<td>Few hours.</td>
<td>7</td>
</tr>
<tr>
<td>Influenza</td>
<td>3 or 4</td>
<td>One day.</td>
<td>4 or 5</td>
</tr>
</tbody>
</table>
MORE LIGHT REQUESTED—AND FURNISHED.

"The second feature of importance was the action of the executive committee relative to the proposed patent-law amendment making impossible the issuance of patents upon methods of treating human diseases. The resolution embodying the views of the executive committee with respect to that movement is a curiously worded statement which seems to need further elucidation, for the reason that it does not make clear the fact that the alleged decision of the supreme court declaring all such patents invalid will also necessarily prevent the patent office from issuing them, and so make an end to litigation concerning them, nor does the wording of the resolution make it clear that the committee intended that the interests of the dental profession took precedence in their minds over 'the interests of organizations now in existence,' but vice versa. A little more light on the real motives of the executive committee in this regard would be welcomed in view of the importance of the principles at stake."—From editorial in the October Dental Cosmos.

We would respectfully refer the editor of the Cosmos to the March, 1898, number of the DENTAL DIGEST, wherein we explained this whole question quite fully and so will not enter into it here.

If in discussing the future work of the Dental Protective Association we were surrounded only by its friends and the friends of the dental profession, nothing would please us more than to give all the plans. Many things cannot be published to the world for the present, however, because surrounding and mingling with the profession are numerous spies and hired servants of those who bitterly oppose any effort to band the dentists together, and to earn their salaries the above mentioned persons are required to do everything possible to injure the work we are doing, and they resort to many vicious and slanderous methods. Many of these enemies of reform hold such prominent positions that we are compelled to keep back much that the true friends of the dental profession should know.

Suffice it to say that the National Dental Association took just such action as all societies should take, and would have taken had they been
familiar with all the facts. Agitation of this question has been very detrimental to the Dental Protective Association, and this alone should be sufficient reason for dropping the question, since this organization is run solely for the benefit of the entire profession, and an organization which has already done so much good and for which there is so much yet to be done, should not be handicapped in any way. Especially not by a movement which is already superseded by court decisions, and is therefore unnecessary. This fact alone will prevent any possibility of Congress passing the proposed bill, and even granting, for the sake of argument, that Congress did pass it, this would not prevent the issuance of illegal patents, covering the same devices but in a different form, just as the S. S. White Dental Manufacturing Company has for years obtained patents in various forms on sham and trivial claims that would not be worth the paper that they were written upon if a test were made of their validity, and by such monopoly has accumulated vast sums of money at the expense of the dental profession.

Another very important reason why the National Association and all honest dentists should be opposed to such legislation is because, as we are informed by the accredited author of this patent-law amendment, the S. S. White Dental Manufacturing Company favors it. This fact alone should be sufficient to create universal opposition to the movement, for this company has never shown any particular love for the dental profession or desire to better its condition in any way, and judging of its past patent monopoly transactions, any change in the future laws which is favored by it would not be for the benefit of the dentists.

Suppose the correspondent of the New York State Dental Society, who as we stated before is the supposed author of this patent-law amendment, had introduced a bill making it unlawful for any one to take out patents or to purchase them with no other object than to lay the devices on which such patents were granted on the shelf, and thus prevent others from making use of the same, thereby depriving the profession of the benefit of the devices as well as the natural competition to which they are entitled. We wonder what the attitude of the S. S. White Company would have been toward such a movement. This is an abuse which is not composed of sentiment, and one which the dental profession have submitted to for many years. Why not take up a much needed reform?
WHO WAS TO BLAME?

"It is a matter of regret to many who are interested in the success of our new National Association that its first meeting was held under circumstances which necessarily detracted much from its success. It is further a matter of surprise that the results accomplished were as satisfactory, considering the adverse influences which hedged it about both at the time of the meeting and for some time previous thereto.

"It was not until a very short time before the date fixed for the meeting that the place where it was to be held was definitely decided upon, and pending that decision all sorts of rumors gained currency as to the availability of the place finally selected. Its geographical location, its hotel accommodations, its climatic conditions, etc., were all called in question, and created a widely felt uncertainty as to the desirability of Omaha as a meeting place. These doubts certainly deterred many from undertaking a trip which involved a considerable financial outlay and an amount of fatigue and inconvenience which few care to assume during the summer vacation period unless a compensating inducement in the way of a pleasant and profitable gathering is offered.

"Someone blundered in the management which permitted the foregoing state of affairs to occur. It was not until the August issues of the dental journals had appeared that the official decision as to the place of meeting was announced, or until official assurance was given that delegates and visitors would be properly provided for during the time of the meeting. Nor was sufficient notice given of the character of the program provided, as the official document was issued only at the last moment. As a result, the attendance was small, lamentably so in comparison with what it should have been under proper management, to the lack of which and nothing else the meager result is to be charged. If a proper place of meeting is selected, a good program provided and ample notification given as to all its details, a good attendance will result. Dentists will not barter the certainty of a much needed rest and vacation after a season of arduous labor for an uncertainty in the matter of a dental meeting to which they are invited long after the disposition of their vacation time has been provided for, and especially when the inducements offered by the dental meeting are discounted by the possibility of much personal discomfort and expense. Right here it is customary to offer sentiments of professional duty as the warrant for sacrifices of that character, but professional duty involves also the duty of maintaining one's physical and mental standards by a proper summer vacation. Therefore, if the summer gathering of our national body is to be a success, it must not be made an arduous task, but a pleasure and means of recuperation to those who attend."

—Extract from editorial in October Dental Cosmos.
Let us see who was to blame. Omaha was selected as the place of meeting by ballot, according to the rules of the Association, at the previous meeting in 1897 by an overwhelming majority, and could not be changed by the executive committee. What did this committee do to insure a successful meeting? A notice of the time and place of convening was published in all the journals early in the spring. Application for reduced railroad rates was made about the same time, several months before the traffic associations would consider it. A long time in advance of the meeting letters were written to the officers of the various sections, urging their activity in regard to the literary program.

Early in the season some of the officers of the Faculties' Association, while visiting the Omaha Exposition, applied to the hotels for rates for their meeting and were refused, the hotels having agreed among themselves not to make rates until they were sure what the attendance would be at the Exposition. Alarmed at their attitude the gentlemen above mentioned asked us to change the place of meeting, urging the lack of accommodations.

Several members of the executive committee were at the Put-in-Bay meeting in June, and after talking the matter over it was thought best for the chairman to go to Omaha and find out the true state of affairs. We therefore took this trip at a great sacrifice of time, made all the arrangements, including a good place in which to hold the meetings, examined the hotels and secured a written contract with four of the best for reasonable rates. Soon after our return a circular was sent each member of the Association and the delegates so far as known, that satisfactory arrangements had been made and that the railroads and hotels had given reduced rates.

The great mass of petty details have been omitted, but some idea can be gotten of what work the chairman of the executive committee did, and much of this labor has been necessary each year for the last twenty-five. We would ask our readers to contrast it with what the editor of the Cosmos has ever done for his profession? Yet he sits in his easy-chair in the luxurious office thoughtfully furnished by his employers, the S. S. White Co., and fifteen hundred miles from the place of meeting criticizes the honest work of those who are keeping the Association alive.

There is an important consideration which should properly be discussed in this connection, viz., that the individual who is always
striving to benefit those around him rarely grows tired or needs relaxation, for he gets his rest and recreation out of life and the good he is doing. On the other hand, the human being who does nothing to help his fellow creatures robs his soul of its natural nourishment and it becomes dwarfed. Because of this starvation of the soul, the brain and body grow out of proportion and the physical economy demands more rest. When it comes to any self-sacrifice, such a person usually feels tired and begins to study "the duty of maintaining one's physical and mental standards by a proper summer vacation."

Accrediting the editor of the Cosmos with the good sense and sound judgment we are sure he possesses, were he only allowed to exercise them, we fail to see the logic of his criticisms, for he must have known that the place of meeting was fixed by a vote of the Association one year before; that the rumors which received the wide circulation he speaks of were not started by officers; that the executive committee does not make up nor prepare the literature of the National Dental Association; that the program issued is simply a guide for the business part of the sessions, sometimes not being printed until approved by vote of the Association after first session; and that the officers had nothing to do with the weather.

Our fastidious members could have been taken to the meeting in a refrigerator car and kept in it while at Omaha, if their presence would have added sufficient interest to the meeting and they had shown any desire to attend. From the fact, however, that when the meetings have been held in the most convenient places, and the editor of the Cosmos has been on the ground he did not show interest enough to attend any of the sessions, probably because his vacation had been previously provided for, it does not seem necessary to plan a cool place for such members of our profession.

It may be urged that it is each individual's privilege to act his own pleasure in attending these meetings or not, and that we should not criticize those who do not present themselves. In reply to this, we believe that each member of a profession owes that profession a reasonable amount of sacrifice for its advancement, and until the editor of the Cosmos shows more disposition to do something towards furthering the interests of the National Association, would it not be well for him to refrain from criticising what he knows to be the honest and earnest work of others.
Notices.

OHIO STATE DENTAL SOCIETY.

The annual meeting of the Ohio State Dental Society will be held this year in Columbus, Dec. 6-8. A good program is in course of preparation and a profitable meeting is assured. The profession are cordially invited to be present.

NORTHERN ILLINOIS DENTAL SOCIETY.

At the recent session of the Northern Illinois Dental Society, held at Rockford, the following officers were elected: President, Dr. C. W. Cox, Batavia; Vice President, Dr. C. B. Dillon, Sterling; Secretary, Dr. J. W. Corman; Treasurer, Dr. M. R. Harned, Rockford.

VIRGINIA TIDEWATER DENTAL ASSOCIATION.

A permanent organization of the above association has been effected at Norfolk, and the following officers elected: President, Dr. J. N. Webster, Norfolk; Vice-President, Dr. H. W. Campbell, Suffolk; Secretary and Treasurer, Dr. W. M. Sturgis, Norfolk. The meetings will be held the first Monday in each month.

MASSACHUSETTS BOARD OF DENTAL REGISTRATION.

A meeting of the Massachusetts Board of Registration in Dentistry, for the examination of candidates, will be held in Boston, December 5, 1898, at 10 a.m., at Harvard Dental Infirmary, North Grove street. All applications, together with fee of $20.00, must be filed with the secretary of the board before November 28.

MASSACHUSETTS BOARD OF DENTAL REGISTRATION.

ROCHESTER DENTAL SOCIETY.


TRISTATE DENTAL ASSOCIATION.

The dentists of Indiana, Kentucky and Illinois met in Carmi, Ill., Oct. 24, and organized the Tristate Dental Association. The following officers were elected: President, C. M. Meade, Carmi, Ill.; Vice-Presidents, S. F. Gilmore, Princeton, Ind., Lloyd King, Henderson, Ky., W. C. Brosman, Albion, Ill.;
Secretary, R. H. Burke, Shawneetown, Ill.; Treasurer, Alvin J. Hovey, Mount Vernon, Ind.; Purchasing Agent, M. M. Haas, Evansville, Ind.; Editor, F. J. Raymond, Evansville, Ind.; Executive Committee, C. Chandler George, Evansville, Ind. The association held two sessions to-day and listened to interesting papers. Evansville, Ind., was chosen as the place for the next meeting.

**LATEST DENTAL PATENTS.**

11,696. Reissue, dental spittoon, Frank Hurlburt, assignor to A. C. Clark, Chicago.
610,518. Mouth and throat mirror, Henry Bausch, assignor to Bausch & Lomb Optical Company, Rochester, N. Y.
610,775. Tooth-powder receptacle, Wm. S. Thompson, Jr., Woodside, Md.
610,840. Dental pliers, Edward H. Angle, St. Louis.
611,038. Surgical injector clamp, Benjamin H. Lohman, St. Louis.
611,670. Rubber-dam clamp, Joseph Wittowski, Berlin, Germany.
611,788. Tooth-brush, Isaac N. Lincoln, Providence, R. I.

**TRADE-MARK.**

31,962. Powder for cleaning and polishing the teeth, Thomas Hollis, Boston.

**LABEL.**

6,665. Edward P. Week, Norwalk, Conn., "Dr. Many's Antiseptic tooth-powder," (for tooth-powder.)

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**News Summary.**

**Practicing Dentistry Without a License** cost a dental student $25.00 in Youngstown, O.

**David S. Lord,** a dentist of Syracuse, N. Y., committed suicide October 11 by inhaling illuminating gas.

**Dr. A. H. Robinson,** a dentist who has been in practice in Hutchinson, Kansas, for many years, fell down stairs October 11, and soon after died from his injuries.

**Dr. Geo. S. Gagnon,** who has started several dental parlors throughout the country, has filed a petition in bankruptcy. His liabilities are $80,000, and his assets $800.
Detroit Dental Society.—This organization gave its autumn supper October 10, and thirty-five guests, including several dentists from other parts of the state, were present.

The Dental Practitioner and Advertiser, which is the third oldest dental journal in existence, and has been published for twenty-nine years at Buffalo, N. Y., has ceased to exist.

A sneak thief has been arrested in Indianapolis. He represented himself as an agent for dental supplies, and whenever the dentist left the room he would help himself to everything in sight.

Prize for clean teeth.—A man in Maine, it is said, has offered a number of small prizes to the school children in his town who take the best care of their teeth during the summer vacation.

Losing teeth.—Dentists say that women who talk the most lose their teeth soonest. We doubt it. Women who lose their teeth soonest are those who leave them lying around in wash-basins or on window-sills.—St. Louis Humorist.

Dr. Bernard Herz, a dentist of Philadelphia, was struck by a locomotive and instantly killed October 18. He was a graduate of the Pennsylvania College of Dental Surgery, a member of several city clubs and societies, and a very philanthropic man.

Salt as an antiseptic.—According to the Cronica de Ciencias Medicas de Filipinas, the insurgents dress wounds with dry salt or strong brine, from lack of the usual antiseptics, and wounds from firearms heal under it in four to five days.—Semana Medica.

For the disinfection of sponges.—Sponges can be boiled without injury in 30 per cent prophylactic alcohol, Saul announces in the Munich Med. Woch. of June 14. He boils them two hours the first time; afterward thirty minutes. Anthrax spores are killed in ten.

Foreign bodies in the air-passages.—Heller reports a number of serious cases in which prompt irrigation of the naso-pharyngeal space produced such efforts at expectorating or coughing, that the foreign body was expelled at once and life saved. He urges all to try this simple measure before resorting to tracheotomy.—Munich Med. Woch, June 28.

To neutralize nicotin.—A German journal states that after a long search Professor Gerold, of Halle, has found the means of neutralizing the action of nicotin in cigars. During the process of manufacture the leaves of tobacco are steeped in a decoction, the principal element of which is wild marjoram (Origanum vulgare.) Gerold claims that by this means the deleterious effects of tobacco are avoided, and yet the quality and aroma are not altered.

Longevity of physicians.—A French statistician has discovered that in the sixteenth century the average duration of a doctor's life was only thirty-six and one-half years. In the seventeenth century it reached forty-five and two-thirds years, in the eighteenth century forty-nine and two-thirds years,
and at the present time he finds it is fifty-six years. The same inquirer purposes to ascertain whether the average longevity of patients has increased in the same proportion.—*Toledo Medical and Surgical Reporter.*

**Chaps and Fissures of the Lips.**—Professor Hearn uses the following formula and states that when the condition does not readily yield to this treatment, epithelioma should be suspected in those past the middle of life:

\[
\begin{align*}
& R \quad \text{Hydrarg.} \quad \text{oxid. flavi}, \quad \text{gr. iv} \\
& Balsam. \quad \text{Peruvian}, \quad \text{gr. xx} \\
& \text{Vaselini}, \quad \frac{3}{2} \text{j.} \\
\end{align*}
\]

**Sig.**—Apply to the lips two or three times a day.

**Dental Law Valid.**—The Supreme Court of Indiana October 12 held that the dental law, providing for a state board of dental examiners, is constitutional and valid. Under the decision it is now unlawful for anyone to practice dentistry in the state without obtaining a certificate from the state board of examiners. The Indiana State Dental Association has the power to name examiners and prescribe the qualifications for practice. This suit was brought against Daniel Ferner, who was fined $20 after having refused to obey the law.

**Alcohol as a Disinfectant.**—Recent researches seem to show that absolute alcohol is devoid of all disinfectant properties, whereas proof spirit (50 per cent) gives more tangible results in this direction than either stronger or weaker solutions. Antiseptic substances which, in aqueous solution, are more or less active germicides, entirely lose this property when dissolved in strong alcohol, but, on the other hand, corrosive sublimate, carbolic acid, lysol and thymol, dissolved in a 50 per cent solution of alcohol, disinfect better than aqueous solutions of same strength.—*Med. Press and Circular.*

**Repairing a Gold Crown.**—By E. A. Randall, D.D.S., N.S. Just suppose you have made a gold crown, and in finishing you go through the shell, making an unsightly hole. If you undertake to solder this the chances are that you will have three or four holes caused by the solder melting out at the joints. To prevent this trouble, paint the crown all over the outside with whiting mixed thin, except around the hole which you wish to repair, fill this with a plug made from gold-foil, touch it up with a drop of borax water, and put a bit of gold solder inside, heat it with blowpipe, and success will be the result.—*Dominion Journal.*

**Mercury, to Purify.**—Dr. Beacock says hydrochloric acid has no effect on mercury; sulphuric acid must be heated to affect it much; nitric acid acts on it lightly; by taking advantage of this mercury can be purified easily from lead and many other base metals or impurities with which it is often mixed. Using one part acid to eight parts water, heated to 140° F., will not attack the mercury and is sufficiently strong to eat up the baser metals the mercury may contain. Another way to purify mercury is to shake it well in pulverized sugar, then filter through a paper cone by making pin holes in the bottom of it. The mercury will filter through, leaving the sugar in the paper.
EX CONVICTS CANNOT BE PHYSICIANS.—The United States Supreme Court, April 18, 1898, affirmed the constitutionality of the act of the New York Legislature of 1895 prohibiting persons who have been convicted of and punished for a crime from practicing medicine in the state, the opinion being delivered by Justice Brewer. The question arose in the case of a man named Walker, who had served ten years in a penitentiary for an offense committed in 1878, and after his release set up as a physician. The court held that it was within the police power of the state to enact such a law. Justice Harlan delivered a dissenting opinion, saying the law in effect added to the man’s punishment and was ex-post facto.

ALCOHOL AND THE RUSSIAN DEATH RATE.—An official inquiry into the comparatively larger increase in the Tartar population of the city and government of Kazan has, according to the Kamsko Volshki Krai, brought out some remarkable facts as to the effect of alcoholic indulgence on the death rate. The Kazan Tartars, numbering about 640,000, have a rate of mortality of only 21 in 1,000, while the mortality among the Russians is 40 in 1,000. The general conditions among orthodox Russians and Mohammedan Tartars are practically the same, except in so far as personal habits are concerned. The medical investigation leaves no room for doubt that the lesser mortality of the Mohammedan Tartars is directly due to their abstinence from spirituous liquors, in which the Russians indulge freely.

TREATMENT OF BURNS.—The most exquisitely painful burns are assuaged in a few moments by an application of campho-phenique after the following formula:

R Cocain hydrochlorate
Campho-phenique
Olive oil

M. Rub up the cocain and campho-phenique and add the olive oil.

A man whose hand had been torn and badly burned by an electrical discharge, the pain of which was so severe that he fainted twice before the dressing could be applied, expressed himself as without pain in less than one minute after the application.—St. Louis Medical and Surgical Journal.

SIXTY-SIX YEARS MAKE AN “AGED” PERSON.—The supreme court of Georgia thinks that it would be difficult to designate an exact period of life when one might with certainty be said to have become aged. And, while it concludes that the term “aged” as applied to human beings is not for all purposes susceptible of precise definition and that it is not practical to arbitrarily fix a period of life at which the condition of being aged may be said to have certainly begun, it holds, in the recent case of Allen vs. Pearce, that it is safe to say that a man 66 years old is entitled to an exemption of his property from levy and sale under that clause of the constitution of Georgia allowing this right to “every aged or infirm person,” and this though he may be a hale and hearty man. In an English case it has been held that persons 50 years of age are aged, within the meaning of the statute of charitable uses, providing for gifts “for the relief of aged and impotent and poor people.”
FOREIGN BODIES IN THE EAR.—Hummel (Munchener med. Woch.) makes the following deductions: (1) The relation of the normal ear canal to inanimate foreign bodies is entirely without reaction; that is, the foreign body in the ear does not per se endanger the integrity of the ear. (2) Every hasty endeavor at removal is therefore not only unnecessary, but can become very injurious. (3) In all cases not previously interfered with (with few exceptions) the foreign substance can be removed from the ear by means of syringing. (4) The general practitioner should never employ anything but the syringe in his endeavors to remove foreign bodies from the external auditory canal. (5) An instrumental removal of a foreign body from the ear should be effected only by one fully able to examine the ear with an otoscope and acquainted with every operative manipulation in this region.

THE PASSING OF THE RETAIL PHARMACIST.—At the annual meeting of the American Pharmaceutical Association held recently in Baltimore, Mr. Joseph Feil of Cleveland read a paper showing that the number of drug stores in the country is progressively decreasing, not only relatively to the population, but actually. The decrease varies in different parts of the country, ranging from 1.8 per cent in Pennsylvania in the last two years to 24.6 per cent in Texas. The total number of drug stores in the United States in the years 1896, 1897 and 1898 was said by the reader of the paper to be respectively 37,664, 36,483 and 35,467. Within the same period the number of wholesale druggists also decreased from 296 to 284. The reasons for the decrease, Mr. Feil believed, are the competition of the department stores, particularly in toilet articles, and the wide practice of price-cutting on proprietary medicines, to which might be added the growing custom among physicians of giving remedies in tablet form instead of writing prescriptions. Mr. Feil said that when the retailers number about 25,000, and the wholesalers about 200, equilibrium will be established and the decrease in the number of pharmacies will cease.—Medical Record.

REPROACH OF ILLINOIS AND MICHIGAN.—The state board of health of Michigan complains that graduates of the Independent Medical College of Chicago are constantly being registered in that state. They confess their inability to prevent such registration under the present medical practice act of the state. Perhaps in no branch of legislation has more educational work been done within recent years than in that respecting the relation of the professions to the state, and particularly the medical profession, and it must be recognized as a surprising condition of affairs that these two progressive commonwealths have remained stationary while others have made marked and commendable advances. A law that in Illinois permits the existence of such a notorious fraud on medical education and on public confidence as is this institution styling itself a “college,” and a law which in Michigan permits the graduates of such frauds to be registered as medical practitioners, are a reproach to the whole people of both states. It cannot be that another legislative session in either state will be allowed to pass without a correction of these defects.—Medical Standard.

[This institution also gives dental diplomas “while you wait.”—Ed.Digest.]
Recently I had occasion to make a crown for one of my patients, which although a bad case turned out so satisfactorily that I was eager to tell others the benefit of the modus operandi. The idea may not be an entirely new one, but it was new to me, and was the result of efforts to overcome difficulties I had not had occasion to obviate before.

The tooth was a lower right first molar, with root-canals almost filled with pulp-stones. The crown of the tooth had been cut down to the neck, so that none of the tooth structure protruded beyond the gum line. The peridental membrane came almost to the surface, causing the neck of the tooth to be hypersensitive. The gingival margin along the buccal surface had contracted so as to show very plainly the bifurcation of the roots, and the lingual side of the neck was almost in the same condition, while the gums over both anterior and posterior roots had receded still more, so that the surface presented was convex. Fig. 1.

The peridental membrane coming up close to the surface as it did, together with the hypersensitive condition of the patient generally, precluded the possibility of making a band. (The patient suffered from severe organic heart trouble, which prohibited the use of cocaine.)

Two holes were drilled, one into each root about three-sixteenths of an inch deep, and 16-gauge round iridio-platinum wire posts were fitted into these, protruding from the tooth one-quarter of an inch. The holes in the roots were not made deeper for fear of drilling through the side. Fig. 2.

The next proceeding was to cut out the pulp-chamber into a deep
saucer shape. An impression of this cavity was taken in gutta-percha, and with Watts' metal a pure gold lining 32-gauge for it was struck up. Fig. 3. This lining was placed in the pulp-chamber and burnished, the iridio-platinum pins thrust through it, which owing to the divergence of the roots almost crossed each other and had to be bent up straight and parallel, Fig. 4 A.

A wax impression was taken and the whole was invested in marble dust and plaster, the wax removed and the inlay filled up with 22 k. gold, producing a solid and exactly-fitting gold inlay, with two iridio-platinum pins protruding through it, both above and below. Fig. 4 B.

The next step was to swedge an iridio-platinum covering for the root, which after being properly fitted was perforated with two holes, allowing the inlay and pins to be placed in the tooth, and the iridio-platinum covering to be put down over it.

Now two platinum barrels were made with one end closed to fit down over the posts, all the parts were put in position, a gutta-percha impression taken, and the entire appliance removed to the laboratory, where the platinum barrels were soldered to the iridio-platinum covering, Fig. 5. The work then consisted of two pieces—one the gold inlay with the two iridio-platinum pins, and the other the small iridio-platinum plate with the two platinum barrels soldered to it; this latter piece was now used as a base to make an all-porcelain crown with the platinum barrels imbedded in it. The soldering of the barrels and tooth facing to the iridio-platinum base was done with 30 per cent platinum solder. The inlay with its posts was cemented into the roots and pulp-chamber, and when the cement set proved to be very secure indeed. Next the crown was put down over the protruding pins and cemented into place. Fig. 6.
The operation required considerable time and patience, but the result is a crown of excellent lasting qualities, great comfort and beautiful appearance, and I know of no other way in which I would have been able to save the roots of the tooth.

PRESIDENT'S ADDRESS.

By G. N. Beemer, D.D.S., Mason City, Iowa. Read Before the Northern Iowa Dental Society, July 5-8, 1898.

One day a ragged, barefooted colored boy, with a tattered straw hat on his woolly head and a broad grin on his ebony face, was dragging by a string an old soap-box filled with tin cans and other rubbish. He seemed so happy that a lady stopped and said to him, "Well, my little man, you seem to be having a fine time. How old are you?" Rolling his eyes up at her, he replied, "Mammy says I'se seben, but judgin' from the fun I'se had I'se at least sebenty." So it is with our society: though only four years old, yet judging from the pleasure which has been derived by those who have attended the meetings, it is much older than the years indicate.

The existence of this society is due to Drs. Steele, Grout and Belding, who realized when only six dentists from Northern Iowa were present at the state meeting that another society was needed. Each year has seen new members added and this session promises an even greater addition to our ranks. As the founders of this society in organizing it showed their devotion to the profession, let us follow their lead in our society work. If we have any theory or method which will enable our fellow practitioners to give better service to their patients, let us impart that knowledge.

Dentistry has risen from a trade carried on by a carpenter, blacksmith or barber, to one of the noblest professions. At a banquet given by a dental society one speaker was assigned the toast, "The Dignity and Utility of Our Profession," and this was his response: "Suppose that to-morrow in every business, profession, political or social sphere, all who have false teeth of any number or kind should appear without them. Suppose that to-night all the fillings in teeth should drop out and each pulp be exposed to hot and cold, sweet or sour. Then and then only could we measure the utility or conceive the dignity of our profession."

A dentist gave anesthesia to the world and thus made possible the painless performance of surgical operations. The blessing of
this is beautifully expressed in the following words of Dr. Oliver Wendell Holmes: "The knife is searching for disease, the pulleys are dragging back dislocated limbs, nature herself is working out the primal cause which doomed the tenderest of her creatures to the sharpest of her trials, but the fierce extremity of suffering has been steeped in the waters of forgetfulness, and the deepest furrow in the knotted brow of agony has been smoothed forever."

The science of dentistry has been of inestimable value to the community, both as regards the alleviation of suffering, the perfecting of new appliances, and the enactment of laws for the protection of laymen as well as dentists. Let us as a society do our part towards helping on the general work, as well as making our organization a success.

THE ESSENTIAL OILS AND SOME OTHER AGENTS: THEIR ANTISEPTIC VALUE; ALSO THEIR IRRITATING OR NON-IRRITATING PROPERTIES.


Very soon after assuming the duties of the chair of materia medica and therapeutics in college work I became convinced that in our literature there was much loose statement concerning the action of the drugs we employ in dentistry. Especially did this seem true in regard to the antiseptic powers of the various agents employed as such. Further, the therapeutic action of these agents has generally not been especially considered. It seems that iodoform is still used by many as an antiseptic, though it has long been known that it has not this power. Also, that the presence of albumin renders the ordinary solutions of bichlorid of mercury inert as to antiseptic power, and prevents the effectiveness of that agent in treating suppurative surfaces, yet it is persistently used for this purpose. Also, the essential oils, some of which have previously been shown to possess antiseptic virtues, have been looked upon as a group of antiseptics, and, as it has seemed to me, are being used without reference to their relative merits as antiseptics, or to their therapeutic effects upon the tissues to which they are applied. For these reasons I have in my teaching in the Northwestern University Dental School made trial of these agents in the bacteriological laboratory concerning their effectiveness as antiseptics, and have
also in various ways proved their effects upon the animal tissues, in order that I might speak definitely of my own knowledge of these matters. In this paper I will give briefly my observations upon a number of these agents.

To determine the antiseptic value of these agents the following experiments were conducted: Test tubes, each containing ten c. c. of sterilized mutton bouillion (which amount will hereafter be referred to as the unit of culture media) were used. The broth in these tubes was for the most part infected with saliva from various members of the class. In each set of plants made a control tube was used, i. e., a tube in which the broth was infected with saliva, but into which no antiseptic agent was placed, simply to act as a control for the results of the remaining tubes into which antiseptic agents were placed. In each instance the control tube presented a full development of bacteria, thus proving the accuracy of each set of plants. One drop of the essential oil was first used in the tubes and when it prevented development of bacteria the quantity was gradually decreased in other plants, until the least amount that would prevent development was ascertained. To divide the drop I placed ten drops of alcohol in a small vial, and into this placed one drop of the oil, the alcohol dissolving the oil immediately. I then used in the culture tube such proportion of the drop of the essential oil desired, one drop of the solution representing \( \frac{1}{10} \) drop of oil. Those drugs that were found ineffective with one drop were increased in other plants until found effective, or were given up as unsuitable or worthless as antiseptics. The same dropper was used throughout, and it was observed that a drop of alcohol is smaller in bulk than a drop of an essential oil. Because of this difference, ten drops of alcohol and one drop of an essential oil forms a ten per cent solution so nearly as can be figured, and one drop of this solution represents \( \frac{1}{10} \) drop of oil.

An antiseptic must be regarded as a poison to the vegetable cell, and many of them act also as poisons to the animal cell. I undertook this series of experiments for the determination of these differences of poisonous effects, with the idea that in selecting antiseptics for use in practice we should have special regard to the effect of the agents upon the animal tissue to which they are applied. To determine the irritating or non-irritating properties of these oils an extensive course of experiments with them has been conducted
during the winter months, in connection with sores artificially produced on guinea pigs, and also on my own person. To determine the effect of these agents when applied directly to soft tissue, the applications were made in each instance to my own person. And pardon me for saying that I have come to positive conclusions regarding some of the agents along these lines.

*Oil of Cassia.*—We find that \( \frac{1}{8} \) of a drop is the smallest quantity that will prevent development of bacteria in the unit of culture media, and there being 67 drops of oil of cassia in one c.c., this agent is effective as an antiseptic in 1 to 2233 parts; that is to say, one whole drop of oil of cassia would prevent development of bacteria in 2233 drops of infected broth. This explanation will hold good in connection with each agent used. Oil of cassia is undoubtedly the most potent of the essential oils as an antiseptic. I have analyzed at least a dozen samples of cassia, obtained from as many different sources, and have found them to be adulterated in each instance. One sample especially, shipped direct from China to a dealer in Chicago, was found to contain fixed oils in considerable quantity. Others were found to contain alcohol, etc. This oil as found in commerce to-day is not so potent an antiseptic by about one-half as was the cassia obtained ten years ago. A reference to the work done by Dr. G. V. Black about ten years ago, along the same line, serves to prove the correctness of this statement. The samples of cassia he used at that time were potent in 1 to 4000 parts. If I could have obtained a pure, unadulterated sample of cassia, it would have certainly outclassed oil of cinnamon as an antiseptic by a wide margin, but as it is they have proven exactly the same. However, you will notice when we discuss it, that of oil of cinnamon only 63 drops are required for one c.c., while of cassia 67 drops are required. This means simply that one drop of oil of cinnamon is just slightly larger in bulk than one drop of oil of cassia, so that this discrimination in the number of drops to the c.c. still places oil of cassia ahead of oil of cinnamon as an antiseptic, the potency of oil of cinnamon figuring out 1 to 2100 parts.

While oil of cassia stands at the very head of the essential oils as an antiseptic, it is at the same time the most poisonous in its effects upon soft tissue. As a test of its irritating properties, a pellet of cotton was saturated with it and placed in a small rubber cup to prevent evaporation. This was applied to the surface of the skin
and held there by means of a piece of court plaster large enough to cover it and stick tightly to the skin about the edges. This was retained in place for twenty-four hours, during which time the irritation to the soft parts was by no means pleasant. At the end of this period a blister invariably formed, but the inflammation in the tissues at this time was not very great. The blister occupied an area from one-half to one-third greater than that to which the oil was directly applied, and filled and refilled with serum several times before any tendency to recovery was noticed. At the end of forty-eight hours the inflammation in the parts involved was intense, and occupied an area four or five times as great as that to which the oil was directly applied, and numerous small independent blisters almost invariably formed about the circumference of the inflamed area. This condition continued for several days, and while the inflammatory process was at its height the sore was one of the ugliest and most formidable in appearance it has ever been my privilege to look upon. These sores were also very slow in healing, for it was with seeming regret on their part that the inflammation was permitted to subside and the parts to return to a normal condition. Fortunately these sores were fraught with no serious consequences.

To further test the irritating properties of this oil a sore, in connection with which there was considerable inflammation, was produced on a guinea pig and treated for a number of days with the spray by means of an atomizer. So long as this treatment was continued the parts could not recover, and the inflammation was greatly increased. Suppuration was then produced by infecting the sore with pus microbes. This in turn was treated with the spray, with the result that the germs were destroyed and the pus formation stopped, thus proving conclusively that this agent is an excellent germicide when applied to suppurating surfaces, as well as a most potent antiseptic.

It is clearly proven to my mind that while the antiseptic and germicidal properties of this oil are of the highest order, it is one of the most irritating in its effects on soft tissue of all the agents with which we have anything to do. And because of these effects, as outlined above, I feel justified in making the statement that oil of cassia should never be used as a dressing in the root-canals of teeth.

There is another reason why it should not be used and that is its proneness to cause discoloration of the teeth. In almost every
instance where its use is continued for a time the teeth are more or less discolored, in some cases very considerably, and this is one of the most difficult forms of discoloration to correct that we meet.

Is it not reasonable to suppose that when cassia is used in the treatment of pulpless teeth the above disagreeable conditions may occur in the soft tissues occupying the apical space, and the peridontal membrane become involved in the inflammatory process? Have you ever thought that the excessive flow of serum which so frequently occurs from the tissues of the apical space of teeth that are being treated with this oil is nothing more or less than the discharge of actual blister, as in the cases above recited? If these are reasonable suppositions, and I believe they are, is it still a source of wonder to you that teeth so often under these circumstances suddenly develop such extreme tenderness to pressure?

Oil of cassia, however, has a place in our practice as dentists. Cassia water is sometimes very useful in the treatment of fistulous abscesses, for it is so stimulating to the tissues that it excites a healthy action when other agents fail. Oil of cassia is exceedingly useful in the treatment of severe cases of pyorrhea, so-called, where the pockets about the teeth are deep and considerable pus is present. In such cases it may be used in full strength by means of a dropsyringe, as the oil is not permitted to remain in contact with the soft tissues long enough to cause trouble, being so soon diluted by the fluids of the mouth.

Oil of Cinnamon of Ceylon.—We find that \( \frac{3}{10} \) of a drop prevents development of bacteria in the unit of culture media, and that 63 drops constitute one c. c., thus showing this agent effective as an antiseptic in 1 to 2100 parts. Oil of cinnamon of Ceylon, as you well know, has very much the same nature as oil of cassia, but in some respects there is a marked difference between them. It has been demonstrated that oil of cinnamon is not so irritating to soft tissue as oil of cassia. An application to soft tissue in the same manner that cassia was applied, left for twenty-four hours caused considerable irritation and formation of blister. At the end of forty-eight hours the inflammation was severe, but not so intense as that caused by cassia, and the area of tissue involved in the inflammatory process was not so great. Also the blister that developed by the application of cinnamon was by no means so large as that from cassia, occupying the center of the inflamed area and spread-
ing over tissue in extent equal only to that to which the agent was directly applied. The blister and inflammation were not so persistent as with cassia, the former refilling with serum usually but two or three times and the inflammation readily passing away.

A sore attended with much inflammation on a guinea pig was treated with the spray, with the result that it was further constantly irritated and thus prevented from healing. Suppuration was then produced in the sore and the spray again applied, when the germs were destroyed and the pus formation stopped. The action of cinnamon was not so vigorous as that of cassia, but to my mind cinnamon is altogether too irritating for use in the treatment of pulpless teeth.

A Synthetic Oil of Cinnamon, prepared in both France and Switzerland, and a sample of which I secured this spring from the first lot sent to this country, proved to be as potent an antiseptic as the regular oil, \( \frac{3}{10} \) of a drop preventing development of bacteria in the unit of culture media. 64 drops of this oil constitute one c. c., proving it effective as an antiseptic in 1 to 2133 parts. It is, however, in its first effects more irritating to soft tissue than the oil of cassia. An application was made to soft tissue, and at the end of fifteen hours a fully developed blister, in extent larger than the area of tissue to which the oil was applied, resulted. There was very little inflammation or discoloration of the tissues, although the first effect of the oil on the soft tissue was so vigorous that very much tenderness and inflammation were confidently expected to follow, but in this I was disappointed. The blister continued to refill with serum several times, but no tenderness or inflammation worthy of mention actually developed in the surrounding parts. I cannot recommend this oil for use in the treatment of pulpless teeth.

Beechwood Creosote is the next agent from point of potency as an antiseptic; \( \frac{5}{10} \) of a drop prevented development of bacteria in the unit of culture media. There are 64 drops in one c.c., thus showing creosote effective as an antiseptic in 1 to 1280 parts. This agent is kind to soft tissue, for an application remaining thirty-six hours produced practically no irritation. There was just the slightest evidence about the center of spot where it was applied, but no inflammation. Surface of skin was slightly discolored, and burned or seared over, but not to an extent that caused the loss of any tissue. A sore on a guinea pig was treated with the spray, with the result that the inflammation subsided and sore healed rapidly.
Another sore accompanied with suppuration was treated in like manner, and the germs were readily destroyed, the pus formation stopped, and continued treatment resulted in the gradual healing of the sore. Creosote has proven its right to stand among the first from point of potency as an antiseptic, and because it is practically non-irritating to soft tissues is a safe agent, and in some cases a very desirable one for use in the treatment of pulpless teeth. For a case of putrescent pulp of long standing, for instance, one in which the lateral openings and dentinal tubuli are completely saturated with mephitic odors and gases, creosote in my judgment is the most effective and desirable of the available agents. It is very penetrating and most persistent in its effects, and I have used it to good advantage in severe cases of apical pericementitis. In some instances, however, where discoloration of the teeth has occurred, it has seemed due to the action of this drug. Creosote having more or less the nature of carbolic acid, possesses to a certain extent the properties of a local anesthetic, and because of this property it has a rather beneficial effect upon inflamed tissue.

Oil of Cloves.—\( \frac{1}{8} \) of a drop prevented growth in the unit of culture media; 69 drops constitute one c.c., showing it effective as an antiseptic in 1 to 1150 parts. Oil of cloves is absolutely non-irritating to soft tissue and produces no discoloration. An application to the surface of the skin for thirty-six hours left no more trace than so much sterilized water would have done. Sores produced on guinea pigs were treated with the spray of oil of cloves, and the inflammation subsided more rapidly than when treated with any other agent, and the sores healed as rapidly as could be wished. A sore in which suppuration was produced with pus microbes was treated with the spray of this oil, when the germs were destroyed and the formation of pus stopped, simply proving beyond question that while effectively destroying microbes, the only action of the oil in contact with irritated, inflamed soft tissue is that of a soothing agent, serving to reduce the irritation and inflammation and returning the disturbed tissue to its normal condition.

A sore produced on my arm by an application of cassia became infected and pus formed. This was washed thoroughly with a 1 to 1000 solution of bichlorid of mercury for several nights and dressed with iodoform, nosophen and aristol, resulting in an absolute failure to stop pus formation. One night, after washing the sore thor-
thoughly with the bichlorid solution, I poured oil of cloves over the raw tissue. There was only a slight smarting for a few minutes, after which the action was quieting. The application was held in position for twenty-four hours, and when removed no pus was present and the little granulations could be seen all over the surface of the sore. It was immediately dressed with aristol and let alone for forty-eight hours, at the end of which time it was healed.

Another sore on the lower part of my right leg, the result of an application of formalin, was causing a great deal of trouble. The inflammation was severe, the tissues very sore, the muscles felt bound up and painful, it being exceedingly difficult to walk. Continued treatment with ordinary remedies gave no relief. One morning, after having thoroughly cleansed the sore, a liberal quantity of oil of cloves was placed on it and the bandage applied. Within four hours' time the disagreeable drawn condition of the muscles passed away, pain ceased, and the foot could be moved freely in all directions and could be used in walking just as well as ever.

Oil of cloves for general use in the treatment of pulpless teeth is certainly one of the best agents at our command. It possesses the property of destroying or rendering inert septic and infectious material, and in cases of apical pericementitis is perhaps the best that can be used. It possesses local anesthetic properties to a marked degree, and because of this fact serves to reduce the inflammation in the tissues in the apical space and causes them to return to a normal healthy condition.

*Oil of Bay.*—⅞ of a drop prevented development in the unit of culture media; 72 drops are necessary for one c. c., showing this agent effective as an antiseptic in 1 to 1028 parts. Oil of bay is a comparatively new agent to me, and I feel warranted in stating that it is new to the vast majority of the dental profession. A year ago last winter a gentleman said he had been using it for some time in the treatment of pulpless teeth, and that so far as his clinical experience went had found it to be an agreeable and efficient agent, as he had not observed that it produced irritation. At his request I tested it, with the above result, which places this oil in the foremost ranks of antiseptics. I have used it more or less since, and in one case thought the irritation and tenderness induced was directly due to the action of the oil, but have since observed none of these bad effects. I concluded I was wrong; that there must have been some
foreign, irritating substance present which caused the trouble. I have made two applications of the oil to soft tissue, retaining each in contact for thirty-six hours, for the purpose of observing its effect, and no irritation resulted in either case.

A sore was produced on a guinea pig with an irritant which caused intense inflammation, and was treated with the spray of bay for several days. The closest observation did not reveal any additional irritation; on the contrary the inflammation gradually subsided, but not so rapidly or willingly as when some other agents were used. A suppurating sore treated with the spray yielded very nicely, the germs being destroyed and pus formation stopped. I think we are safe in concluding that oil of bay is a valuable addition to our list of agents for the treatment of pulpless teeth.

Oil of Sassafras.—\( \frac{7}{10} \) of a drop prevented development of bacteria in the unit of culture media; 70 drops are required for one c. c., proving it effective as an antiseptic in 1 to 1000 parts. Oil of sassafras in contact with soft tissue for thirty-six hours produced no irritation. I have treated sores in which there was marked inflammation with the spray, and the result was much the same as with the last named agents, the inflammation subsiding, irritation passing away and the sore healing. While a potent antiseptic, it has not exhibited nearly the ability to destroy germs and prevent pus formation that the stronger agents have. I have never used oil of sassafras in the treatment of pulpless teeth, but can see no reason why it should not be a useful and harmless agent in this connection.

Oil of Peppermint.—\( \frac{9}{10} \) of a drop prevented development of bacteria in the unit of culture media; 72 drops are necessary for one c. c., showing this agent effective as an antiseptic in 1 to 875 parts. An application of oil of peppermint to soft tissue continued for thirty-six hours produced no irritation, no discoloration of the skin, nor inflammation, thus showing conclusively that it is non-irritating to soft tissue. A sore with considerable inflammation was treated with the spray, with the result that the inflammation readily yielded, irritation subsided and the sore healed. Another sore, suppurating, was treated in the same way, and the germs were destroyed and pus formation stopped, which proves that this agent is not only an antiseptic, but also destroys the germs and thus prevents pus formation. Three years ago I used this agent a little in treatment cases, but discarded it simply because of the persistent,
penetrating odor. Other than that I can see no objection to its use in pulpless teeth.

Dr. Black's "1-2-3."—This is the next agent in point of potency. \( \text{I}^{1/2}_6 \) drops prevented development in the unit of culture media; 65 drops are necessary for one c.c., proving this agent effective as an antiseptic in 1 to 454 parts. As you well know, this is a preparation given to the profession a number of years ago by Dr. G. V. Black, consisting—the so-called mild solution, and this is the one used in these tests—of one part oil of cassia, two parts carbolic acid crystals and three parts gaultheria. It has always proved itself a most efficient agent in the treatment of pulpless teeth, and has been used by many practitioners for the last ten or twelve years, possibly more than any one other agent. I have used it continuously since starting practice and have never observed any irritation of the soft parts, tenderness of the tooth to pressure, or inflammation resulting from its use. Possibly some of you will wonder why "1-2-3" is such an efficient and desirable agent, consisting as it does of cassia, carbolic acid and gaultheria; carbolic acid being not a positive persistent antiseptic, but one whose restraining effects upon the development of bacteria are only transient; oil of gaultheria being absolutely worthless as an antiseptic, and the use of cassia being so thoroughly condemned because of its extremely irritating properties. Of course this agent depends upon the cassia for its antiseptic properties; the gaultheria is used as a diluent to the cassia, and the carbolic acid employed more especially because of its anesthetic effect on soft tissue. When these different drugs are properly mixed to form "1-2-3," Dr. Black thinks there is more or less of a chemical union between them, so that the individuality of each seems to be lost, and the result is the formation of a new agent with different characteristics from those possessed by the three individual ones. At any rate it is harmless to soft tissue, for an application left for thirty-six hours produced no irritation whatever, and there was only a slight searing and discoloration of the skin's surface. Sores much inflamed were treated with the spray and no further irritation produced. Its action was more like that of a neutral agent, so to speak, not irritating the sore, nor imparting to an appreciable extent any soothing influence, the inflammation subsiding just about as it would if left to itself with all irritating influences removed. A suppurating sore was treated with the spray of this agent, when it demon-
strated its right to be classed as a very potent germicide, for the germs were destroyed and pus formation ceased.

"1-2-3" as formed with the present cassia of commerce is not so potent an antiseptic as that formed with cassia obtainable several years ago. This is due to the fact before stated, that cassia is so adulterated at the present time. In fact, the power of "1-2-3" is lessened in almost direct proportion to the adulteration of the cassia. 5/6 of a drop was effective in ten c.c. of broth, as shown by Dr. Black’s experiments several years ago. "1-2-3" is abundantly effective, as shown by these experiments, but the time may come when it will not be, if cassia continues to be adulterated. For general use in the treatment of pulpless teeth "1-2-3" is certainly an effective and excellent agent.

Carbolic Acid, 95 Per Cent.—1/10 drops prevented development in the unit of culture media; 61 drops are required for one c.c., showing this agent effective as an antiseptic in 1 to 338 parts. Carbolic acid is not a permanent, positive antiseptic, as its restraining power on the development of bacteria in the majority of plants made was only transient. 1/10 drops prevented development for a period of three days, after which the bacteria developed in almost every instance. The restraining effect upon the development of bacteria seems to be in almost direct proportion to the quantity of the agent used in the culture tube. The use of carbolic acid in dentistry is so familiar that I need not dwell on this point.

Oil of Myrtol.—1/10 drops were necessary to prevent development of bacteria in the unit of culture media; 68 drops constitute one c.c., showing myrtol effective as an antiseptic in 1 to 357 parts. Oil of myrtol is an agent which I have used but little in practice, for in the majority of cases there has been more or less irritation produced, and some tenderness of the tooth developed, so that it impressed me as being somewhat of an undesirable agent. An application of myrtol to soft tissue for thirty-six hours produced decided irritation, there was a strong tendency to the formation of blister, and the surface of the skin was destroyed. The irritation and inflammation present continued for two or three days, gradually abating. A sore on a guinea pig treated with the spray showed evidence of further irritation, and so long as the treatment was continued the inflammation refused to subside. A suppurating sore treated in the same way was certainly benefited by a consequent destruction of the
germs and cessation of pus formation. There is no doubt that this agent is very irritating and should not be generally used in the treatment of pulpless teeth. There are cases where I use strong myrtol water, seemingly to good advantage, and these are in connection with abscesses with fistulous openings, especially those of long standing, in which there is more or less irritation of the soft parts throughout the tract of the fistula, and that uneasy, disagreeable sensation often experienced by the patient in these cases.

**Oil of Cajuput.**—6 drops are necessary to prevent development in the unit of culture media; 72 drops are necessary for one c.c., proving this drug effective as an antiseptic in 1 to 120 parts. Applications of this oil to soft tissue retained for thirty-six hours produced no evidence of irritation, in fact the discoloration of the skin was very slight and remained but a short time. An inflamed sore on a guinea pig was treated with the spray and no increase of the irritation was produced. Another sore suppurating, was treated in the same way, with the result that the germs were gradually destroyed. Its action, however, was not positive, for if the treatment was discontinued for a day or two the pus formation continued as before.

At first I used oil of cajuput more or less in the treatment of pulpless teeth, but latterly have not employed it in this connection; in fact the only use I now make of it is occasionally to moisten the inner walls of the root-canals previous to filling with gutta-percha. For this purpose its non-irritating nature recommends it, and especially the fact that it is a solvent of gutta-percha and causes the latter to adhere to the walls of the canals.

**Eucalyptol** (Sanders' and Merck's), 6 drops each of these preparations are necessary to prevent development in the unit of culture media; 70 drops to one c.c., showing each preparation effective as an antiseptic in 1 to 116 parts. Eucalyptol in contact with the skin for thirty-six hours produced no evidence of irritation, inflammation nor discoloration, thus proving that the agent is non-irritating and harmless in contact with soft tissue. A sore with considerable inflammation was treated with the spray, with the result that the inflammation readily yielded, the irritation subsided, and the sore healed, thus further proving that it is non-irritating even to injured inflamed soft tissue. A sore with suppuration was treated in the same way, with virtually the same results as with cajuput; it exhib-
ited a restraining influence upon the development of bacteria and pus formation, but the treatment being discontinued for a while pus formation went on as before. As a drug to place in the root-canals of teeth after the removal of a pulp, following devitalization, in order to keep the parts healthy for a few days previous to root-canal filling, it is perhaps the agent that I use more than any other, being certainly harmless and never exciting irritation. I usually employ it for the purpose of slightly moistening the inner walls of root-canals previous to filling.

The Oil of Eucalyptus as found in the market produced only a restraining effect upon the development of bacteria when a saturated solution was formed with the bouillon.

Oil of Gaultheria was carried in my experiments as high as 8 drops, this quantity forming a saturated solution in the broth—that is to say, the broth had taken up or dissolved all of the oil that it could possibly retain, there being also a large number of free globules floating about in the broth, and still development of bacteria took place quite abundantly, showing that this agent is useless in restraining the development of bacteria.

Eugenol.—This agent resulted in the same way as gaultheria. 8 drops were used in the unit of culture media, which amount formed a saturated solution with numbers of globules of the free oil floating about, and still the bacteria developed, thus proving that eugenol also is useless as an antiseptic.

Formalin.—Of late the dental profession has taken up this agent for the treatment of pulpless teeth and abscesses, for devitalizing pulps, etc., and many are reporting wonderful results from its use. Not long since I read an article in one of our journals where the writer paid a glowing tribute to this agent as a most efficient and desirable one for the treatment of almost all conditions of pulpless teeth. Having had some experience with it myself, and because of many negative results experienced being suspicious whether it was a proper agent to be used about the mouth, I decided to investigate it as thoroughly as possible. First I tested it as to its antiseptic properties, and found it to be very powerful. Of the formalin preparation, which is a saturated solution of the gas formaldehyde in water (the latter taking up about 40 per cent of the former), \( \frac{1}{10} \) of a drop prevent development of bacteria in the unit of culture media; 56 drops are necessary for one c.c., showing formalin potent as an
antiseptic in 1 to 1400 parts. Somebody has been so enthusiastic over this agent as to state that it is fully as potent an antiseptic as bichlorid of mercury. This is certainly a mistake. I prepared a 1 to 1000 solution of bichlorid of mercury and found that it required 9 drops of this solution to prevent development of bacteria in the unit of culture media. Then I made a 1 to 1000 solution of pure formaldehyd, which we now have in a solid state (the gas being reduced to such by chemical processes), and of this solution found that it required 40 drops to prevent development of bacteria in the unit of culture media, thus proving that formaldehyd is not so potent an antiseptic as bichlorid by at least one-fourth. I next resolved to determine its ability to irritate soft animal tissue, just as I did with the other agents. I took a small pellet of cotton, saturated it with formalin, placed it in a small rubber cup to prevent evaporation, applied it on the surface of the skin on the lower part of my right leg, and covered it over with a large piece of court plaster stuck tightly about the edges. This was placed there the 14th of last March. At 12:30 a.m. I went to bed and to sleep, but between four and five in the morning I was awakened by the pain and could get no rest after that. The pain was intense and of a very peculiar character. It seemed, as if something were inside my leg gripping it with a vice. Then it would take a turn and twist about, as if tearing the inside out. It would stop for an instant, and then the performance would be repeated with renewed vigor. The pain continued more or less severe all day. I wished to keep the application in place for twenty-four hours—the time adopted for the other agents—but at the end of twenty hours the pain had been so constant and the tissues began to look so ugly that I removed the drug. The tissue to which it was applied and for about two inches in all directions was turned snow-white, as if all the blood were driven from the parts. The pain was lessened very considerably within a short time after the application was removed. The tissue to which it was directly applied was perfectly anesthetized to a considerable depth, but just at the circumference of the application there was considerable tenderness. There was much swelling which seemed to be more like that of edema than of true inflammation. In two or three days some color began to return to the parts, except where the agent was directly applied, which latter has never regained normal color. In about two days more a line, purple in
color, began forming at the circumference of the point of application—a line of demarcation—and it became apparent that there was to be a break in the tissues. This break occurred and sloughing took place; considerable tissue was lost all over the surface of the inflamed area. The tissue in the center raised about the edges, but was very obstinate about coming away. From the time the agent was thoroughly absorbed in the tissues I was not up to the standard physically, my appetite was more or less impaired, and my digestion and eliminative organs were somewhat interfered with. These conditions continued to grow worse until the climax came in a bad case of systemic poisoning, the effete matter being thrown off through the medium of a severe diarrhea, and also much vomiting—the former continuing for three days, the latter for one, following which time my physical condition rapidly improved.

Having seen a number of cases which have been treated by physicians with solutions of formalin varying in strength, in which more or less sloughing of the parts has resulted—one which I saw not long since where as low as a 2 per cent solution was used, in connection with which considerable sloughing resulted—and also because of the very vivid recollections of my own personal experience with it, I have come to the conclusion that we should get along without it in the treatment of diseased conditions about the mouth.

As I have devoted a paper to this agent before another society, I will not give my observations of it in more detail here. My paper is now too long for me to consider the subject of the selection of antiseptics with a view to utilizing their therapeutic effects in individual cases in connection with their antiseptic powers, but this can be fairly made out from the observations related.

INCOMPATIBILITIES.—In an article in the Berliner klin. Woch. Professor Binz, the pharmacologist of Bonn, calls attention to the following incompatibilities: Preparations of iron with tannic acid produce ink; chloroform in glycerin or tincture of iodin in water will not mix; sulphonal is very slightly soluble in water; calomel with potassium iodid results in the formation of the irriant mercuric iodid; tincture of iodin and mercurial ointment applied locally and together produce intense irritation; permanganate of potassium added to syrups causes a brown coloration, due to the abstraction of oxygen. Combinations of explosive powders, for example, potassium chlorate and tannic acid, and also under certain circumstances combinations with permanganate of potassium, sulphur, and carbon, should not be prescribed.
CONTROL OF MOUTH-BREATHING. By W. Freudenthal, M.D., New York. In the last issue is an article on "A Bridle for the Control of Mouth-Breathing." [September Digest, p. 639.] Permit me to sound a note of warning. Every human being, young or old, will and must breathe through the nose with the mouth closed, unless there be some pathological condition in the nose, retropharynx or pharynx to prevent it. Physiologically this nose respiration is always present under normal conditions, and it is only necessary to refer to the text-books on physiology and laryngology for confirmation of this fact. Therefore the assertion of the author, that "such obstructions (viz., adenoids, stenoses, hypertrophied tonsils, and turbinate bodies, ecchondroses, nasal polypi, etc.) often appear as the results of the non-use of the nose in respiration," is based on a physiological impossibility.

On the other hand, if there are obstructions present, the author no doubt will agree with me that the best thing to do is to remove them. Then the patient will very quickly breathe through the nose without bridle or other mechanical appliance. But unfortunately we are not always able to remove certain impediments in nasal respiration—say, for example, a chronic nasal catarrh. If in such a case we apply the bridle to a child, two possibilities confront us; either the bridle is fastened so loosely, as I have frequently noticed with similar appliances, that the child still breathes through the mouth and not through the nose, in which case it is not harmful but of no use; or the bridle is fastened so tightly that the child cannot separate the jaws. In this case the child will choke to death. And it is this possibility against which I should like to warn my colleagues. If a child cannot get any breath through the nose and if the mouth is tightly locked, provided there is no loss of teeth, giving space through which air could pass, there is only one thing left such a patient—suffocation.—Med. Rec., Sept. 1898.

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TO TAKE A PARTIAL IMPRESSION WHEN THE TEETH CONVERGE OR DIVERGE. By F. W. Bliss, D.D.S., Santa Cruz, Cal. Read before Calif. State Dental Assn., June 22, 1898. First take an impression in wax and make a model from it. Then
soften and mold pieces of base-plate material upon the alveolar ridge of the model between the converging teeth, and use them for impression trays. Place upon them plaster of paris and put in the mouth in their respective positions, and after the plaster has hardened and before removing take another impression in modeling compound. Now remove the modeling compound first and then the base-plate impression; they will come from the mouth separately. Place them together so that they will sustain the same relations that they had in the mouth. Make a model from this combination and it will be as perfect a representation of the parts as will be required.

Discussion. Dr. Goddard: I would ask Dr. Bliss how he uses the base-plate, whether wet or dry, and about what temperature? and whether he uses it in the mouth direct?

Dr. Bliss: I think it may possibly be used in the mouth. I have been in the habit of heating it with hot water. Although it is a little longer way, I think it is easier to trim the base-plate part out of the mouth. You can heat it with water or dry heat.

Dr. Goddard: Some years ago I used something on a general parallel with that method. I took a soft piece of modeling compound, placed that in this dovetailed space, which I understand to be the shape of the space between the converging teeth, making in the mouth a core of modeling compound; before that had got hard, or perhaps after it was hard, it could be pushed up laterally over this dovetailed space, and then the sides trimmed so that it slipped from crown of tooth towards gum; these little chunks of modeling compound then were placed back in the dovetailed spaces and a plaster of paris impression taken. This would come out of mouth, leaving the modeling-compound cores in the dovetailed spaces. These could be pushed out laterally, put in impression and model made over that.—Pacific Med. Dental Gazette, Sept. 1898.

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DOUBLE RESECTION OF THE LOWER MAXILLA. By Eugene S. Talbot, M.D., D.D.S. In the Cosmos for August, 1898, appears an article (reprinted in the October Digest, p. 690) by Dr. Edward H. Angle of St. Louis upon the above subject, in which he claims to be the first to suggest this operation and that it had been discussed for four years by surgeons with regard to the prognosis, hence he deems some suggestions as to technique and plans of fixa-
tition not amiss, especially since he claims if the operation be properly performed, it may become of considerable use and importance. In those extreme types of malocclusion familiar to every one, he remarks, the proper functions of the teeth have become almost wholly impaired, as well as speech greatly interfered with, and the appearance of the patient transformed to marked deformity, constantly attracting attention and comment and being a source of humiliation to the patient, whose condition, if he be possessed of a sensitive nature, becomes truly pathetic.

The late Dr. W. W. Allport, who suggested this operation over four decades ago, consulted the late Dr. Brainard of Chicago, admittedly then one of the most skillful American surgeons, in regard to its propriety. Sections of the inferior maxilla were to be removed at the location of the first bicuspid, the section to be cut in such a manner as to bring the incisors directly in contact with the superior incisors, and not throw the anterior part of the jaw downward, as would be the case in Dr. Angle's operation. Later he consulted Drs. Moses Gunn and Powell of Chicago. They were all of the opinion that such an operation could not be successful; first, owing to the impossibility (at that time, as they supposed) of holding the parts steady in place. Second, that the arteries and nerves would not unite, thus producing death of the pulps or teeth in the anterior part of the jaw; hence the operation was not performed. The first difficulty can no doubt be overcome by modern methods. The second requires demonstration.

The report of a case in the July Cosmos does not indicate a very successful operation: "At the end of the third week Dr. Blair brought Mr. K. to my (Dr. James W. Whipple, St. Louis) office, when to my regret I found a very serious and unfortunate condition of affairs existing. The means adopted for holding the superior borders of the dissevered maxilla in position had proved to be entirely ineffective. The parts had failed to unite on either side. On the left side there was an effusion of bloody pus, which oozed into the mouth when the parts were pressed together. The right side was in a better condition, but no union of the bone had been effected. The jaw was stiff and sore, and the teeth could be separated from the upper only a short distance."

The operation was performed December 19; Dr. Whipple was still trying to adjust an appliance to hold the parts together on the 26th
of the following April. If the pulps in the eight anterior teeth were alive, it is a revelation in vitality of nerve and blood-vessel tissue. If such an operation were possible I should quite disagree with Dr. Angle as to the method of improving the appearance of this person's face. What he needs is an expression of character. The deformity is the result of arrest of development of the face and superior maxilla rather than excessive development of the lower jaw, hence I should suggest an improvement of the face generally. The deformity should be corrected by bringing forward the upper teeth (making the cuspids prominent) and the alæ of the nose, thus giving character to the face rather than increasing the deformity and further humiliating the patient.—*International, Oct. 1898.*

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**TUBE-DOWEL CROWN.** W. A. Heckard, D.D.S., Indianapolis, Ind. Of course you have never had a dowel crown of your own work come back on you to have the root treated, but you have doubtless had to chip the porcelain off a Richmond, or split a Logan crown, and bore out a platinum pin to get access to a root that had been improperly treated by some other dentist, only to find that the apical foramen had been drilled through, thus causing constant distress to the patient. Passing over the many things that cause and cure such roots, how do you guard against subsequent trouble when you find a case of this kind? Does not cotton saturated with your "pet" canal-dressing usually stop all trouble? I find cotton and campho-phenique removes all soreness. While other more solid materials than cotton may do the work, they are liable to be pushed through the foramen, and you know what trouble and time it takes before you can get the material out again; but a cotton twist can be drawn out easily. I have treated many teeth in this manner, a large number of them cases that could be reached through a filling, or even through a gold cap, but of late years I have handled in the following way teeth that call for a porcelain crown: Nothing will give a better result or more satisfactory operation for your patient than to use a "hollow pin crown," especially in incisors when the apical foramen has been punctured, or in roots in which you suspect the possibility of future trouble. But the hollow pin seems to be the drawback. Friends have said: "If I could only get a tube I could make the crown easily enough." Well, the tube is easily made. Take a piece of gold plate and an old excavator (file the
excavator if it is not small enough; see Fig. 1), then start the gold with your fingers just as though you wished to double it in the middle. When you have bent it to an angle of 45 degrees, place it on the excavator, and you can round it with a small hammer very easily. As the two edges come close together, use a flat file on them until they just touch. Use a very small bit of solder in making the joint. The crown is then made in the usual manner, being careful not to fill the tube in backing up the facing with gold. (See Fig. 2.) Cut the tube off flush and finish the gold.

Fig. 1.  Fig. 2.  Fig. 3.

Now comes the point. Before setting or cementing on the crown, roughen the tube on the outside with a file and fill the inside with a plug of cotton. Then put a wisp of cotton in the end of the root. Set the crown in cement in the usual manner, and after the cement has hardened remove the cotton plug from the tube. Sometimes a little cement squeezes into the root end of the tube. If this has occurred, drill through it and remove the cotton left in the end of the root, through the tube. You now have a well-crowned root, with access to the apical foramen.—Indiana Dent. Jour. Sept. 1898.

* * *

FURTHER NOTES ON THE BACTERIOLOGY OF THE MOUTH. By Kenneth W. Goadby, L.D.S. Eng. There is no region of the body more exposed to the advent of microorganisms, unguarded from their entrance and adapted to their growth, than
the mouth; in fact, at one time or another most known organisms may be found therein. The bacteria of virulent disease have frequently been observed in the oral cavity of perfectly healthy individuals, organisms which if transmitted to a susceptible person would undoubtedly produce serious or fatal results. The perception and appreciation of these facts is one of most vital interest to all who practice dental surgery. The most superficial and casual observer is at once struck by the fact that all mouths contain bacteria, although the numbers and species vary within wide limits and bear a distinct relation to the environment of the subject. Notwithstanding the enormous variety of organisms that may occur in the mouth, there appears to be a distinct flora, flourishing most in uncleanly conditions and decreasing to but a few species in normal healthy mouths. I have been especially interested in the bacteria which are to be found in unhealthy mouths, and whose biological characters have so far not been described. In every case examined the writer has been able to isolate a streptococcus identical with the one described, whilst other observers have isolated a similar organism, and a series of experiments has conclusively proved that the diplococci normally occurring in the mouth grew out into the streptococcus brevis when cultivated. Cover glasses were coated with agar and planted with the diplococci of the mouth, the preparation being so arranged that it could be examined microscopically. After incubation the diplococci were found to have developed into streptococci which gave the cultural peculiarities of streptococcus brevis.

The favorite site for bacterial growth is along the gum margin and the spaces between the teeth, a condition no doubt arising from the accumulation of food, and the inability of the tongue to clear such places. In patients suffering from gingivitis marginalis or from pyorrhea alveolaris, enormous quantities of bacteria are to be found along the gum margins and in the "pockets" in this region; in fact the white deposit (or materia alba of the Leeuwenhoek) is simply a teeming mass of bacteria; how any teeth resist this invading host is a mystery, many of them being acid producers and capable of liquefying gelatin. The same occurs wherever much tartar is present upon the teeth, and where occurring locally, as on upper molars, there a corresponding increase of organisms takes place even in an otherwise healthy mouth. The removal of the tartar and the use of antiseptics restores the part to a normal condition.
The removal of carious teeth and septic roots also rapidly diminishes the number of organisms present, and the author has found that often the only organism remaining is the streptococcus, although many species were present in the first place; under these circumstances the practice of leaving roots in the mouth and covering them with a denture cannot be too greatly deprecated, whilst on the other hand the writer entirely agrees with Tomes that previous to the removal of such teeth the application of antiseptics may do much to prevent local or general infection, which, though rare, does at times undoubtedly occur.

In all the unhealthy mouths the writer has examined (fifty in all) two organisms or types of organisms were found, viz., vibrios (spiral and commas) and huge thick-jointed threads, whilst besides these short motile bacilli are always to be met with. Before discussing these bacteria however, it will be as well to say a few words about certain well-known organisms not peculiar to the mouth, but which are constantly to be found in it.

Chromogenic bacteria of many species are often to be found in the mouth and invariably under diseased conditions of that cavity. Miller claims to have isolated eight different organisms producing a yellow color, viz., B. fluorescens non liquefaciens (motilis), an organism commonly found in water. Podbielskij, Losenthal and others have noted this organism, whilst Mr. Pakes, of Guy’s Hospital, informs me that he has often found it in cultures made from the mouth. Miller describes or rather mentions a “vibrio” which produces a green coloration, which from the meagre remarks is probably the organism referred to above; the B. fluorescens in question is extremely motile and may have misled the observer. In all the mouths from which the author obtained this chromogenic organism the tartar was stained a greenish color, whilst in two of the cases distinct green staining of the front upper teeth was present. Miller’s assertion that green staining cannot be accounted for by an organism which only colors the medium and is itself colorless, is by no means in keeping with observed facts, especially when we consider the case of “blue-pus” colored by the B. pyocyansus, and it seems perfectly reasonable to suppose that a bacillus growing along the neck of a tooth may diffuse its pigment over the tooth surface.

Staphylococci are another variety of organism constantly to be met with in unclean mouths, and of these the most common is the

DIGESTS.
albus; in this my researches agree with Nettler; the other staphylo-
cocci, aureus and citreus, also occur, the former being least common
and occurring in about 7 per cent of cases. Yeasts are almost always
present, and the writer has several times obtained the rosa giving
a fine rose pink coloration. A short motile bacillus produc-
ing a fine red color has been obtained from five mouths.

Morphology.—Extremely short bacilli with rounded ends, often
occurring in pairs and looking extremely like a diplococcus; a
twenty-four hours' broth culture shows distinct motility, stains with
usual anilin dyes; spore formation not observed.

Biological Characters. Agar.—Smooth raised streak, whitish
with defined edge in forty-eight hours. Pinkish color after three
days, eventually becoming red. Potato.—Slow coloration, seven
to fourteen days; curious bright red, globular or bead-like colonies.
Broth.—Twenty-four hours, slight opacity, no marked turbidity;
stringy precipitate with a faint red tinge in five days. Motile
bacilli. Gelatin.—Very slow growth, no liquefaction, but growth
to bottom of slab, color only at top; nail growth. Litmus milk.—
Grows fairly well, acid reaction in several days, generally seven to
ten, color eventually reduced; no clotting. Miller figures a red
coccus, giving pigment aerobically only. Rosenthal also mentions
a red coccus, micrococcus roseus, obtained from the mouth. A
great many other chromogenic bacteria are to be found in the mouth,
but space does not admit of their further discussion.

Among the special mouth organisms none have attracted so much
attention as those thread-like and filamentous forms unhappily
grouped under the term "leptothrix" by Robin, Hallier, Vignal
and many others, for no special reason apparently than that they
exist in the mouth in thread-like forms. Miller, who was the first
to recognize the inadequacy of the term leptothrix as applied to any
thread-forming organism, and being unable to cultivate them upon
artificial media, provisionally divides the filamentous forms of the
mouth into three species, morphologically and according to their
reaction with acidulated iodin, as follows: (a) Leptothrix inno-
minata, thin wavy threads with little or no segmentation, and
giving a yellow color with acidulated iodin; (b) Bacillus maximus
bucallis, thick, much-jointed threads generally giving a blue color-
ation with iodin; (c) Leptothrix bucallis maxima, similar to (b) but
with larger joints and giving no reaction with iodin:
This reaction to iodin can scarcely be considered a sufficient difference between a "leptothrix" and a bacillus, whilst if any bacillus which forms threads is to be ipso facto a leptothrix, then under this head come most known bacilli, and many if not most vibrios. Leptothrix is a term that should be used to express a species and not a morphological form. In Baumgarten's classification a leptothrix is described thus: Spherical, rod-shaped or filamentous forms, the last showing a difference between the two extremities; spore formation not known. Cocci like reproductive bodies are formed by segmentation of the rod-shaped elements.

If we take a small portion of the white deposit from the gum margins of individuals suffering from gingivitis marginalis or pyorrhea, and make a coverslip preparation, the slide invariably shows one or more of the thread-like forms noted above, and in making cultures from such cases I have succeeded in isolating a thick, heavily-jointed organism which grows out into long threads and appears to be the "leptothrix bacallis maxima" of Miller, if we are guided by the iodin reaction; but as the organism to be described is not a leptothrix in Baumgarten's sense of the term, the author has decided to reserve the term "Bacillus maximus bacallis" for this organism, a most decided bacillus and which if labeled as a leptothrix would only complicate the confusion extant in the nomenclature of mouth-bacteria.

At first the writer had great difficulty in obtaining even an impure culture of this bacillus; many media were tried with no avail, although many interesting results were obtained in relation to the growth of mouth-bacteria generally. (1) Mouth-bacteria grow best upon an alkaline medium; a series of percentages of normal $N_aOH$ was tried varying from 1 to 20 per cent; 1 per cent gave the best results, so we now add 10 cc. of normal $N_aOH$ per litre of broth, etc., after neutralization. (2) All mouth-bacteria flourish best when the medium contains gelatin, so that broth made with shin of beef is better than broth from beefsteak; and gelatin-agar better than agar. (3) The addition of a small percentage of potassium sulpho-cyanid does not prevent the growth of many mouth organisms, the mouth streptococcus often growing in 5 per cent of that salt. (4) The mouth streptococcus constantly outgrows other forms, and so on with many other minor points.

The first cultures of the bacillus maximus bacallis were obtained
in the following way: (1) Broth was inoculated from a mouth direct, the coverslip preparation showing the organism in question. (2) Cultures upon agar were made at intervals after the first three days, and (3) eventually plating from the impure culture obtained. So far a pure culture has not been obtained by plating direct from the mouth; the organism in common with the spirillum presently to be described evidently requires some time to adapt itself to the new environment. The above method is tedious, and better and more certain results are to be obtained by the method used for the spirilla. The organism occurs in all dirty and unclean mouths, and not infrequently upon the tonsil, although it appears to be present in the greatest numbers in mouths where a large amount of caries exists.

Morphology.—Thick jointed threads 1 to 1.5 μ long, 10 to 20 μ long; some threads may be even longer than this, others curved and twisted, especially in old cultures on potato. The individual elements are 1 to 4 μ long but may be much larger, the ends are squarish or rounded; it stains by Gram’s method and by ordinary dyes. With carbolic methylin blue, red granules often appear. In old cultures (four to ten days) the threads stain irregularly, especially with carbo. meth. blue; some of the unstained spaces appear to be vacuoles, others are highly refractile spores; these spores stain a deep red by Mollér’s method.

A twenty-four hours’ culture on broth or agar is motile, especially the shorter isolated segments which have a twisting and irregular motion; some of the long threads are also motile and may move in a spiral manner. The flagella may be stained by Pittsfield’s method; the maximum number appears to be six, two terminal and four lateral; there are generally only one or two lateral or isolated bacilli in the threads; I am not, however, quite certain as to the number of flagella. The bacilli do not stain purple with Miller’s iodin, although at times portions of the rod stain a faint blue. In old cultures the rods appear granular, and many large, irregular, oval or round involution forms occur.

Biological Characters.—Aerobic and facultative anaerobic, i. e., grows both in presence and absence of oxygen. It quickly liquefies gelatin. (a) Stab cultures: a distinct cone-shaped liquefaction in twenty-four hours. No liquefaction in depths, but good growth to bottom of stab; forty-eight hours lower parts liquefy. (b) Streak cultures: twenty hours, deep groove of liquefaction with whitish
flocculi in liquid.  (c) Gelatin plates: twelve hours, whitish-grey, flat round colonies, 2.5 to 5 mm. wide, with slightly darker central spot when viewed by transmitted light.

Microscopically (1 in. obj.), irregular dentated edge, slightly yellow, with darker brown irregular center with feathery edge overlying the outer and lighter part which contains irregular fibres.  

Agar.—Twelve hours, brownish grey streak with regular defined wavy edge; with a pocket lens the surface is distinctly granular, having the appearance of frosted glass—thick, easily scraped up with spatula.  The bacilli grow out into long articulated threads.  

Broth.—Twelve hours, granular precipitate with masses floating in fluid, no pellicle and little turbidity; twenty-four to forty-eight hours, more turbidity and precipitate, no pellicle.  A pellicle may be formed later, three to five days, and on peptone water in about the same time.  Hanging drop, mostly short thick bacilli distinctly motile but not excessively so.  

Litmus Milk.—Twelve hours, distinct acid reaction, color eventually reduced; no clotting in six days.  

Blood Serum.—Twelve hours, slightly raised, moist, whitish growth; no further change in five days.  

Potato.—Twelve hours, thick and well marked, moist, raised, greyish growth; twenty-four hours, brownish-grey, hanging drop, motile.  Soon forms spores.  

Spore Formation.—In a twelve days' culture many oval or oblong highly refractile bodies may be seen, not staining with the ordinary dyes, and forming curious chains with the long axes parallel.  On staining by Möller these bodies are stained a deep red, the bacilli blue.  If some of the culture be suspended in broth and maintained at 70 to 75 deg. C. for half an hour the bacilli are destroyed, but the spores are not and develop on agar streaks in the usual way.  A five days' culture on peptone water gives no coloration with pure sulphuric acid or on addition of sodium nitrate.  No gas bubbles appear in gelatin shakes, whilst .05 gm. per cent of potassium sulpho-cyanid does not prevent growth.

In all unhealthy mouths, and especially in the early stages of pyorrhea the writer has observed vibrios, of both comma and spiral form; these are the well-known spirillum sputugenum and spirocheta dentum, and which so far have resisted all attempts at cultivation.  The writer, after repeated endeavors extending over a period of more than two years and after many failures, has obtained a method by which these refractory organisms may be isolated,
although at present it is impossible to say if all the spiral forms met with belong to the same species; so far, however, all the cultures obtained, twelve in all, correspond with one another in their main characteristics. On the surface of alkaline potato gelatin the writer has obtained the spirillum five times from five consecutive cases. Three other cultures were obtained at an earlier period of the investigation, but as the method did not always prove successful it was thought better to defer the description of the spirilla until a method had been discovered whereby the vibrios might be grown with certitude. These conditions appear now to be fulfilled.

During the research many media have been tried, with varying degrees of alkalinity; media made with egg albumen as basis instead of meat extract, infusions of glands, saliva broth with different percentages of pot. sulpho-cyanid, mucin media made from snail mucin, vegetable juices, and many others. Three times a pure culture was obtained by the use of egg broth, made by adding four eggs to a litre of water, with 1 per cent of peptone and lactose and .5 per cent salt; the medium is then neutralized so that the albumin is converted into alkaline albumin in such a way that a slight trace of acid produces a precipitate. On this medium a slight growth occurred, and upon streaking on to saliva agar and then plating a pure culture was obtained. The spirilla will grow also for a short time upon mucin gelatin (2 snails to 100 cc. water) but soon die out.

The potato gelatin is made by extracting one kilo grated raw potato with a litre of water for two hours, and after adding gelatin and boiling two eggs are added (whites only), reboiled, neutralized and 1 per cent normal NaOH added.

On this medium the spirilla grow in conjunction with other mouth-bacteria, among them B. maximus buccalis as mentioned above, and by adopting proper precautions a pure culture may be obtained. The method is the following: (1) Inoculations from mouth direct on to slanted potato-gelatin, development is extremely slow. (2) After three days a second slant is inoculated from any minute pin's point colonies which show spirilla; if the second tube shows growth there is little difficulty in obtaining a pure culture; on the other hand, plating from the first tube is generally successful, the point to be remembered is that the organisms require time to accustom themselves to the altered conditions of surroundings, but if left too long may be exterminated by the development of other bacteria.
On the gelatin plates at the end of four to five days minute, ill-defined, grey-white moist colonies are to be seen, the hanging drop showing distinct spiral motion, but on staining the spirilla are far from typical. Potato-gelatin streaks from these colonies develop slowly; in three days minute pin's-point colonies may be seen along the streak; even now these will not grow in the hot incubator. After a variable time, however, the growth is more pronounced, and on transference to agar at 22° C. a good development of beautiful spiral and comma-shaped forms appear at the end of twenty-four hours in the form of a whitish, raised, moist streak.

Potato-water, potato-agar, and potato-agar gelatin do not give such satisfactory results. On boiled potato streaked from the mouth direct spirilla, as well as B. maximus buccalis, may be found at the end of twenty-four hours, but a transference to even potato gelatin does not give satisfactory results. Large slices of potato in petrie dishes have also been tried with but poor results, it being extremely difficult to see the minute colonies on the surface of this medium.

Nettler found the spirochaete dentum in the pus from a putrid empyema. The author has also found the same organism in the pus from a diffuse suppuration following the removal of an upper second molar; the mouth of the patient in question contained many spiral forms, and a few were to be found in the pus of the drainage tubes in the face which did not communicate with the cavity of the mouth. The spirillum cultivated by the writer has the following characteristics: Morphology. Vibrio, occurring in young cultures as comma-shaped rods .1 to .3 u in breadth, 1 to 2.5 u long, with rounded, or pointed ends. In older cultures growing into well-marked spirilla, some composed of commas united in series, others spirilla with four or five turns without a break, very long threads are also met with; these are often much thinner (spirochaeta), the spiral forms are most common after forty-eight hours and best marked on broth. In old cultures curious swollen and twisted involution forms are to be seen; some of these are at the ends of the spirilla and commas and present a similar appearance to the forms seen in the mouth itself and not unlike flagella. Curious spherical bodies are at times to be seen in the course of the spirilla similar to the so-called arthrospores described by Hueppe in the cholera vibrio; spherical bodies are also to be seen with no spirilla attached. No endogenous spores have been observed. Stains with difficulty, best
with carbolic fuchsir, or carbolic spillers purple, or by anilin gentian violet after treatment with alcohol. In old cultivations the threads and spirilla stain badly and often have the appearance of chains of bacilli with an unstained interval between them. It does not stain by Gram's method. A twenty-four hours' broth culture is extremely motile, it often being difficult to observe under the \( \frac{1}{5} \) in. lens in the hanging drop. Upon staining by Pittsfield's method, or by night blue, a single terminal flagellum may be seen. Biological Characters.—Aerobic, facultative anaerobic, motile, liquefying, spirillum.

Gelatin Plates.—At the end of forty-eight hours, minute greyish white colonies, very much like streptococci, moist and flat. Liquefaction commences soon after.

Microscopically (\( \frac{1}{5} \) in).—Brownish, round, or slightly oval, not granular, with darker, irregular central area opaque. Agar colonies similar, but less color and without darker area.

Stabs.—Cup-shaped liquefaction in four days, little fluid, the tube may often be inverted without the liquefied mass running out, white flocculi in liquid and at bottom. The rate of liquefaction varies somewhat in different specimens and is as a rule longest in cultures recently isolated.

Streak.—Groove of liquefactions in three days.

Agar.—Good growth in twenty-four hours; greyish, raised, moist growth, with well defined straight edge; colonies may, however, be separate and form grayish, round, smooth, defined patches, eventually becoming confluent. In agar stabs growth takes place to bottom of puncture but does not develop much; a film soon spreads over the surface. In three to six days a brownish buff color appears in the central and thicker parts of the streak. In old streaks on agar the surface may be raised into hillocks or be irregularly raised and wrinkled; the appearance on agar is extremely variable. Blood Serum.—Twenty-four hours, brownish streak with slight amount of liquefaction. Forty-eight hours little change, liquefaction extremely slow. Litmus Milk.—Twenty-four hours, well marked acid reaction, with well marked clotting in seven days, sometimes less. Broth.—Twenty-four hours, general turbidity and slight trace of pellicle. Seventy-two hours, well marked pellicle. A four or five days' culture on broth or peptone water gives well marked "cholera red reaction" with pure sulphuric acid.
<table>
<thead>
<tr>
<th>Organism</th>
<th>Gelatin</th>
<th>Lit. Milk</th>
<th>Agar</th>
<th>Broth</th>
<th>Potato</th>
<th>Blood Serum</th>
<th>Colonies-Gelatin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vibrio cholera</td>
<td>24 hours, no liquefaction; 48 hours liquefaction; 7 days, clot</td>
<td>24 hours, slight acid; 48 hours, marked acid; 7 days, clot</td>
<td>24 hours, moist white layer, defined edge</td>
<td>24 hours, slight pellicle, fluid slightly cloudy; 48 hours, more pellicle</td>
<td>24 hours, no growth; 48 hours, no growth; 3 days, faint growth</td>
<td>24 hours, yellow brown streak, slight liquefaction; 48 hours, similar</td>
<td>24 hours, pale yellow, irregular, coarsely granular</td>
</tr>
<tr>
<td>Vibrio Metchnikoff</td>
<td>24 hours, no liquefaction; 48 hours, liquefaction commencing</td>
<td>24 hours, slight acid; 48 hours, more acid; 7 days, clot</td>
<td>24 hours, moist yellowish white streak</td>
<td>24 hours, cloudy, with pellicle; 48 hours, more pellicle</td>
<td>24 hours, no growth; 48 hours, no growth; 3 days, faint growth</td>
<td>24 hours, yellow brown, slight liquefaction; 48 hours, similar</td>
<td>24 hours, similar to v. cholera</td>
</tr>
<tr>
<td>Vibrio Finkel Prior</td>
<td>24 hours, well marked liquefaction; 48 hours, large deep liquefaction</td>
<td>24 hours, no acid; 48 hours, no acid; 7 days, no clot</td>
<td>24 hours, slimy layer, spreading over surface</td>
<td>24 hours, cloudy slight pellicle; 48 hours, more pellicle</td>
<td>24 hours, no growth; 48 hours, no growth; 3 days, creamy yellow growth</td>
<td>24 hours, well marked groove of liquefaction; 48 hours, half liquefied</td>
<td>24 hours, minute granular, yellow and yellow-whitely liquefaction</td>
</tr>
<tr>
<td>Spirillum spu-tugenum</td>
<td>24 hours, no liquefaction; 48 hours, slight liquefaction</td>
<td>24 hours, acid reaction; 48 hours, more acid; 7 days, clotting</td>
<td>24 hours, moist gray white raised streak, center yellowish defined edge</td>
<td>24 hours, slight turbidity; 48 hours, more turbidity; 72 hours, pellicle; 9 days, clear fluid, wrinkled pellicle</td>
<td>24 hours, no growth; 48 hours, faint brown tinge; 3 days, well marked</td>
<td>24 hours, brownish layer, slight liquefaction; 48 hours, similar</td>
<td>24 hours, brownish, round and oval, not granular, with darker irregular center</td>
</tr>
</tbody>
</table>
Potato.—No apparent growth in twenty-four hours at 37° C. Two to three days 22° C., well marked, rich red brown coloration, moist and slimy. Involvement forms and threads often formed.

The writer has compared this organism with Koch's cholera spirillum, and those of Metchnikoff and Finkler Prior. It is not unlike them in many respects, but has important points of difference. Like the V. cholera and V. Metchnikoff, it gives a well marked cholera red reaction, which is not given by V. Finkler Prior, and although it liquefies gelatin, does not do so with such rapidity as the latter organism; in fact, in recently obtained cultures little or no liquefaction occurs. Slight liquefaction of blood serum takes place, more like the effect produced by V. cholera and V. Metchnikoff. On litmus milk it produces more acid than V. Finkler Prior, and a clot is finally formed more like V. cholera and V. Metchnikoff. The appearance on broth varies but is not so rapid as either of the other three. The growth on potato occurs at ordinary temperature of room, differing from V. Metchnikoff and cholera, and is more rapid.

The cultures I am passing round illustrate these points. From the foregoing results the spirillum the writer has isolated appears to be a distinct species, and must be regarded as such; but that all the spiral forms met with in the mouth belong to this organism alone is highly improbable. At the same time most of the commas and spirilla are to be referred to the spirillum described, the evidence adduced being certainly in favor of this view.

In summing up, the conclusions the author draws from the various results set forth in this paper are these:—The filamentous forms occurring in the mouth are by no means therefore leptothractae, and one of them at any rate has been conclusively proved to be a bacillus capable of spore formation and thread production, whilst other bacilli which space prevents me describing also produce thread-like forms. The B. maximus is also an organism whose relation to dental caries is important, both from its power to produce acid and the ease with which it liquefies gelatin.

Spirillum sputugenum and spirochaeta dentum are to be found in inflamed conditions of the gums, and especially in pyorrhea, these organisms being forms of one variety whose cultures differ from other known spirilla, while the difficulty of obtaining pure cultivations is due to reluctance with which organism takes on a saprophytic existence, as well as the restraining influence of other organisms.
Finally both organisms, though they may exist in healthy mouths, are present in most profusion wherever inflammatory and pathological conditions are found.—*Brit. Jour. Dent. Sc.*, Sept. 1898.

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**SWELLING OF SUBMAXILLARY GLANDS DUE TO THE PRESSURE OF A LOWER DENTURE.** By W. H. Dolamore, L.R.C.P., M.R.C.S., L.D.S. London. For some years past I have attended a lady about 28 years of age for bad pyorrhoea alveolaris. When she first came to me the disease was already far advanced—indeed her more immediate cause of complaint was an abscess which had formed on the lingual surface of the gum in the neighborhood of the apex of the lower left lateral. Abscesses have from time to time reappeared and the disease itself has run its usual course, having perhaps more acute symptoms than is usually the case. The way in which a tooth firmly fixed, relatively speaking, and the gum around practically free from disease, became in the space of three months so loose and so bathed in pus as to need to be extracted (if one can use the term extraction for the lifting out of a tooth quite detached from its root membrane) is extremely suggestive that the disease was due to some infective organisms. The treatment that has proved of most service has been the use of sulphate of copper, abscesses when they developed being laid freely open. It was impossible to band the teeth so as to keep them firmly fixed on account of the objections of the patient to this course, and trying to secure them by lacing together with thin platinum wire caused so much periostal irritation that the wire had to be removed. However, the treatment has at least served to keep the disease in abeyance, and I do not think that her teeth are more loose now than when I first saw her about four years ago, though of course she has lost the tooth previously referred to, which curiously was an upper bicuspid, though speaking generally the disease is more marked in the lower than in the upper jaw.

Seeing that she was deficient in masticating teeth in the lower jaw, having lost the first and second molars on either side, it seemed reasonable to suppose, quite apart from any other consideration, that the insertion of a denture would relieve the lower front teeth of some of the wear and tear of biting, and so perhaps help in preventing them becoming increasingly loose. I therefore made and inserted for her an ordinary bar lower. There was nothing to note during
the first few weeks that she wore this denture. It pressed in one or two places, but these having been eased the plate became quite comfortable. After however wearing it for a few weeks she noticed a swelling had formed under both the angles of the lower jaw. The swellings came somewhat suddenly, though she may not have noticed them while they were yet small. She tells me that they increased markedly in size after meals. She was going that day to the seaside, and being suspicious that she was suffering from mumps, consulted her physician, who assured her that this was not the case and advised her to leave out plate. This she did and when she arrived at her destination the swellings had completely disappeared.

It is curious to note that she is of opinion that her gums are usually worse when she is by the sea; this, of course, may be nothing more than a coincidence. She tried several times after this to wear the plate, but always with the same result—a return of both the lumps. On her return to town she wrote telling me of this, and when sending her an appointment I asked her to wear the plate for a few hours before coming to see me. This she did and I found the swellings above referred to; they occupied the region of the superficial portion of the submaxillary glands, had a defined margin, but were quite soft to touch and compressible. There was no sore place in the mouth, but the lower margin of the plate in the bicuspid region obviously reached down to the floor of the mouth.

Here I may note that the patient is very thin and has small bones. The depth of the body of mandible is less than usual, and a finger placed on the floor of the mouth can readily feel one placed over the mylohoid muscles, the thickness of tissue between the two fingers being very slight. I cut away freely the lower margin of the plate, which she has worn since then without any return of the swellings.

There is no doubt in my mind that the swellings were due to the plate pressing on Wharton’s duct, so impeding the flow of saliva from the submaxillary glands. That the lumps were due to the salivary glands becoming swollen is more or less proved by the fact that they became markedly larger after meals, and a glance at the course pursued by Wharton’s duct shows that as it passes upwards, forwards and inwards beneath the mylohoid muscle it comes at the anterior border of the hyoglossus muscle near to the floor of the mouth, close to the jaw in the bicuspid region; in very thin subjects but little tissue can cover it at this point, and pressure exerted
here would obviously obstruct its course. A plate is scarcely likely to exert this pressure save in patients with fragile lower jaws. It is possible that the tissues around the mouth of this patient may be in an irritable condition, for I cannot conceive that these can escape some degree of infection by absorption from the discharges which escape year after year in pyorrhea.—*Dental Record, Sept. 1898.*

**DENTIST'S POSTURE AT OPERATING CHAIR.** By Eliza M. Mosher, M.D., Ann Arbor, Mich. Abstract of paper read at Tri-State Dental Meeting, Put-in-Bay, June, 1898. We have here the bones of the trunk, minus the arms, head and some ribs. The human skeleton consists of a pedestal, the pelvis, upon which is poised a long, slender, flexible column; to this and hanging forward from it are certain weights, the heaviest and largest extending forward, called the chest, made of ribs, cartilages and a sternum. Inside that circle are organs which increase the weight to the front and middle third of this long, flexible column. Then we have as other weights two arms hanging from it, connected from the scapula and shoulder blades. Then we have again a heavier or lighter weight in the form of the head, poised upon the top. Now to bring that coarsely-shaped structure into the upright and hold it there as it stands is rather a difficult matter, but you must remember that in addition to all this there are attached two columns, the legs, which by muscles can be swung out and placed underneath it, so that this disjointed structure is supported in the standing posture upon this foundation or legs.

The question arises, Is there any posture which we may call normal, one which is better than all others, one toward which the body should ever be turned? In order to find out whether or not there is, we immediately think of the two organs which are constantly at work, the heart and lungs. We say if there is a normal posture it must be one which gives to these two organs the largest space and least friction? If such a posture can be found, and in addition we find that all the other organs of the body are in their best place and are active, with the least friction and are filling up only their space, we say that position is the one which it was intended man should keep. If we come to study this structure we find that when the body rests firmly on the balls of the feet and lightly on the heels, when the pelvis is down in front and up behind,
carrying the gluteal weight high, in that position we find the sternum and spine as far apart as is possible for them to be without muscular action. In this position the heart and lungs have the best amount of space.

Commonly one arm balances another, but from before backward the body is not symmetrical. It was a difficult problem for me to ascertain where the balancing weights were placed until one day I discovered, while studying a little statuette, that upon the position of the pelvis depends the depth of chest. When a person stands his weight upon the heels and not on the balls of his feet, the chest is flattened and gluteal region lowered, and we have a lack of space for heart and lungs to do their work.

Remaining in certain postures continuously or using certain muscles repeatedly, the tissues on the one side become permanently short and the tissues which have been used become lengthened, and the intervertebral substance thins on one side and thickens on the other, so that the body attains a permanent shape in the position which it occupies most often, so that you and I, if our eyes are open to the subject, can with perfect ease tell what position any individual occupies in his work; in other words, the trade-mark of his work is built into his body.

The practical question which comes up this afternoon is this: The dentist, almost more than any other workman (if I may call him so), is obliged to occupy a position over his patient which is far from the normal position of the body, that in which it can do its best work. In making this study it has been very interesting to me to see the influence first on the spine. Fortunately the dentist is obliged to change from one foot to another, but he puts more weight on the right foot. It is his right hand which is steady, and he must turn his face to the patient. Perhaps you do not know what this does to the back and various parts of the body. From a study of it upon a good many individuals I find that the spine becomes permanently twisted outward and to the left, the ribs project backward on the right and recede on the left. At the upper part the twist continues at the top, so we have a rotation of the spine upon its own axis. Then you find that he has in addition to this a low left shoulder, which makes the two sides not symmetrical. The anterior wall of the body is shortened very materially. The space from the pelvis to the top of the chest is shortened and flattened, flattened
on the right and pushed out on the left. Now in that position the harmful effect is the influence upon the lungs, especially upon the young man who is not overly strong. The indoor life and flattening of chest is of course a great wrong. Using muscles on one side and not developing them on the other puts the body at a disadvantage.

The profession of dentistry has now become so important and is so influential it is bringing into it the best of our young men, and also women. I think that we should consider this matter of bad position and see if there is not some way to prevent it. If every dentist would exercise twice a day for 10 or 15 minutes, which should stretch out the short ligaments and shorten those which are getting long and filling out the body, a better state of health would be enjoyed, and the condition would be obviated, even though he is obliged to work in very bad postures.—Indiana Journal, Oct. 1898.

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Caries of an Unerupted Tooth. By W. D. Miller, D.D.S., M.D., Berlin, Germany. From time to time we read in the dental journals of rare cases in the domain of dental pathology, for the origin of which our generally accepted views and theories offer no satisfactory explanation. A case of this category was described by Dr. C. N. Peirce in the Cosmos for 1893, page 80, and as it has been cited as a proof of the untenability of the chemico-parasitical theory of caries, it will be of interest to study the question more closely. The case was that of a lady thirty-five years of age, who suffered severely from facial neuralgia on the left side. On examination Dr. Peirce discovered a tumor, about two centimeters in diameter, just above the tuberosity. On cutting into the tumor he came upon a hard substance, which proved to be the third molar. Upon further examining the cavity he discovered and removed three supernumerary teeth. The first of these teeth had six cusps, arranged in two parallel rows, the second had only four cusps, while the third resembled a bicuspid and was only one-sixteenth of an inch in length. "On the distal approximal surface of the second tooth was a well-marked cavity of decay, the carious action having penetrated through the enamel and well into the dentin." "The existence of true caries under these conditions," writes Dr. Peirce, "is extremely interesting from the fact that the teeth were completely covered by the soft tissues of the gums, and therefore entirely protected from any direct action of the oral fluids and food debris."
Dr. Peirce offers no further remarks upon this subject, but Hans Block (Cosmos, 1893, page 605) says: “This case, where true caries had destroyed an unerupted third molar, proves that bacteria are not even an essential factor for caries, as in this instance caries did occur on a tooth which never was exposed to external influences, hence also not to bacteria.” This statement was ventured by Block notwithstanding the fact that neither he nor anyone else had examined the tooth with the object of ascertaining whether bacteria were really absent or not.

Professor Peirce kindly sent me the tooth in question some three years ago, but owing to various circumstances it is only now that I am able to report the result of its examination. The outward appearance of the cavity differed in none from any ordinary case of decay, and therefore need not be described. As the dentin was of course completely dried up, I laid the tooth in pure water for twenty-four hours in order to soften the carious portions, and then with a spoon-shaped excavator removed as large a piece as possible, from which I prepared sections by means of the freezing microtome and stained them by the Gram method. The microscopical examination revealed the typical appearances invariably seen in dental caries. The bacteria present were mostly cocci; bacilli were much less numerous. The characteristic iodin reaction could also be obtained, though it was not pronounced. Consequently, as was to be foreseen, the presence and action of bacteria were proven in this case as in all others. The question now arises, how did bacteria get there, and how could they without fermentable substances form the acids necessary for decalcification?

The thought naturally presents itself that even though the tooth at the time of the extraction was so covered by the gums as to be quite shut off from the oral cavity (Dr. Peirce does not seem to have made a thorough examination with reference to this point), it must at a former time have been accessible to the fluids of the mouth. This supposition was supported by the fact that the microscopical examination of the Nasmyth’s membrane, isolated by means of hydrochloric acid, not only revealed the presence of discolorations in several places, but also showed the membrane to be invaded by bacteria of various forms. Furthermore the fissures were distinctly discolored.

These facts could be explained if the tooth had really never been
erupted, only on the supposition that a process of suppuration had existed in the neighborhood of the tooth, but Dr. Peirce does not mention anything of the kind in his report. All the facts point to the conclusion that the tooth in question must at some time or other have been for a considerable period exposed to the action of the secretions and food particles in the mouth. At all events it was far from being a case of "caries without bacteria."

Through the kindness of Zahnartz Hörstel of Plauen I was put in possession of a preparation which might be described in this connection. The two temporary molars and cuspid (right lower) of a seven-year-old child were extracted on account of a severe suppurrative process at the roots. On removing the first molar the crown of the first bicuspid, which was wedged in between the roots of the molar, came out with it. Apart from the defective calcification of the enamel the surface of the crown was covered with black-green spots that had certain likeness to chronic caries. Closer examination, however, showed that it was only a case of discoloration, probably caused by some derivative of the coloring matter of the blood. Numerous bacteria, cocci as well as bacilli, could be demonstrated on the surface of the enamel as well as on the wall of the pulp-cavity, which would naturally be the case in a tooth long immersed in pus. Neither the enamel nor the dentin showed any changes indicative of caries.—Cosmos, Oct. 1898.

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TEMPORARY SETS OF ARTIFICIAL TEETH. By Dr. R. E. Sparks, Kingston, Ont. Read before the Eastern Ontario Dental Association. This question is frequently ignored by the dentist and consequently by the patient. Some practitioners believe that anything is good enough for a temporary set and that very little need be expected of it. These are they who lend or make a temporary set at a very small cost to the wearer. Patients who apply for permanent sets frequently say that they had temporary sets but never wore them. Some practitioners discourage the use of temporary sets, assuring their patients that by waiting a few weeks or months they can have a permanent set. So we see many wearers of artificial teeth with features distorted, gums flabby, flaps of unhealthy mucous membrane drawn down into the spaces left by absorption of the alveolar process after the insertion of the artificial teeth. I therefore ask the following questions: Are temporary sets of artificial teeth
beneficial? Why? How may they be made to give the wearer most comfort and benefit?

I take the ground that temporary sets are beneficial if made so they may be worn with comfort. First, the patient has the use of them for mastication, and this is most important to the individual with weak digestive powers, whether hereditary, or caused by continued overstrain by loss of masticating organs. Second, articulation. This is also a very important consideration to persons who sing or speak in public. Third, personal appearance. This is no small consideration to ladies, particularly those whose duties bring them much in contact with the public. Fourth, as a protection for the gums. Instead of temporary teeth being an irritation to the gums made sore by extraction of the teeth, they protect the gums from injury, from contact with hard substances of food and from the teeth in the opposite jaw, where such exist. Fifth, temporary sets fill the gaps where any extensive bridging is to be done, and where it may be necessary for any reason to postpone the operation. How may they best be made for the comfort and benefit of patient?

Where I can do so, in the case of upper sets I prepare to extract the molars and second bicuspids some weeks before I insert the temporary set. The greatest shrinkage takes place during the first few weeks. I leave the front teeth for appearance and use, where they are of any use for mastication. Ladies who occupy public positions object to being left without any teeth whatever. When the gums where the molars and second bicuspids have been extracted are healed and the sharp points absorbed, I extract the remaining teeth and take the impression at the same sitting. Where the teeth have been out for some time I allow rubber to pass up over the gums. Where the teeth have just been extracted I grind the tails of the artificial teeth to fit into the sockets left by the recently extracted teeth. This method anticipates the absorption of the alveolus. I have often seen temporary sets of teeth put in on this principle fitting as well after two or three years as others which had been worn two or three months, but had been put in on the ordinary principle. This is not always feasible where an anesthetic is administered unless it be gas, which may have to be administered two or more times. The advantages of inserting temporary sets upon this principle are many. It gives them a very natural appearance, looking as if the teeth had grown out of the sockets. After the outer wall
of the alveolus is absorbed the tails of the teeth set closely to the ridge. By this method one may with considerable accuracy take the impression and make the plate before extracting the teeth. To do so, cut the teeth off the plaster cast and make sockets sufficient to receive the tails of the artificial teeth. This is particularly appreciated in cases of partial sets, as the teeth can be extracted and artificial set inserted at the same sitting. But supposing for some reason chloroform be administered, the teeth must all be extracted at the one sitting, I would recommend that the gums be given a few weeks for absorption to take place. Then as in the other case I would have the artificial gum pass up over the ridge as far forward as the second bicuspid. The front teeth I would grind to fit the gum. That the tail may fit very closely I shave the cast where the teeth come in contact. The advantages of this method over having a gum of whatever material are various.

An artificial gum under the lips just after the teeth have been extracted will in most cases make the mouth appear too full. The ridge being prominent, the artificial gum of whatever made is almost certain to show, and as it is seldom feasible to use gum teeth, vulcanite is used and looks very unnatural. But a far more serious objection than these presents itself and forbids the general use of gums over the anterior ridge of the upper jaw in the case of temporary plates. If worn for any considerable time after the gums are absorbed the ridge becomes flabby and the mucous membrane of the lip becomes drawn into the space between the plate and ridge. Why this should occur at the front of the mouth and not at the back, and in the case of the upper and not in the lower, I am at a loss to say. In the case of temporary lower sets I usually cover the ridge entirely around with vulcanite and use plain teeth. The lower jaw being less prominent than the upper, the projection of lip caused by a thin layer of rubber is not so observable. The lower plate having to depend for retention upon its contact with the ridge, unlike the upper set which has the palatal contract, makes a gum all the way around more desirable.

The same care should be taken to secure a good articulation as in the case of a permanent set. As to the length of time it may be well to advise a patient to wear a temporary set, no rule will apply. I recommend the wearing of them as long as they are retained well and used with comfort, but warn the wearer against wearing them
after they become loose and uncomfortable. I always expect a well
fitting temporary plate to be worn a year. By that time I expect
the gums to be in a good condition for a permanent set. In the
spring of 1875 I made a temporary set of teeth for a lady three
weeks after having extracted her upper set. About two years ago I
saw her and she was still wearing it with comfort. She had then
lately broken off the central incisors, and said she would have them
replaced by others on the same plate, as it was all right and she did
not know what she might get next time, so she is probably wearing
them yet.

The wearing of a temporary set overcomes the desire for a perma-
nent set before the gums are ready for them, as is so frequently the
case where temporary sets are not worn.

As regards the fee that should be charged for temporary sets, that
could be no more regulated than could the fees for permanent sets
or for any other operation. There is no reason why a temporary
set of teeth should be made any cheaper than a permanent set, or
that a temporary and permanent set should not be twice as much as
either one, especially when extraction of the teeth is regarded as a
part of the operation. But there seems to be a sort of retail and
wholesale principle observed, that two sets shall cost less than twice
as much as one set. This being the case I make it a rule to have
the retail fee for the first set. This insures my making the perma-
nent set if the temporary set has been satisfactory and patient be
within reach. It insures me against loss if patient should get per-
manent set elsewhere.—*Dominion Dental Journal, Sept. 1898*

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RESTATEMENT OF THE TOOTH-BLEACHING PROBLEM.
Odontological Society, April 19, 1898. From a general survey of
existing ideas upon the question of tooth-bleaching one cannot avoid
the inference that our practice in this line of treatment is almost
wholly empirical. Practitioners concern themselves principally
with methods of procedure and the detail of minutiae which go to
make up a given bleaching process, rather than with the scientific
reasons why the process is applicable, or from a rational understand-
ing of the conditions to be met. Hence it is that we hear more of
the relative merits of given processes for tooth-bleaching than we do
of the principles which govern their successful use. But the best
and most uniformly successful results in this as in any line of treatment can never be attained through the empirical study of clinical phenomena alone; a clear understanding of the underlying principles involved is essential to a rational use of methods based upon them, and is necessary to their successful application.

It is at once evident that we are confronted with a chemical problem, for in the successful application of a tooth-bleaching agent we have wrought an important change in the matter causing discoloration, so that it has lost its color quality and become white. Any change which affects the composition of matter so that its identity as such is destroyed is a chemical change. Our problem then is one of chemical reaction between a so-called bleaching agent and the coloring matter lodged within the dentinal tubules which shall so alter the composition of the latter as to render it colorless. A bleaching agent is any agent capable of effecting that result.

We may next consider the nature of the coloring matter, and afterward the means by which its color factor is destroyed. Tooth-discoloration may arise from many causes, but for our purpose this evening we will consider only the most common one, viz, that following death of the pulp and in which the source of discoloration is the hemoglobin, of the blood. Hemoglobin is a complex proteid compound contained in the red blood-corpuscles. Traumatic causes, intense and sudden congestion of the pulp due to irritants, especially of arsenious acid or strangulation of the pulp, may cause a rupture of the stroma of the corpuscles, liberating their contained hemoglobin and its diffusion into the tubular structure of the denin. The result is that the tooth becomes pink.

The difference in appearance between blood containing unruptured corpuscles and that in which the hemoglobin has been liberated is quite marked, and is clearly seen in the two flasks before you. One contains simply defibrinated blood, the other defibrinated blood which has been agitated with a small amount of ether. The latter when viewed even in thin layers by transmitted light presents the appearance of a homogeneous solution of hemoglobin in serum, while the former in thin strata presents the characteristic cloudy, granular appearance due to the presence of the unbroken corpuscles.

We may now test the reaction of our hemoglobin solution with hydrogen dioxid by staining a sheet of white blotting-paper with the hemoglobin and then applying the dioxid, and as you see, the
color is rapidly discharged, from which we infer correctly that in the very first stage of tooth-discoloration—the pink stage—the color is readily discharged by pyrozone.

The pink stage, however, rapidly passes and gives place to a brown discoloration, or at least some modification of a brown tint, varying in intensity with the amount of hemoglobin originally present. The change from the pink to the brown tint is due to a chemical alteration in the hemoglobin, which consists of its splitting up into hematin and globulin. This change takes place more or less rapidly and spontaneously within the tooth-structure. We can bring about the same result experimentally by the application of any acid to the hemoglobin stain on our blotting-paper, and by touching the stain with dilute hydrochloric acid you see the bright red color is instantly changed into brown. Upon making an application of pyrozone as before we find that the brown stain remains unaffected, and we infer that the brown stage of tooth-discoloration is relatively more resistant of bleaching by pyrozone than is the pink, an inference supported by clinical observation. The tooth under ordinary circumstances passes through color changes beyond the brown stage into a bluish or gray or nearly black color, and these changes in color are due to the progressive breaking down of the hemoglobin until the compound is reduced to its lowest terms. The final black or dark color is permanent, and is due to the formation of an unalterable compound of iron probably with sulfur, the iron being one of the original constituents of the hemoglobin and the element to which its various color manifestations are due. The sulfur which enters into the formation of the permanent final stain is derived from the protoplasmic element of the cellular structures of the pulp.

The resistance of the brown discoloration of hematin to pyrozone and other bleaching agents in greater or less degree renders the restoration of teeth so discolored often quite difficult. I have found, however, that the brown discoloration may be successfully removed by the prolonged action of either sodium or hydrogen dioxid, followed by an application of strong oxalic acid. The rationale of the process is based upon, first, the existence of iron as a constituent of hematin, and the formation of a soluble and practically colorless salt of iron with oxalic acid.

The permanence of the bleaching process is directly related to the
existence of iron as an element in the original coloring matter of the
tooth, and which must either be finally gotten rid of or else so
fixed by the application of certain agents that it cannot form
new and colored compounds, if a permanent result is to be hoped for.
That iron is one of the elements of the hemoglobin stain is easily
demonstrated, and that it is not removed by pyrozone but simply
changed into a colorless combination, will be seen by applying the
usual reagents for the detection of iron to the bleached stain on the
paper before you, and there are at once shown the characteristic
reactions of iron to potassium sulfocyanid, potassium ferrocyand,
and to ammonium sulfid. Teeth in early stages of discoloration
and which contain coagulable matter in the tubuli should be
treated to an application of strong zinc chlorid immediately after the
bleaching by pyrozone, in order to coagulate and fix the white com-
 pound unalterably, or what is better, should be treated with a strong
alkali—e.g., sodium dioxid or Schreier's preparation—with a view
to dissolving and eliminating the contained organic matter, aided
by a thorough irrigation by hot distilled water. Where coagulable
matter is not present resort must be had to a resinous solution, ap-
plied to the desiccated tooth until the dentin is fully saturated.

Discussion. Dr. Van Woert. Does Dr. Kirk believe or think
that the galvanic current has any additional beneficial effect in con-
nection with any of the agents he has used? Does it make the
bleaching more permanent if it has been used cataphorically?

Dr. Kirk. That opens up another phase of the subject. It de-
pends upon your method of operating. If it is a question as between
the relative value of an ethereal twenty-five per cent solution of hy-
drogen dioxid or an aqueous solution of equal strength, I see very
little difference. My statement, however, needs some qualification.
It depends upon another thing, too, and that is, whether you desic-
cate the tooth in the beginning or whether you do not. Where I am
going to use an ethereal solution I do not desiccate the tooth. Mr.
Evans some time ago gave me the hint that hydrogen dioxid was
very hydroscopic, that it was greedy of moisture; therefore I reasoned
that it would be better to not remove all the moisture from the den-
tin, and in that way there would be a leading in of the hydrogen
dioxid by reason of its affinity for water causing it to leave its ethereal
solvent and to penetrate the tubuli. On the other hand, if I am go-
ing to use an aqueous solution, I would desiccate first and then use
the current. I get a better result cataphorically with aqueous py-
rozone than I do without; but I cannot say I get a quicker action
with the aqueous solution used cataphorically than with the ethereal
solution used without cataphoresis. Where I need an aqueous so-
lution I would use the current.—*Dental Cosmos, Sept. 1898.*

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CLAY AND PLASTER MODELING APPLIED TO CROWN,
BRIDGE AND PORCELAIN WORK. By J. H. Prothero, D.D.S.,
Chicago. Read before Odontographic Society, May, 1898. The use
of clay in crown and bridge work may not be apparent at first glance,
because in the actual process of crown and bridge construction it is
used only in the production of dies and counterdies for swage work;
but when we consider the pliability and ease with which clay can be
molded into desired forms, its utility as a means of developing
artistic talent and of enhancing the powers of observation becomes
appreciable, and for this reason it is especially valuable to the dentist
who desires to do really fine and artistic crown and bridge work.

The object of this is to call attention to the value of clay modeling
as a means of developing the artistic talents along specialized lines.
For those who cannot avail themselves of the services of an in-
structor a few simple directions may be of benefit. Materials needed
will be a few pounds of composite clay and two or three modeling
tools. They should be simple in form, shaped somewhat like the
finger but flattened on the sides. These, in addition to the fingers,
will be all the tools needed. The fingers really do most of the
work, while the tools aid in making it a little more definite.

A convenient size to make a model tooth would be from one and
a half to two inches across the occlusal surface. The model used as
a pattern should be a natural tooth in as perfect a condition as pos-
sible. This can be set in a small piece of clay in such a position as
to present the occlusal surface directly toward the modeler. Outline
this surface of the tooth, marking the grooves in their proper rela-
tion, then with the tool remove the clay along the sides of the
groove, and in this manner produce the slope of the cusps, being
careful not to lose the proportions the grooves have outlined. When
this surface has been molded into proper proportions the position
of the model tooth can be changed and one of the surfaces pro-
duced, and so on until the entire crown and roots can be developed
if so desired.
In order to get the best results a tooth should be modeled a number of times, until its form and detail are familiar and can be produced from memory. This can be done by alternation, using first the natural tooth as pattern, then modeling the same from memory and comparing with the pattern tooth. The first efforts will naturally be crude, but continued application will accomplish results both pleasing and satisfactory.

Black's Anatomy is a valuable help in this work, because it gives a thorough, detailed analysis of each individual tooth, and of each and all the surface markings, and can be used in conjunction with the natural teeth to very great advantage. The following description of the occlusal surface of the lower first molar is taken from this work, and who could not, when modeling this surface, approach more nearly the ideal after reading such a description: "The outline of the occlusal surface, when seen in a line with the long axis of the tooth, is trapezoidal, with the buccal marginal line the longest. The buccal angles are about equally acute, while the lingual are equally obtuse, and all more or less rounded. The buccal margin is convex, but made irregular by two buccal grooves. The lingual margin is nearly straight, but sometimes slightly concave, or notched in the center of its length by the lingual grooves, but more generally it is slightly convex.

"The occlusal surface has five developmental grooves—the mesial, buccal, disto-buccal, lingual and distal—which divide it into five developmental parts, or lobes. These are the mesio-buccal (a), disto-buccal (b), mesio-lingual (c), disto-lingual (d), and distal (e) lobes, each bearing a cusp of the same name. The mesial groove (n) runs from the central fossa over the mesial marginal ridge to the mesial surface. The buccal groove runs in a deep sulcus from the central pit to and over the buccal marginal ridge to the buccal surface, and divides the mesio-buccal from the disto-buccal cusp. The disto-buccal groove (p) also runs bucco-distally from the central pit over the buccal ridge, more or less near the distal angle, as the distal cusp is large or small. It divides the disto-buccal lobe from the distal. The lingual groove (s) runs from the central pit, in a deep sulcus to and over the lingual marginal ridge, onto the lingual surface and divides the two lingual lobes. The distal groove (r) runs distally over the distal marginal ridge, and divides the disto-lingual lobe from the distal. The mesial and distal
grooves form a line traversing the whole extent of the occlusal surface, from mesial to distal, in the center of which is a V-shaped deflection, with its point to the lingual, the base receiving the point of the triangular ridge (i) of the disto-buccal cusp. In most examples the central fossa occupies all the occlusal surface within the circle of the summit of the marginal ridges.

"The occlusal surface of the lower first molar has five cusps, one on each of the five lobes, three on the buccal marginal and two on the lingual marginal ridge. Usually these are not so high and prominent as the cusps of the upper molars. The mesio-buccal (a) is the largest and strongest of the buccal cusps, and occupies rather more than one-third of the buccal marginal ridge. The disto-buccal cusp (b) is of less extent from mesial to distal, but has a longer triangular ridge, though not so high, which ends in the point of the V-shaped deflection of the mesial and distal grooves. The lingual cusps (c, d) are about equal in size and height (perhaps the mesial is a little higher on the average). They have strong triangular ridges (k, l) which terminate in the angles formed by the junction of the lingual with the mesial and distal grooves in the central pit. The distal cusp (e) occupies the distal portion of the buccal ridge, and forms the disto-buccal angle of the occlusal surface. It is the smallest of the five cusps and varies most in its relative size. It is the distinguishing mark of the lower first molar, being but rarely absent in that tooth, and never present in the lower second molar."

In order to preserve the modeled teeth in as permanent a form as possible a description of the method is here given: Oil the outer surface of the clay tooth, and after making a mix of plaster sufficient to cover a surface about four inches in diameter and an inch in depth, press the modeled tooth into the plaster far enough to get the entire outline of the occlusal surface. The plaster is now allowed to harden, then the upper surface is smoothed, notched in one or two places, varnished, and another mix of plaster applied to one-half the circumference of the model, building it in such a way as to leave the margins square. When this plaster has set the margins are varnished, and the last piece is completed by building plaster on the base and against these margins and the clay model. The three parts can easily be separated, the clay removed and the inside of the mold varnished, after which the matrix can be filled
with plaster. When the sections are removed the plaster tooth can be trimmed and the piece kept for a pattern.

A little time devoted to modeling the various teeth and reproducing them in plaster will soon give a set of working models that will be extremely useful in carved plaster cusp work, and for cusp and contour work in porcelain art. *Clay modeling*, specialized to meet the wants of the dentist, may be considered as a sort of technique training, and *plaster modeling* a practical application of the knowledge gained from clay to the actual processes of crown and bridge construction. The manner in which it is usually manipulated is as follows: When a molar or bicuspid band has been properly fitted to the root of the tooth, the impression taken, molds procured and the case mounted on the articulator, the occlusal surfaces of the opposite teeth should be varnished, the band filled with plaster and the articulator closed tightly. This will give an accurate impression of the surfaces against which the cusps of the crown must strike. Now with the knowledge one has of the forms of the cusps and the location of the grooves on the occlusal surface, cusps can be carved in the plaster corresponding to the occlusal conditions. The margins of the cusps must be carved even with the inner side of the band to compensate for the two thicknesses of gold that form the cusps, and which is conformed to the outside of the die.

When the carving of the cusps is completed, the band with cusps is removed and pressed into moldine and a die of fusible metal obtained. The details from here on are familiar to all, so will be carried no farther.—*Review, Oct. 1898.*

* * *

**ORIFICIAL IRRITATION IN RELATION TO NEURAL DISTURBANCES.** Presented to Section on Neurology and Medical Jurisprudence, at forty-ninth annual meeting of American Medical Association, June 7-10, 1898. By Dr. Geo. V. I. Brown, Milwaukee, Wis. It would seem upon consideration that many operations brought forward by the gynecologists during the last few years for relief of so-called reflex pains and other nervous disorders, particularly neuralgia and migrainoid headaches, have not given the relief that was promised for them. The same is undoubtedly true to a considerable extent in regard to the rectal surgeon’s efforts, and notwithstanding the fact that deviating septa and hypertrophied turbinates have freely given off their offending portions, there still
remain many who suffer constantly without a hope of relief; and in directing your attention into a new channel with regard to etiology and treatment of these conditions, I would urge the fact that, with a high nervous organization and free distribution of nerve-supply quite as complex as that of the other orifices referred to, the normal mouth has thirty-two teeth as additional predisposing factors, each with its own separate nerve-fibers from the wide-spreading carrier of sensation—the trigeminus. In addition to these connections each root is surrounded by a highly vascular peridental membrane, also in close connection with the blood and nerve-supply, making it not unreasonable to suppose that all these taken together would offer a very frequent source of irritation. Considering also the fact that through caries the pulps of these teeth and the nerve elements they contain are often exposed directly to external irritants, the etiologic factors, particularly with affections within the range of the direct nerve-supply through which they carry the sensation, ought in a large number of cases to be found to be within the oral cavity.

During the last few years my efforts have been directed to the study of certain peculiar forms of orofacial irritation, particularly one form of which little or nothing in the way of description seems to be extant in the literature of the subject. Without attempting to go into a general or even a partially detailed description of the various possible irritations from within the oral cavity, I desire to treat of what I have found to be a very common associate of neural disorders. It is a noticeable fact that in the mouths of all those so affected, wherever the natural teeth remain, their occlusal surfaces show that constant grinding and rubbing has abraded them, through the extreme pressure brought to bear during the paroxysms—if the pain be paroxysmal occurring in an intense nervous state—the result of hours of painful suffering or other like conditions. This has frequent mention by writers as noticeable among those who suffer from such disorders, but in no instance do I find where an author has thought fit to reverse the order of things and make the habit of the jaws, which is responsible for this condition, one of the etiologic factors in bringing about the disease, rather than a result, as it is generally held to be. Last year I described this hyperkinetic condition of the muscles of mastication and explained how irritation of the brain-centers governing these muscles, whether as a symptom of other neural disturbance or vice versa, would produce the same
result, namely, an irritation of the peridental membrane surrounding the roots of the teeth, and how, through their apical foramina this irritation might be communicated to the many branches of the nerve, after which, as is well understood, the point at which that result expressed itself in pain, muscular spasm, tenderness of neuritis, hyperesthesia, anesthesia, or whatever the effect might be, could be reflected anywhere along the path of the nerve among its associates. Certain forms of this peridental inflammation and the resulting pain are quite familiar to dentists, but that there was grave trouble frequently caused by other forms of this affection, with which neither they nor physicians were commonly familiar, I have long been satisfied, and in the paper referred to I described a number of cases of extremely aggravated pain in the head and face which were cured or to a considerable extent relieved at my hands by the simple method of grinding the crowns of the particular teeth affected in such a manner that they could no longer be brought together. Since the writing of that paper, however, another form of this particular trouble has come to my notice in several cases, with symptoms such as are commonly ascribed to reflex expressions of uterine diseases.

Through the pterygoids a lateral grinding motion of the jaw of man takes place, which if pursued at night is easily noticed, and usually attention is called to it. If, however, the masseter and temporal muscles are called into unusual activity, the result is that the jaws are pressed firmly and tightly together, with a force varying in individuals from 200 to 270 pounds. With the jaws closed normally and the occlusion perfect, this force would be comparatively equally divided among the whole number of teeth. If, however, as usually happens in these cases, the jaws be shifted a little to one side or slightly forward or backward, then certain portions of individual teeth are brought together, and they alone must bear this tremendous force. Ordinarily the membrane surrounding the root is capable of withstanding a considerable amount of pressure for a considerable length of time. But by the continued application of this pressure, especially when weakened by other more general conditions, as of circulation, or otherwise, this power of resistance becomes impaired, and then one of two things must result—either a local disturbance made manifest by elongation of the tooth and soreness to pressure, a not generally serious affection, accompanied sometimes by localized
pain, usually comparatively easily remedied, or as I have believed, a direct communication of this irritation to the larger nerve trunks, to be by them carried to other parts. It has been recently proven that the old idea—as given in Gray’s and other anatomies—of a direct communication of artery, vein and nerve, from the apical foramen to the main trunk of the nerve, passing along the jaw, is generally if not always incorrect, and that there is a more complex nervous connection with nerve filaments extending directly from this membrane to the main nerve supply, and this scientific histologic demonstration is directly in line with my own clinical observation, because it explains at once what I believe I have demonstrated to be true: that any or all the nervous symptoms generally recognized can be the direct result of peripheral irritation through this peridental membrane. We are all familiar with the much-written and widely understood neural disturbances consequent upon eye-strain, but whoever heard of neurasthenia, hysteria or neuralgia resulting from jaw-strain, and yet this is exactly what does occur. If the use of certain muscles and the straining of those muscles can cause neurotic symptoms through irritation of the optic nerve-supply, why cannot the continued application of hundreds of pounds of force directly to certain other branches of the nerve through which sensation is transmitted do so equally with the other part? This theoretic explanation is, I believe, borne out quite fully by the following cases:

Case 1. Mrs. —— complained of a general debility, loss of strength and poor circulation, and suffered intense pain at rather short intervals which finally became shorter until the pain was almost continuous between her eyes at the base of the brain and in the vicinity of the ear upon the left side. Three operations by gynecologists, who had mistaken her symptoms for reflex pain due to some womb disorder, left her rather worse than better. The treatment of certain inflamed conditions of the pulps of her teeth and maxillary sinus, and a correction by grinding the surfaces of tooth crowns giving evidence of receiving rather more than their share of the wear and tear, has given her, at least for the few months past since the operation, complete relief. Case 2. Mrs. ——, a very great sufferer, pain in eyes, back of head, which during severe paroxysms was severely felt also in the back, arms and leg, had become almost a hopeless neurasthenic. The birth of the last of
her five children was coincident with the onset of the severe symptoms and naturally led to treatment for laceration and endometritis, but without result. The abraded crowns of several teeth and the set expression during pain facilitated diagnosis; the treatment applied was to grind the occlusal surfaces of the affected teeth until they could not meet in occlusion, and treatment of pulps of the teeth that were irritated, resulting in complete relief from pain and a generally improved condition.

The cases were reported in the paper before referred to, one in which hyperesthesia of the lower lip and chin was instantly relieved by the extraction of a bicuspid tooth of a woman who had been treated, as she said, "for falling of the womb"; and another, a girl about 17 years old, whose extreme suffering for about eighteen months was finally relieved by grinding down certain teeth, irritated by grinding at night, found to be the probable result of sexual excitement as shown by a history of the case.

Many similar instances might be recited in which the symptoms of pathologic oral conditions have been confused with those of the eye, ear, nose and rectum, as well as of the vagina and uterus, but the present purpose is chiefly to call attention to the fact that this habit of the muscles of the jaws is of extremely common occurrence—in fact, nearly always an active feature of nervous states—for if caused, as sometimes happens, by overstimulus of the centers controlling those muscles, the result of some etiologic excitement elsewhere, then the effect is simply to increase the severity of symptoms; on the other hand it may be the irritant and solely responsible, but in either case the simple attention necessary to correction of the difficulty is a matter of first necessity in the treatment of a large majority of sufferers from functional and other disorders of the nervous system.—Jour. Am. Med. Assn., Nov. 12, 1898.

Adenoid Vegetations.—G. Zimmerman attributes the etiology of recurring pseudo-croup to adenoid vegetations, and states that in his experience extirpation always cures the croup. ... Bilhaut also emphasizes the frequency of curvature of the spine, scoliosis, kyphosis and lordosis in children affected with adenoid vegetations, and has observed all these troubles vanish after their removal. He claims that this should always be the first step in the treatment of any defective development of the spine or thorax. ... Lauffs recently reported the cure of a distressing case of prolapsus ani in a boy of five, cured by removal of adenoid vegetations.—Munich Med. Woch., July 12 and 18, and Vienna klin. Woch. July 14.
Letters.

NEW JERSEY LETTER.

Editor of The Digest, Newark, November 19, 1898.

Mr. Editor: On the evening of Monday, December 19, the Central Dental Association will hold a meeting which we think will become memorable. At this time Dr. A. C. Hart of San Francisco, well known as one of the leading men on the Pacific coast, will read a paper on "The Positive Prevention of Decay." Dr. Hart has been working on this paper for the past ten years, and the Central Dental Association should feel proud to have the result of this labor first given to the profession through them. We have been given to understand that the paper will controvert several theories advocated by Dr. J. Leon Williams of London. A number of men prominent as microscopists and histologists have promised to be present to discuss the question.

The essay committee of the New Jersey State Dental Society has for its leader the veteran worker in dentistry, Dr. C. S. Stockton, who is ably assisted by Drs. Sanger and Riley. We bespeak for the meeting next summer eminent men to read papers and discuss them as well.

After the letter of Dr. Essig in this month's issue of the Cosmos, many New Jersey dentists are anxiously waiting to see whether the committee on colleges of the National Association of Dental Examiners will not refute some of his statements and bring forward the proofs.

The vice-chancellor of New Jersey has issued an injunction against the tooth-paste company that succeeded last summer in surreptitiously obtaining a copy of the report of the committee that recommended the preparation. A summary of the grounds on which the injunction was issued are as follows and will bear careful thought: The report was read in meeting of the society, but was not given out as public property, remaining the exclusive property of the society, the same as the literary work of an author would still be his property, even though he should read it to an audience invited to hear it, or just as a play is the property of its author under the same conditions.

The copy of the report was not obtained therefore by or through
any permission of any member or officer of the state society. It was proven in the argument of the counsel of the state society that the report was not given out as public property, and that therefore no one outside had any right to publish or in any way make use of any portion of said report.

The defendants failed to prove a single point that they advanced, and the vice-chancellor issued an injunction restraining them from using the report.

Yours fraternally,

Hornet.

NEW YORK LETTER.

To the Editor of the Digest, New York, Nov. 22, 1898.

Mr. Editor:—Bees swarm in June, and when hornets swarm in October something has gotten into the hornets' nest. From all the buzzing it looks as if there were serious doubt just where they will light.

It seems as if someone took a delight in sending dirty linen to Omaha for a washing, and then hung it out in some of the journals to dry. New Jersey and Washington seem to have had special mention at the national meeting, and we quite agree with "Oriole" concerning the Washington affair.

The latest scheme is a national body with a fund, scientific investigations to stand on their merits, and doubtless a "professional" organ. Every organ must have a crank (journal). January will unfold what is in the air. Note the thirty-first anniversary of the New York Odontological Society. A program is announced for a double session that gives promise of unusual interest. Dr. Williams coming again across the ocean in midwinter would indicate that he has something prepared which will attract all scientific men. It is easy to listen to true scientists, for they are not boyish. "When I was a child I spoke as a child, but when I became a man I put away childish things." This is very applicable to dental societies.

It is announced that Dr. Williams will put his slides into the hands of any and all histologists possible before he reads his paper, thus giving them a chance to prove or disprove his claims. Nothing could be fairer.

Thirty-one years seems a good while ago, but we remember very well the formation of the Odontological. It has had a most interesting history, and taken all in all we do not think any other society
can make a better showing. As it has been, so it should continue to be a representative body of greater usefulness than ever.

We do not quite understand the real purpose set forth in the coming meeting, but it is becoming apparent that if we are to take advanced ground there must be more unity than has been heretofore manifested. A national organization which can come up to the standard of the age will have to pull together intellectually and financially. More plans have been projected, and we think it due to the pride of professional aspirations that they be attempted.

Dr. Head of Philadelphia displayed his articles of vertu before the November meeting of the Odontological, following with a paper. He showed decided skill in his clinic, placing a corner on a superior central incisor. A large attendance gave full approval, and if all could obtain the same results as Dr. Head has done, porcelain filling would be a success. His use of very thin and exceedingly soft platinum proved its value as a matrix. A thickness of from one-thousandth to three-thousandths of an inch could be secured, and the toughness and ability of platinum to stand any amount of heat made it more valuable than any other metal.

Dr. Littig advocated placing the body partly in the matrix, and while it was in position in the cavity by pressure with spunk or paper forcing out all the moisture possible. This facilitates the removal of matrix from cavity and seems a good idea.

Something new is an ethereal solution of cocaine for obtunding sensitive dentin. It has just been put on the market by McKesson & Robbins, and operates by thermal action and very rapidly. Many of the most progressive men in New York highly commend it.

We learn that Dr. C. D. Cook of Brooklyn, father-in-law of Charles Tomes of London, is seriously ill with typhoid pneumonia. Dr. Cook has been one of our best known dentists for nearly a half century, and all will hope for his speedy recovery.

Cordially,

New York.

BALTIMORE LETTER.

Dear Digest: Baltimore, November 19, 1898.

In a recent conversation the editor of a dental monthly gave his reasons for having criticized those who write under assumed names. As a class the editors of our journals are bright, entertaining and clever men; they do much to mold opinion and create sentiment
among our professional brethren; they are entitled to no little respect for their ardor and enthusiasm, and this we cheerfully accord them.

However, when a man assumes the editorial function of a journal which is published by a corporation, great or small, his dealings with that corporation must conform to certain definite and fixed regulations; he must of necessity become a party to a contract, because all business is done that way; his identity is as distinct as that of the publishers; his successful conduct of the journal evidences his fitness for the place, brings credit and shekels to the company, and incidentally extends and enlarges the scope of the editor’s influence. His relations with his partners, the publishers, cannot be overlooked, and must for all time involve those who subscribe for and read his journal, even though he has carte blanche.

It is not strange that men of the most independent mold, of superior judgment and good taste, grow to look at things professional through this business contract. What fool would tear down the house in which he lives, unless to build a better? And certainly no suicidal mania has prevailed among our dental editors of late. Indeed it would be a thing quite unnatural, and disturbing to one’s sense of the fitness of things, to see a vigorous editorial in a dental journal condemning the publishers or antagonizing the publishers’ interests.

Thus it is that the corners are rounded off of what is written, abuses are palliated or overlooked, subscribers and advertisers are everywhere placated or smoothed down. Perfume and incense alone escape from the editor’s cozy corner, the approaching millennium is crowded to the forefront, while the smile of the successful salesman wreathes the editor’s handsome face.

This is all very pretty and we don’t find fault with it; indeed, we think the world is better and happier in spells when it is led to forget the sin of Adam and the vices of his descendants. But if there is to be real progress there must be seasons of investigation of a sort not provoked by optimistic editorials. Attention must be called to abuses, so that they may be corrected. It seems to the writer that an impetus in this direction can best be given by a wind that bloweth where it listeth, or by a little bird that tells its story and then is nobody. What man so vain or self-opinionated as to think that he could in his professional capacity undertake to regulate even the
dental community in which he lives; yet, in the capacity of a modest little bird he can point out the ideal and condemn the vicious, without even for a moment entertaining the idea that in his ordinary associations he has any right to pose as anything but a very plain and humble member of his profession.

Then again, we would like to ask our friend, the editor, if precedent has not established a license for writing under a nom de plume? Have not our ablest writers, most sensitive, high-toned and best men resorted to this practice in all ages? Have not reforms, social and political, been the result of such efforts? Much of course depends upon the motive; and when it can justly be said that Oriole's letters are written to gratify private ambition, to indulge in expressions of personal animosity or unfriendliness, or to further in any way his individual interests, then will the writer discard Oriole and appear in person with his explanation.

By the way, it is not a little amusing what wide guesses are made as to Oriole's identity. A friend tells us that he has received several letters and been personally charged with being Oriole. Another says that his writings have been submitted to experts and compared with Oriole's letters to prove his responsibility, and worst of all, the experts were certain 'twas he. Ha-ha! guess again.

In our last letter we hinted at an error which some of our friends have allowed themselves to be enticed into; it is this. A certain patent medicine company, seeking the endorsement and recommendation of the dentists, conceived the idea that if the dentists themselves had an interest in the profits of the concern manufacturing the secret preparation they would more unfailingly recommend it to their patients. The agent of the concern was therefore sent through this section with blocks of stock, to be sold or given away to the dentists in proportion to their ability to recommend the nostrum. And who would have thought it? Instead of kicking the representative out of their offices, many of our best-known men accepted the stock. The list of names was exhibited to Oriole with much pride by the peddler and was sorrowfully scanned. Washington, too, was well represented. We would like some of these men to say publicly whether they are willing to have their clients know that they have a business interest in this preparation; that they don't know anything of its manufacture or of what it is composed, or in what proportions, but they are assured by the manufacturers that it
is good for all dental ills. As a rule, men of our profession are the most gullible creatures on the face of the earth; in the words of a canvasser, given to me in confidence: "They are easy meat." Take Oriole's advice: don't receive as a present or buy any stock that is offered in this way. Put your money in a savings bank until the pile is large enough for legitimate investment; and don't accept presents that will involve you in dishonor.

Our board of examiners is in session and from reports are laboriously brushing up on what is taught in the colleges. We think if the present board should be retained for ten or twelve years they would be well qualified for their duties. "Civil service" should be practiced here; a green man who is unaccustomed to study and teaching ought not to examine students. Then we don't like the idea of holding the examinations in the dental colleges. The fees are ample; let the examiners hire a hall and not involve their work with the colleges or college men.

Cordially, Oriole.

DANGERS OF THE NASAL DOUCHE.—Lichtwitz deprecates the routine prescription of the nasal douche in all cases of hypersecretion of the nasal mucous membrane. Irrigation is called for only when the nasal fossa require clearing of pus and crusts, for instance in idiopathic ozena. This affection is mainly limited to the nasal fossa properly so called, and irrigation is in such a case the most fitting form of procedure. An ordinary syringe or enema syringe with suitable nozzle should be used. In all other nasal affections irrigation is inadequate or useless; it is even dangerous. Repeated flooding of the mucous membrane may give rise to olfactory lesions. Antiseptics are highly injurious and pure water is badly borne; the physiologic solutions of sodium chlorid, sodium bicarbonate or sodium sulph. are the only harmless liquids. In numerous cases irrigation has caused the sense of smell to be temporarily or permanently diminished or lost. Distressing frontal or occipital headache may result, owing to the liquid passing into the sinuses. The injection of irritating liquids may even set up inflammation of these cavities. The most skillful and careful irrigation is insufficient in many cases to prevent the resulting headache. A very grave complication is the penetration of the liquid into the middle ear, suppurating otitis media occasioned by supervening. In acute coryza, especially in children, douching should never be practiced. In one such case known to the author mastoiditis followed irrigation of the nasal cavities. The predisposition to otitis is increased after retromental operations, in particular after ablation of adenoid vegetations. For eight years the author has given up all irrigation after pharyngo-tonsillectomy, and during that period has met with no case of post-operative complication.—British Medical Journal.
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Editorial.

PROFESSIONAL VERSUS COMMERCIAL ASPECT OF DENTISTRY.

The question of a higher standard of education for those entering our profession has been under constant discussion for years, and this agitation has compelled the College Faculties' Association to effect reforms of various kinds which have been steps towards increasing the requirements, but some more radical move is now needed.

There is, however, another element predominating in the profession at this time which is quite as dangerous as ignorance—the commercial aspect, and on account of this being so prominent the professional aspect is almost smothered in everyday practice. The question of how to get hold of money is so prominent in the minds and actions that all other features are lost sight of. On this account, when the patient presents himself the first consideration is, how can the greatest amount of money be secured? When as a matter of fact the first consideration should always be, what is for the best interests of the patient?

We believe this principle is so often lost sight of nowadays that the profession is constantly being brought into disrepute, and in the long run the operator is the loser both in manhood and financially.

This does not end here. The desire to acquire money leads individual practitioners to adopt many questionable methods for the sake of securing business, so that they often lose sight of propriety and the proper treatment and rights of their competitors. The strictly professional man must therefore view the existing conditions with many misgivings for our future standing, for it cannot be denied that as a profession we are on the downward grade. This demoralization is far-reaching, and to get at the remedy we must first seek for the causes.

The first question which we will consider here is the extreme poverty of a majority of the dentists in the United States, and from this
from standpoint the dental profession as a whole is a pitiable object. With here and there an exception the individual dentist is without accumulation of property, and in many cases is in debt and unable to meet promised obligations, not knowing from month to month where the money is to come from for current expenses. We believe this description not overdrawn, and if true, think how demoralizing and detrimental such a state of affairs is to real success, causing as it must a warping of judgment, hindering proper management of the case in hand, and too often leading to questionable methods.

Admitting that the depression in all lines of business during the last five years has lessened the income of the dentist as much as that of any other class, and has had much to do with increasing the impoverished condition of the profession; and granting that the improvement in business will to some extent remedy this, back and independent of it all are conditions which are detrimental and must keep us as a body impecunious. In the first place the expenses of the dentist are out of all proportion to his income, but we cannot discuss this feature here in detail. Our next proposition is that there are more practitioners than can secure such remuneration as good dental services deserve, and this overcrowding is on the increase.

Each spring when the classes are graduated and given diplomas authorizing them to practice, the blunt reality of earning a living confronts them. Most students have in the three years' course spent all they had accumulated, and in many instances have borrowed the necessary funds to meet the expense of their college course, so that the question "what next?" must be settled speedily. Having located in a good town, which however is full of dentists—in fact it has seemed impossible to find a location where the demands were not already fully supplied—the next thing is how to get patronage. Since much time has been spent in the college clinics observing methods of practice, the plan of conducting the infirmary has been noted, and it is but natural that the graduates should adopt similar methods, even though such sometimes are not on the most dignified and highest professional plane, and in a private practice would be termed quackery. Is it any great wonder that each year a larger proportion of the profession are adopting commercial methods instead of professional? And is it strange that a discussion of the question whether we are a profession or a trade is being forced upon us?
We have briefly described a condition which cannot be disputed. It would be much pleasanter to draw a different picture—one of a truly professional body—but this cannot be done, for not more than one-fourth of those practicing dentistry can be called a part of the profession or are known in it, and three-fourths are entire strangers to the other fourth and the work they are doing. A great reform is needed, and from whence will it come? Not, we fear, through the present Faculties' Association, for there are so many schools now in existence that large classes are too important a factor, since most of the institutions are dependent upon matriculation fees and infirmary receipts for their financial support. Consequently, half the students admitted are totally unfit to enter a profession, not having the proper qualifications and caring for little but to get their diplomas. And when graduated it is safe to say no member of the faculty would think of allowing his family or anyone in whom he was much interested to fall into their hands for service.

This is a brief description of the conditions existing in most of the colleges in the Faculties' Association, yet individuals connected with this organization retort when criticised, saying how much they have advanced the standing of the dental profession, improved the facilities for teaching, and made a three years' course necessary instead of two, etc. All this would be well and beneficial if they had the proper kind of material to work with, but with students who are totally unfit in the classes, the sin is greater because another wrong is done to the incompetent ones, since another fee is taken from them and they waste their time and money for another year.

A great injury is also done those who patronize the college infirmaries and pay for the kind of service which must be rendered by such students. In spite of all this, when any suggestion or criticism is offered these same colleges insist that no one except themselves is competent to judge of their doings or of their graduates.

The National Association of Dental Examiners should be so composed and organized as to render great service in abating the evil, but for various reasons it has not as yet been able to accomplish what is needed. In the meantime the Faculties' Association with a great amount of self-praise adopts resolutions of reform as to qualifications for admission, which it was said would head off the examiners. But when taking a broad view of what reforms are needed, a perusal of these resolutions merely shows how utterly inadequate
they are. Therefore, we make this prediction, that if the colleges
do not the profession will stop this abuse; and if the Examiners'
Association is not competent by reason of "political appointment"
or any other cause, the National Dental Association must step in
and take the matter in hand.

That a change must soon be brought about is evident, and it is
important that the matter be well considered. It seems to us that a
reform must come from some educational institutions, either now in
existence or to be formed for that purpose. Who will take the
initiative by admitting only students who are qualified to practice
this profession? Surely such institutions would receive the support
and influence of the leading men of the profession.

ANATOMY AND HISTOLOGY OF THE MOUTH AND
TEETH. By I. Norman Broomell, D.D.S., Professor of Dental
Anatomy, Dental Histology, and Prosthetic Technics in the
Pennsylvania College of Dental Surgery, Philadelphia. Pub-
lished by P. Blackiston's Son & Co., 1012 Walnut St., Phila-

This is a remarkably timely and valuable publication. The
growth and appearance of this work has been of especial interest,
for seldom has there been a book presented to the dental profession
which contains so much of vital interest to every medical prac-
titioner.

It is rarely indeed that a book so replete with original matter
can find a publisher who is willing to risk the outlay essential to the
proper presentation of ideas which need to be carefully studied in
order to be fully understood and appreciated. This publication in
its manufacture certainly does great credit to those who have had
the care and preparation of illustrations, paper and printing, for
they are certainly all worthy of the text, and to say this is high
commendation. Of the 284 illustrations a large proportion are
original, and those which are duplicates of previous publications
are described in detail with such novelty and clearness as to class
them with the original work.

In chapters I, II and III, where the osseous and muscular
structures of the mouth are under consideration, never before has
such effort been made for the student's benefit as is illustrated in
the detailed description of each particular part or tissue; indeed,
nothing has been left undone that could add to the ease of the learner
in acquiring a knowledge of the parts studied. In the following
five chapters devoted to a description of the deciduous and perma-
nent teeth, the same care, accuracy and minuteness of detail are
observed as in the previous chapters, so that the individuality of
the tooth, as well as its morphology, can be readily acquired, while
the great care in selection of illustrations makes the study of the
blood and nerve supply of the teeth a pleasant pastime for the
ordinary student. The gums, mucous membrane, alveolo-dental
periosteum, glands, ducts, etc., all receive their deserved attention.

Of chapter XII, pages 281-323, nothing is risked in stating that
nearly all the illustrations are original. In this we have the result
of months of painstaking work and careful and close observation.
Never before have the tooth follicles been opened, and tooth-sacs
and germs, calcified and non-calcified, of the deciduous and perma-
nent teeth been lifted bodily from their moorings and exposed to
view. It is impossible to appreciate the care essential to this work
unless one has attempted to perform it. If the author had done
nothing more than is embraced in this chapter, he would have
earned the gratitude of every dental student and given the profession
a book of incalculable value for the knowledge so beautifully illus-
trated herein.

In the twelfth chapter lies the especial value of the work to the
medical practitioner, and such instruction cannot be received in a
medical school, for no one but a specialist in this science could have
the patience to perform the work.

The five chapters under histology which close the labors of the
author are noteworthy for the beautiful illustrations and accom-
panying description of each, which so greatly enhances the student's
interest in the study of an intricate subject.

The many dental histologists who have attempted to give us the
origin, evolution, morphology and function of the tooth tissues have
not had an easy task. The present effort not only gives us a con-
census of some of the previous writers' views, but adds Dr. Broo-
mell's own experience in microscopy to what has previously been
written, thereby making an ideal book for the dental student and
the practitioner as well.  

C. N. Peirce.
NOTICES.

Notices.

SOUTHERN KANSAS DENTAL ASSOCIATION.
The annual meeting of the Southern Kansas Dental Association will be held in Wichita, December 27-29, 1898, and the profession in this and neighboring states are cordially invited to be present. U. S. Hougland, Sec'y.

EASTERN IOWA DENTAL SOCIETY.
The tenth annual convention of this society adjourned Nov. 16, 1898, after a well attended and profitable session. The officers elected for 1899 are: President, R. S. Bandy, Tipton; Vice-President, I. S. Mahan, LaPorte City; Secretary, T. A. Gormley, Mt. Vernon; Treasurer, J. B. Pherrin, Central City.

SOUTHWEST IOWA DENTAL ASSOCIATION.
At the meeting of this association held in Creston, Iowa, October 18 and 19, the following officers were elected for the ensuing year: President, M. F. Stever, Creston; Vice-President, J. W. Manker, Red Oak; Secretary, F. S. Schadel, Red Oak; Treasurer, S. Cranton, Corning. The next meeting will be held in Corning, June, 1899.

NEW HAMPSHIRE STATE DENTAL ASSOCIATION.
One of the most successful meetings in the history of this society was held November 1-3, 1898. The following officers were elected for the ensuing year: President, F. H. Brown, Lebanon; Vice-President, C. L. True, Tilton; Secretary, F. F. Fisher, Manchester; Treasurer, G. A. Young, Concord; Librarian, H. S. Mackey, Conway. Executive Committee, L. S. Moulton, Concord; E. F. Bibber, Newmarket; W. F. Slack, Northwood.

NATIONAL SCHOOL OF DENTAL TECHNICS.
The annual meeting of this organization will be held December 28 and 29, 1898, in the club rooms of the Grand Hotel, Cincinnati, Ohio. The meeting will be opened with the address of Dr. G. V. Black, and the partial program is as follows: "Value of a Graded School of Study in Uniformity among Dental Schools;" reports of Syllabi Committees; "Operative Technics," by T. E. Weeks; "Prosthetic Technics," by N. S. Hoff; Symposium of teaching methods, W. H. Whitslar, C. M. Wright and H. H. Burchard; "Steel Technics," by G. H. Wilson; "Teaching Cavity Preparation," by C. N. Johnson. Master of Exhibits, Grant Molyneaux. Discussion of the papers will be opened by prominent instructors, and it is hoped that all interested in the newer methods of teaching in dental schools will be present. A profitable time is promised, and the exhibits of class work will be interesting. The profession is cordially invited to attend.

D. M. Cattell, Sec'y and Treas., Stewart Bldg., Chicago.
NEW YORK ODONTOLOGICAL SOCIETY.

The New York Odontological Society will celebrate its thirty-first anniversary on Tuesday, January 17, 1899. On this occasion the society will hold an afternoon and evening meeting, and Dr. J. Leon Williams of London will read a paper at each session. Afternoon paper, "On Certain Controversial Questions and Unsolved Problems in Dental Histology and Pathology." A criticism of the recent paper on the structure of enamel, by Dr. Otto Waldkoff. Further researches on enamel structure, with a critical review of the paper on tubular enamels, recently presented before The Royal Society of Great Britain, by Mr. Chas. S. Tomes, F.R.S. An examination of the forms of acid-forming bacteria found attached to the approximal surfaces of the teeth. A brief review of the work of Dr. Filandro Vicentini on the fructification of leptoithrix buccalis, illustrated by numerous photographs.

Evening paper, "Which Shall It Be, the Scientific or the Empirical Method?" An examination of the present scientific status of the dental profession of America, as shown by its recent literature. The results not altogether flattering. Indifference towards scientific research. The empirical spirit and method. The scientific spirit and method. Are we to have a trade or profession? The question not yet decided. The duty of the colleges. The duty of the societies. The duty of the individuals. The question of patents and secret preparations. The French Academy of Medicine. A plea for the formation of a new national organization, with an established fund and state branches, whose function it shall be to promote original research, and all scientific work connected with the profession, and to examine and pass judgment upon all inventions, formulas for remedies, etc. Such an organization, if properly formed and managed, is certain to prove a wonderful stimulus to progress in all directions, and at a single blow to destroy quack remedies and useless inventions. An advance of twenty years at a single step. The unification of the state laws regulating practice. Shall we go forward or backward? The executive committee: B. C. Nash, F. T. VanWoert. W. W. Walker, Chm., 58 West 50th st., New York City.

LATEST DENTAL PATENTS.

612,081. Spraying device, Russell B. Williamson, Clifton Springs, N. Y.
612,106. Pasteurizing apparatus, Adelbert D. Hill, Stanton, Minn.
612,158. Continuous hot-air syringe and vaporizer, Martin L. Cooper, Modesto, Cal.
612,295. Inhaler, Marvin E. Woodling, Minneapolis.
612,724. Thermal dilator, Jonathan R. Hamilton, assignor to C. S. Emery and A. J. Marks, Toledo, O.
NEWS SUMMARY.

612,760. Surgical chair, Edward J. Wells, assignor to Taylor-Wells Co., Morristown, Tenn.


613,222. Atomizer, Charles M. Blackman, New York City.


613,772. Dental articulator, John W. Moffitt, Philadelphia.


613,902. Dental engine, Martin H. Hopper, Minden, Neb.


613,947. Dental matrix retainer, Joseph M. Strout, Portland, Me.

DETAILED DESCRIPTIONS:


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News Summary.

Dr. Clarence L. Bisbee, a dentist of Brooklyn, died Nov. 10.

Dr. Chas. Goller had his eye blown out Nov. 16, by the explosion of a vulcanizer, and died from the injury.

Dr. B. F. Jacoby, a wealthy retired dentist, died suddenly of heart disease Nov. 5, 1898, aged 60 years.

Dr. T. M. McDonald, a dentist of Hamilton, Mo., died Nov. 3, 1898, of typhoid fever. He graduated from a Kansas City dental college in 1897.

Dr. Wm. P. Sensibaugh, a dentist of Port Byron, Ill., is in a serious physical condition as the result of pranks played upon him while being initiated into a fraternal insurance lodge.

FINED FOR VIOLATING LAW.—A. O. Oberlin pleaded guilty to the illegal practice of dentistry, having failed to comply with the state law. He was fined $40 in Beloit, Wis., Nov. 1, 1898.

CANCROM ORIS.—This is now fortunately a rarely seen form of gangrene. In its treatment fuming nitric acid was found superior to carbolic from the outset —MacMasters, Australasian Medical Gazette.

RUBBER CEMENTS.—(1) Gutta-percha, 2; caoutchouc, 4; fish glue, 1; carbon disulphid, 26. (2) Dissolve caoutchouc, 9, in chloroform, 60, and add powdered mastic, 15.—Zeit. d. allg. oest. Apoth. Ver., lxxii, 442.

ELECTRIC SHOCK.—This must be treated as promptly as possible, and not only with artificial respiration, but with faradization of respiratory nerves, phrenicus, vagus and spinal nerves.—Munich Med. Woch., July 19.

NO DISCRIMINATION AGAINST GRADUATES.—The Senate has recently passed a resolution preventing discrimination against graduates of legally chartered medical colleges in appointments to the medical calls of army, navy and marine hospital service.
Chicagoleans Grit Their Teeth.—A Chicago dentist says that the people of this city wear their teeth out by grinding them, through nervousness and the intense mental strain under which inhabitants of this busy city labor.

Dr. Cass Babcock, for many years one of the prominent dentists of Milwaukee, died Oct. 4, 1898, in New York State. He was a brother of Dr. Charles Babcock, of Milwaukee, and had been associated with Dr. Holbrook.

The Latest in Patents.—A Brazilian has patented an artificial tooth which is hollow, and has a valve in one side through which the air is exhausted to cause the tooth to grip the jaw, after the tooth has been fitted to the gum.

Teeth of Canadian Children.—The trustees of the public school board at their November meeting discussed the poor teeth of pupils and proper remedies for the same. Immediate action was thought to be necessary and some steps will be taken at once to better the existing conditions.

In Removing Plaster from the hands after the application of plaster casts, it would be well to remember the fact that syrup of lime is the strongest solution, and that the application of a little sugar to the hands will greatly assist you. The same rule applies to the removal of casts.—Ga. Jour. of Med. and Sur.

Lard an Antidote to Strychnin.—Dr. W. D. Turner relates some original experiments, proving that common lard is a perfect antidote to strychnin. He gives the lard freely by the mouth—ten to twenty ounces. It finds it marvelously effective, even when administered after the convulsions have begun.—Virginia Medical Semi-Monthly.

Use for Microbes.—A German dentist, Dr. Herz, proposes to put microbes into our mouths. His discovery consists of an inoculant prepared from microbes he cultivates for the purpose. When applied to a decayed tooth it stops the pain, but does not devitalize the pulp; furthermore, it makes it possible to put in a permanent filling—so he says.

Gould’s Pocket Pronouncing Medical Dictionary.—We have received the latest copy of this little book and find it much improved in every respect. The 21,000 most common medical terms are specially defined and pronounced, and the book will be found very convenient to physicians and students. Price, $1.00. P. Blakiston’s Son & Co., Publishers, Philadelphia.

Albumen artificially made out of certain coal-tar waste products has been discovered by Dr. Lilienfeld, of Vienna. He claims that it has all the properties of peptone, and that by means of it one can obtain albumen in sufficient quantity to support life at an expenditure of about eight cents a day. It occurs in the form of a brown powder and has a taste resembling egg-albumen.

Transplantation of Stenson’s Duct.—In a case of recurring fistula Goris opened up the duct from the starting point to its termination in the mouth, which he detached from all adherences, excising all the surrounding connecting tissue. He then fastened it with a couple of stitches behind its natural location; endermic suture of the cutaneous incision. Recovery was prompt and by first intention.—Presse Med., Sept. 3.
NEWS SUMMARY.

DEATH FROM GERMS IN COTTON.—Death caused by blood-poisoning from germs in cotton placed to stop hemorrhage in a wound made by the removal of teeth, is held, in Kasten vs. Interstate Casualty Company, 40 Wis. L.R.A., 651, to be within a condition of an accident policy denying liability for injuries resulting "wholly or in part from poison or anything accidentally or otherwise taken, administered, absorbed or inhaled."

DR. S. L. EDWARDS, a well-known dentist of Des Moines, Iowa, died Nov. 5, 1898, aged 71 years. He was born in Brattleboro, Vt. March 13, 1827, and after completing his college course began the study of dentistry in 1858, and soon after took up the practice of the profession which he followed until a short time before his death. He was a charter member of the Illinois State Dental Society and a prominent member of his own state society, and while of a retiring disposition, was always looking to the betterment of his profession and society in general.

DR. S. B. BARTHOLEMEW, a well-known dentist of Springfield, Mass., died Nov. 11, aged 70 years, from Bright's disease. He was born near Hamilton, N. Y., in September, 1828, and was educated at Colgate University. He practiced dentistry in Rhode Island, served as captain in a regiment during the civil war, and edited the Worcester Gazette for some years after the war. In 1872 he came to Springfield and practiced his profession until three years ago, when he retired. He was active in public and professional work and at one time a lecturer at the Baltimore Dental College.

HEMOSTASIS WITH GELATIN.—All the inconveniences of tampons and the dangers of renewing the hemorrhage when they are renewed, after ablation of tumors of the nose, are avoided by dropping a little 1 per cent gelatinized water from a syringe on the pedicle of the tumor after the first severest gush has been arrested by compression. The clot forms almost instantaneously. Every time the blood appears, check it afresh with the gelatin, warning the patient not to blow his nose, and to stay in bed twenty-four hours, and instill gelatinized or oxygenated water every two hours.—_Semaine Med., Sept. 14._

VALUE OF CHLOROFORM.—Professor Simpson is said to have obtained his first hint about chloroform from Mr. Waldie, a chemist and bookseller at Linlithgow. One day Mr. Waldie happened to have some of the liquid in a saucer when a gentleman entered the shop with a little dog. The chloroform was placed upon the ground to be out of the way, and presently the dog was discovered lying by the side of the saucer unconscious and apparently dead. After a time the dog regained consciousness. Mr. Waldie began to think he had made a discovery, and after some experiments with cats, with the same result, he interviewed Professor Simpson.—_People's Friend; Eng._

HOT AIR AS A HEMOSTATIC.—The jet of hot air from a Hollander apparatus directed upon the bleeding surface of a kidney, liver or severed blood-vessel, will arrest the hemorrhage by the formation of an eschar commencing around the edges and gradually spreading over the entire surface, mechanically checking the flow, in experiments on animals, and Schneider concludes that it would be equally effective on man. The heat is only 39 degrees at 5 mm. from the apparatus, and hence is not sufficient to injure the organ. He
found steam less effective, and less convenient, for several reasons, masking the field of operation, etc.—Semaine Med., Aug. 3.

Protection Afforded by the Organs.—The Presse Med. of June 15 contains the report of experiments by H. Roger, who injected 163 rabbits and 16 guinea pigs with various microbes at five different points in the circulation, to study the protection afforded by the liver and other organs. He found that the microbes are always arrested in the first capillary network they encounter and that the liver disposes of the anthrax, staphylococcus aureus and oidi introduced into the portal vein, so that they disappear and none can be found after a brief interval, but the reverse is the case with streptococcus and coli bacillus, which seem to find the liver a favorable soil and flourish in it, producing extensive lesions. The lung opposes a feeble resistance to the anthrax staphylococcus aureus and oidi, but has a marked bactericidal effect on the streptococcus, although not beyond the limit of neutralizing a fatal dose. The kidney disposes of the oidium albicans.

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FULL PORCELAIN CROWN WITHOUT A PEER.

By B. J. Cigrand, D.D.S., Chicago. Read Before the Missouri State Dental Association, at St. Louis, July 5-8, 1898.

It is a deplorable fact that too frequently the lateral or the first bicuspids, or the first bicuspid roots are extracted and a tooth supplied by some system of bridge-work, as it is generally called, cutting down the sound adjoining teeth, collaring them with gold, when it was within the art of 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 concord with physiological laws.

Nature scorns to be tied up or confined, and the present systems of bridge-work, with their yokes of gold chaining and enslaving one tooth to the other, are contrary to nature and work ill results, more especially when the load is unbearably large, as in cases with a mammoth attachment carrying five and even six artificial teeth upon two natural roots. How preeminently better to save the roots of such laterals and bicuspids and build them up, and give nature the right to ask assistance when occasion demands, and let her return the compliment at favorable opportunities.

The individual tooth as nature supplies it is free from immediate support, the neighboring teeth approximate but are in no sense attached; they lend one another strength in that they are positioned in an arch which demands that at the contact point each tooth shall touch its immediate neighbor, and the teeth are so arranged that a strain that falls on any tooth of either half of the superior or inferior dental arch is communicated to the several teeth on that side of the jaw and thus the major strain is broken.

In some mouths there is considerable space between the dental organs, and their approximate surfaces do not come in contact, and in these mouths the alveolar ridge and the maxillary bones are so well developed as to hold the isolated teeth firmly in position. But
the teeth as generally found by us, and as they normally ought to be, are slightly in touch, yet each as independent of neighbors in functional character as though the masticating apparatus consisted of but a single superior and two inferior teeth, or vice versa. To avoid employing assembled crown-work in every instance possible, and to insert individual crowns instead, should be the earnest and indefatigable effort of every member of our profession.

The intradental band, as I have chosen to call this method of restoring and strengthening roots which are about to carry full or partial artificial crowns, can be employed to good advantage in many of the prosthetic appliances; and though I shall mention in this paper only one of the more important uses which it has, it shall be my real purpose to confine myself to its use in connection with full porcelain crowns.

The band, as its name implies, is placed in the tooth substance immediately within the gingival circumference, and in partial crown-work at a point midway between the cusps and the cervical portion of the tooth. The width of the band depends entirely on what process of dental retention is desired, but in most cases it is seldom more than an eighth of an inch wide and about 30 gauge, made of gold or iridio-platinum. The band in all instances is anchored in the root by means of cement and need not necessarily form a part of the crown proper, but may be set independently of the latter.

The instruments for accomplishing these results are simple and their application is readily understood. The set consists of two trephines of sizes usually desired for banding the anterior ten teeth, and a gauge-mandrel which has two stumps the exact complements of the trephines. If it is intended to band a root the size of the large trephine, the gauge-mandrel indicates on its side nearest the large stump the exact size of the gold necessary to fit the selected trephine. The trephine is so constructed that the face of it is slightly larger than its body; this allows the instrument to cut without pinching. It has two large slots in its circumference, which admit of the steel yielding in the event of uncertain leverage. The teeth of the trephine are modeled after those of the log-circular saw, and the small grooves leading from the teeth permit the sawed dust to escape without clogging the instrument. It requires but a few revolutions of the trephine to effect a perfect intradental groove.
In setting the Logan with an intradental band, the first step is to grind off the remaining portions of the natural crown, as shown in Fig. 1. Some operators advocate the use of the bur in shaping and trimming down the joint-portion of the root, but it has been my experience that the corundum wheel produces a smoother surface and is not so apt to spring from the border of the root. The wheel must be narrow and of sufficient circumference to allow easy access to the root without liability of interference with the adjoining teeth. Grind the root in such a manner as to describe a concave surface, the concavity being at the labial and lingual points, while its mesial and distal margins present an elevated edge, as in Fig. 9. The tooth by this method is left with firm walls at the point where the strain is greatest and most likely to fracture. By thus shaping the
root-end you have not materially weakened the root, and you have made it possible to easily adjust and fit the Logan crown, the latter being beveled from the platinum posts. The corundum wheels can be used to good advantage in grinding away such portions as interfere with producing a perfect fit, Figs. 3 and 4. The inverted cone corundum wheels are very handy for trimming the Logan, as all parts of the margin can be reached without coming in contact with the post. When a large wheel, as Fig. 2, is used to accomplish this result, the stone impinges on the post and often grinds it so much as to impair its strength considerably.

There are many operators who tell us that the proper manner in which to get strength and endurance from the Logan crown is to shape it like a cheveron or roof, necessitating a counter shape to the Logan and insuring the latter from rotation, as Fig. 5. Many of our present-day text-books advocate this method, claiming that crowns which are set in this manner cannot possibly loosen. In Evans' book on crown and bridge-work we find my Fig. 8 on page 66 (in his work it is Fig. 123), and he describes it in these terms: "The obvious advantages of the device are the readiness with which the slopes of the root-end may be shaped with a file; the facility with which these slopes may be given any angle to set the crown out or in at the base, or at the cutting edge, or to give it a twist at its axis; the certainty that once adjusted the final setting will exactly reproduce the adjustment; the assurance that in use the crown will not be turned on its axis—a most common cause of the loosening of artificial crowns."

Now this reads very well and the pictorial side of the operation is excellent, but when you apply it in daily practice and observe where the strain lies in mastication, and you carefully study the outline of the porcelain tooth as pictured in Fig. 8, you will soon comprehend that this method is very faulty and exceedingly difficult to enforce in our practice. In the first place we have learned from sad experience that porcelain is strong only when in bulk, and when it is employed in a thin veneer it does not endure. When the crown is constructed as cited the lingual portion is very frail, and after grinding it out at the approximate surface, as shown in Fig. 6, the crown has a split or bifurcated appearance, and has been weakened decidedly. The comment made by Dr. Evans holds true in reference to the method advocated in Figs. 7 and 9, and when the
root is thus prepared and the crown fashioned accordingly, you have a perfect fit and a strong crown.

In order to get the best results from the Logan and afford greater strength to the root I have found it good practice to follow the advice given by Dr. Ottolengui. After describing how he reams out the pulp-canal in Fig. 11, he adds: "A Logan crown may then be ground and adjusted on the root-end and at the same time the crown-post be fitted into the canal so tightly that, independent of the cement, the crown will have a firm hold on the root." This method of sparing root structure and giving additional anchorage to the metal post gains the approval of all who recognize the principle of force in mastication. Too many operators drill or ream out too freely from the canal and leave a thin wall of tooth substance to carry the great strain and leverage of the Logan post. Fig. 10 clearly illustrates the general practice which prevails in anchoring the Logan crown. A moment's reflection will convince you of the shortcomings of the method.

In using the Ottolengui canal-reamers it is a mistake to employ a large one and produce a large circular opening into the root to receive the Logan post. Choose a small reamer, and by giving it an antero-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 allows the Logan post to tightly hug the walls of the root-canal and thus afford additional anchorage to the crown.

It is evident that a crown set as here 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.

After having given the root this special shape, grind and adjust the Logan crown to the root. Then select the proper-sized trephine, place same in the handpiece, and with a few rapid revolutions of the trephine the intradental groove is produced. Now make a gold band complementing the respective trephine-stump on the gauge-mandrel,
and after soldering the band and trimming off the rough portions you are ready to set the band with cement. But before setting same it is well to put a plug of cotton in the root-canal to prevent the cement, while attaching the band, from filling up the canal. Mix the cement to creamy consistency, add cement to the two surfaces of the band, and register it over the trephine groove, then press it home. Let the cement thoroughly set, and with corundum stone grind the band even with the trimmed face of the root.

The next step in setting the Logan, so as to attain enduring success, is of great importance and must be carefully executed. Place a sparing amount of oxyphosphate on the post-portion of the Logan and paint the joint-ends of the porcelain with a film of chloro-rubber, the latter being produced by adding chloroform to red rubber in a sufficient quantity to make a thick paint. Having thus prepared the Logan, and having protected the root from moisture, insert the post and gradually bring the Logan into the desired position. I frequently employ instead of the chloro-rubber a thin band of gutta-percha, heating the crown with the latter and then applying the requisite cement. This method has been advocated by many operators, and it has been shown that gutta-percha has all the properties necessary to withstand the action of the acids of the mouth, and as a representative agent against caries, even where every other material has proven a failure. I have found that chloro-rubber is fully as good and possibly better for this particular service, in that it can be handled with greater ease and does not become aged so soon.

The earliest reference I have been able to find regarding this method occurs in the *Dental Cosmos* of 1887, p. 749, and reads: "Dr. Richmond usually takes a thin, perforated disk of gutta-percha, pushes the post through it, warms the crown, presses it into place, and when cooled removes the crown, and with a sharp knife trims away the gutta-percha close to the crown-neck. He then warms the crown, puts a very little oxyphosphate cement on the post, and presses the crown home." The journals and text-books have all contained innumerable articles on this process of setting crowns, yet the profession generally seems uninformed on the subject and it is surprising that so few operators employ these agents jointly. I have had excellent results from their use, and during the past three years I have employed chloro-rubber in combination with the cement, and I hope to emphasize the necessity of sheltering the
cement by some agent congenial to the oral tissues and capable of resisting the action of lactic and hydrochloric acid.

It has been advised by some to band the Logan and by this means assist in strengthening and retaining the crown. Fig. 12 is a reproduction of a crown receiving a "circumdental band," and it is unnecessary to call attention to the injurious results accompanying the use of so wide a ferule; and the circumdental band when anchored on a root should receive preparation, as Fig. 13 demonstrates the imperative reason for this step, and when this treatment is discarded the crown will prove a most discouraging failure.

The ferule which all operators now produce to surround the necks of the teeth I have designated as the "circumdental band," such as we have on the Richmond crown. Practitioners have recognized long since that the circumdental band is not an ideal appliance and that it has features which make it undesirable, and among these demerits we chronicle that it obstructs the intradental space; that it impinges on the living tissues; that it is unsightly and contrary to dental esthesia; that it induces pain; that it is easily broken; that it generally affords lodgment for food, and in turn harbors pathogenic organisms.

The dentists who have furnaces for baking porcelain can employ this system of setting a full porcelain crown and produce a dental substitute which will be a perfect representative of the natural tooth. The manner of construction need not be here delineated, as those having the oven for porcelain are well informed as to the process of production. But those who are not thus fortunate can rest assured that the Logan when properly attached will give excellent success.

Discussion. Dr. G. A. Bowman: Accepting a general belief that the Logan is one of the better crowns for anterior teeth, I can readily see how the intradental band can be introduced as a valuable adjunct to it, strengthening it greatly. I quite agree with Dr. Cigrand's analysis of the weak and strong points of posts, for a post should have very little play in the tooth. I have always felt that a banded crown or root was better secured against destructive agencies than one not banded, but when you see so many bands set as they are, we cannot but wish them discarded, for imperfectly fitted bands destroy more teeth than are saved by the crowns. When setting Logan crowns I endeavor to effect as perfect a joint as possible, and to fill up whatever space may be left I employ twenty or thirty
thicknesses of No. 4 soft gold foil, and when it is set burnish perfectly to the margin of the root. The great difficulty of getting the crown and root in perfect alignment, so that there shall be no opening for the lodgment of food and secretions, I think is obviated by a properly fitted band burnished to the root.

Dr. H. S. Lowry; Dr. Cigrand’s method of cutting down the root preparatory to crowning seems insufficient, for I cannot trim a root with a corundum wheel alone and obscure the joint between the crown and root at the anterior cervical margin, nor do I believe he can. I would use an oval or wheel bur for trimming the root at the critical point spoken of before, cutting root beyond the free margin of gum and thus obscuring the joint.

The point about enlarging canal is very good, for it should be made oval and not round. If a round enlargement is made sufficient to admit an oblong-square pin, the lateral walls are rendered unnecessarily thin where they should have the greatest strength, as splitting is liable to occur there.

While the Logan is perhaps the best known to the profession, it is not the ideal crown. The pin should be less flexible and the cervical cup filled with porcelain during the baking to give it additional porcelain body. The Logan is a great root-splitter, simply because it is so easily bent by occlusive force, and if the pin did not bend the root would almost never split. The fulcrum occurring at the peripheral cervical edge, and the point of resistance at the apex of the pin, if the pin bends in the root the point of resistance is removed from the apex to the center or near it, giving the same leverage or splitting force as a pin one-half as long as the Logan. The further the point of resistance is removed from the fulcrum the greater strength you have.

Dr. Cigrand’s use of chloro-vulcanite between the crown and root is very good, but when the chloroform evaporates from the rubber it leaves an undesirable condition of porosity. I prefer the use of liquid gutta-percha first, covering the rim or ring which has been ground into coaptation with the root, and then over this liquid a little string of solid gutta-percha, which if warmed over a spirit lamp will adhere tenaciously to the coating. Then warm the crown, place it in the mouth and press to place. The surplus gutta-percha exudes and should be trimmed away both at the inner and outer edge of the ring.
Dr. M. C. Marshall: The use of these intradental bands with the Logan crown has been discussed by Dr. W. W. Walker, and this is his method of attaching the Logan. He places the band in position, puts the gold over the root, fits it tightly and removes. Then he trims the gold and fits it over the end of the Logan crown, holding tooth against root with the gold. Between the two he uses a wax flux, and has a solid mass of the crown and gold ferrule, which makes a very pretty and strong piece of work.

CATAPHORESIS—MY SUCCESSES AND FAILURES, AND WHY.


The following paper is not an essay on cataphoresis. Enough has been written about the subject to prove to every thinking man that we know precious little about it. When a man claims that every case he has is successful, it is safe to regard him as a mistaken man, or possessed of a very limited practice. No one line of treatment is uniformly successful. If it were, some Yankee would invent a machine for doing the work and the "personal equation" would disappear. If the majority of cases are successful in a given line of procedure, it is good practice to follow that course in the future. It is for the purpose of comparing results with others, and pointing out my own failures, that this paper is presented.

The apparatus I use has a primary battery of 30 Laclede cells. I do not believe that it makes much difference what sort of a current controller you have, so long as it controls. A gentleman recently said that he had discarded cataphoresis entirely, for after using two different outfits—one of which was identical with mine—he had had nothing but failures. I think the failure was in the man and not the method.

You will not be interested in my successes unless you know what is called success. Given a case where, after the dam is applied, the tooth is sensitive to hot or cold air, painful to touch with excavator or bur, and the patient refuses to allow any operation whatever to be performed. Apply the electric current with guaiacocain, 10, 15, 20 minutes, and if you can excavate and are able without trouble to complete the operation, that is success. Absolute insensibility is not necessary; there is a difference between sensation and pain.
If after the application of the current for 30 or 45 minutes the patient still complains of pain on using excavator or bur, that is failure and is so regarded in the statistics upon which this paper is compiled. For removal of pulps, I should not regard 2 hours spent as lost time if the pulp was removed painlessly.

My assistant has tabulated for me 37 cases where the current was used preparatory to filling and 100 where pulps have been removed. In those for filling the average time consumed was $19\frac{2}{3}$ minutes; 32 cases are labeled no pain, 3 are marked slight pain, and 1 failure, where the time consumed was 2 hours, with the full current on for 45 minutes. I cannot account for this failure. The lady, large, healthy, 39 years old, believed me when I told her that it wouldn't hurt, and was not at all nervous about it. The cavity was mesio-occlusal in the right lower first molar and I hurt her cruelly while preparing it. Filled it with gold and it has given no trouble since. This lady's teeth are always sensitive, and I have been her dentist for years but never hurt her so badly before nor since. I wish some one would tell me why I failed in this case. Let me say that the current went where I wanted it to, and didn't get out on the gum nor into the clamp nor the spittoon.

100 cases of removal of the pulp were recorded, 76 of which were painless, 4 reported slight pain, 2 severe pain. In one of the two I perhaps was not so careful as I should have been, and the other was a case of congested pulp in lower right second bicuspid, and I had the current on only 30 minutes. I think from subsequent experience if I had used less current and more time the result would have been better.

Two cases were marked failure. The first of these was a young man 22 years old, pulp congested and almost exposed. Took the whole current for an hour and half, when darkness came to his relief. Next day I applied the current for an hour and removed the pulp without pain and filled roots immediately. The other case was a lady of 20 who had suffered from Friday until Monday with a perfectly sound lower right second molar. Thursday night she went to a dance and got her feet wet. Neuralgic pain in both jaws on right side followed, and being unable to locate trouble she applied to her physician for relief. She called on me Sunday, but referred pain to third tooth. Monday the patient was nearly crazy from pain and loss of sleep, so I applied the current for an hour and managed to
open into pulp-chamber, which contained two pulp-stones. The
pain was great and she refused to have anything more to do with
electricity, so I relieved pain in the inflamed and now exposed pulp
with chloroform, and two days afterward applied arsenic and re-
moved pulp. The intense inflammation and presence of pulp-stones
accounts for the failure, to my mind. This was a sound tooth and I
drilled a hole into the dentin before making any application.

The remaining 16 cases were painful when the broach removed
the pulp, and most of them hurt while the broach was being inserted.
The shortest time was 5 minutes and the longest 2 hours; in both
cases there was no pain. The average time employed was $35\frac{1}{2}$
minutes.

My experience with these cases has been that where pulp-stones
exist there is great difficulty in applying a strong current and it
takes a long time to produce insensitivity. The pulp-stone in
many cases acts like a cork in a bottle and the medicine doesn't seem
to get through to the pulp.

For one gentleman I removed 12 pulps, 10 of which were veritable
stone-quarries, and the current was applied for about 2 hours in
each case; the other two had no pulp-stones, one took 47 minutes
and the other an hour.

Almost every case on my list in which the pulp was congested is
marked "pain," regardless of the time consumed in applying the
current. A very slight current gives pain in these cases and the
patient suffers so much before the medicine gets in its work that I
have come to dread such cases. Whenever possible I open up the
tooth, prick the pulp and deplete the blood-vessels, reducing the
congestion and allaying the pain. When I am able to do this, and
dismiss the patient until the next day, I have little trouble. In
those cases which demand immediate attention, and a congested
pulp is covered with a thick layer of solid dentin, the cataphoric
current has not helped me much. It has seemed to me that I could
get an exposure of the pulp almost as easily and certainly more
quickly without it.

Much depends upon the patient and his ability to take the elec-
trical current, some being unpleasantly affected by a very little,
while others do not mind a large amount, so that each case is a law
unto itself and must be treated as such. While I have not been uni-
formly successful, I think the proportion of successes to failures
justifies me in continuing the practice of using cataphoresis in the removal of pulps and the painless preparation of cavities.

So far I have seen no ill effects resulting from its use in obtundung sensitive dentin. I am fearful of carrying it too far, and prefer giving the patient a little pain in the deeper portions of the cavity, rather than risk possible trouble with the pulp afterward.

**SOME USES OF AMALGAM, PARTICULARLY IN CONNECTION WITH GOLD.**


Patients often ask the dentist: "What do you consider the best filling, gold or amalgam?" Discussions upon that question will be found in the proceedings of nearly every dental society. Our literature, especially that of some years ago, abounds with references to it, and it still is a burning question with every conscientious dentist when he faces some of the cavities in posterior teeth. It is certain that no stereotyped answer of a word or two—such as most of the lay inquirers seek—will do. To answer truly (and I believe in giving my patients as great enlightenment on subjects concerning their welfare as possible), one must enter into something of an explanation. What is best in one case is often far from best in another, and we must remember when deciding upon a fitting material for any particular case, that the dentist's mission is not to make as large a bill for services as he can, nor to see how much gold can be placed in a mouth, but rather to place the teeth in the best possible condition for service for the greatest length of time.

Often a case is presented where I am satisfied that better service can be given with amalgam than could possibly be had with gold. For instance, those buccal cavities in third molars, where by the time one has excavated until a clear, perfect margin is secured, the decay will be found to have straggled round the angle of the tooth and invaded the distal surface. The conditions which usually result in such a cavity are sufficient to preclude the use of dam and clamp, and so limit the time wherein a condition of dryness can be maintained, that in my hands amalgam is for the time king.

You will all agree that a moderately good filling is like a moderately good egg—useless. Therefore it is not wise to use a material when you fear that your skill with it will result in only a mod-
erately good filling. How often has a patient presented to you showing enormous proximal gold fillings ready to fall out on the slightest provocation, with decay all around them. Why is it? Perhaps the cavity was so deep that the dam could not keep it absolutely dry; or possibly the tooth leaned so greatly toward the median line of the mouth that proper condensation of gold along the buccal margin was not accomplished; or the lack of good finish at the cervical margin might have been alone responsible.

Now in a case where I see some such difficulties in the way of an all-gold filling I remember the relation which prudence bears to valor and often resort to a combination of amalgam and gold, using the former for its qualities of easy manipulation, and the latter for its well-known good properties. I proceed in this way: Take for example, a disto-occlusal cavity in a molar, the decay reaching to the cementum. By means of a cotton wedge for three days gain plenty of space and comfort in the tooth, apply dam, remove decay, and bring the buccal and lingual margins well out beyond the point of contact, where they can be cleaned with a brush, and use care that the point on the margin where enamel ceases and cementum begins is quite smooth. Now obtain sufficient retention, including the usual dovetail at the grinding surface, apply as a matrix a thin strip of metal (German-silver is excellent), and hold this firmly against the neck of the tooth by means of one or two wooden wedges dipped in sandarac. An application of carbolic acid, volatilized with warm air, gives asepsis and lessens subsequent shock from cold. Now insert amalgam to about one-third depth of cavity, and with the Darby-Perry excavators, Nos. 23 and 24, trim this body of amalgam to an ideal cavity floor. Then remove matrix and with a fine strip carefully polish the partial filling, and fill balance of cavity with gutta-percha to protect the amalgam and preserve the space. At a subsequent sitting one is greeted by a much simplified cavity.

With the dam in place I perfect my new cervical margin and commence my gold filling with hand pressure, carrying the gold over the cervical margin and condensing. Now apply matrix as before, and just here is a point of excellence in this form of matrix. It is held rigidly against the cervical margin, where I have already sufficient excess for polishing, and as the filling is built up (always building against the walls of the cavity) the matrix is forced back-
ward, giving me the contour just where I want it. The matrix is easily removed, and I find the principal excess of gold is over the buccal and lingual margins, where it is most easily polished away. The matrix removed gives easy entrance for strip and disc. The finishing of such a filling is a simple matter; the true cervical margin is already polished, so no injury is done the gum and slight discomfort is inflicted upon the patient, especially if the disc be lubricated with a little vaselin. The contour of the completed plug occupies a portion of the original space gained, so that in a day or so the separation is entirely obliterated and the crowding of food between those teeth—that so great annoyance—is avoided.

There are many ways of mounting a Logan crown. This is one that suits me very well: Have the apex of root sealed firmly with hard gutta-percha or cement, ream the root and fit crown in the usual way, having the joint below the gum margin and leaving the rim of enamel intact. Roughen the pin slightly and sharpen it; after applying to root a solution of silver nitrate and drying, loosely fill the canal with soft-mixed amalgam, allowing a sufficient amount to fill all space; then press the crown home, using considerable steady force. The excess mercury will be forced out and the crown held securely, with a much better prospect of preserving the root than if cement were used in the same way.

We all have seen lamentable results from using cement in this way with an unprotected joint, the root extensively decayed and perhaps a portion of the labial wall split off. Such roots are often condemned, but they may frequently be saved and be made useful for a long time in this manner. Remove decay and any remaining enamel; fit over the root a somewhat tapering band of thin platinum, trimming it carefully to accommodate the gum, and when well in place fill with amalgam, first gaining such retention for the latter as the remaining walls will afford. At a subsequent sitting open through to the canal and ream as usual; cut down the artificial end of your root, and you are ready for either a Logan or a Richmond crown.

Porcelain facings on crowns or bridges, in spite of everything, will sometimes be broken. Here is a simple way to repair the injury: Remove the remains of the broken facing, cut off the pins and bore two holes in the backing of the crown to accommodate the new pins, countersinking the same on lingual surface of the work;
grind facing to as accurate a fit as possible, and with a knife split
the pins half way or more, then bring the two halves together again.
Now mount your facing in a bed of cement, and remove traces of
the latter from the pins in the countersink, and with a wedge-shaped
instrument spread the halves of the pins and fill the countersink
with amalgam. At a later sitting polish smoothly, and the result
is a strong and cleanly repair.

REPORT OF COMMITTEE ON FOREIGN RELATIONS OF
THE NATIONAL ASSOCIATION OF DENTAL FACULTIES.

Made at Omaha, August 29, 1898.

To the President and Members of the National Association
of Dental Faculties: The special committee on recognition of
degrees in foreign countries and the comparative value of foreign
degrees in this country, appointed at the last meeting of this Associ-
ation, begs leave respectfully to report as follows: The scope of the
investigation of the committee has been somewhat changed from
that which would appear to be indicated by the announcement in the
published proceedings. It should not be forgotten that there are
really no foreign degrees in dentistry, the nearest approach to this
being the Licentiate in England. America is peculiar in having a
distinct and separate diploma for the graduates of distinctly dental
colleges. We cannot hope for the recognition of this distinction
until our course of instruction is fully comprehended in Europe and
the reputation of our degree established. The report of your com-
mittee, then, will specially consider the preliminary steps which we
believe it proper to take before commencing further agitation. The
subject is of the deepest significance and involves our whole system
of education. There can be no mutual recognition until there has
been secured some common ground on which the profession of the
various countries of Europe and of America can meet. At present
the systems are too diverse and involve too many seeming contra-
dictions to allow any real reciprocity. Yet that is a consummation
devoutly to be wished, and certainly we in America should spare no
pains in the endeavor to bring it about. Hence the appointment of
a committee to take the subject into consideration by the supreme
authority in matters educational among us was doubtless a wise
movement, and one which in the opinion of your committee should
be persistently followed up. Indeed, the committee has received
many letters highly approving of the action taken, with the promise of cooperation by American dentists resident abroad.

That this body may act intelligently, it seems necessary in this report to review as concisely as is possible with thoroughness the real situation, with the view of securing a better state of affairs. It must be remembered that scholastic dental practice, with the separate teaching which has been found necessary, is of quite recent origin. The first distinctive dental school was established in America in 1840, less than sixty years ago. For more than forty years all didactic and class instruction was confined to this country. Within the past twenty years dental schools have been organized in some of the countries of Europe, usually in connection with hospitals, for the purpose of securing clinical instruction and material. There has never been any reciprocity between the schools of the two continents, if we except the recognition temporarily accorded by England to the dental departments of Harvard and Michigan Universities. The conditions obtaining in the two continents too widely vary. The one is long settled, possessing the real erudition that can be found only in nations that have a past, but imperatively dominated by the traditions and precedents which are the natural outgrowth of heredity. The other has been a new country, with no educational or other institutions hallowed by centuries of growth and progress, and possessing the weight of ancestral influence. In the settlement and development of this country our people encountered obstacles totally unknown to the older states of Europe. Precedent there was none to guide; and tradition there was none to influence. The problems which confronted them were conditions existing and not theories for consideration. The forces of nature were in one sense our foes and not our allies. It was necessary first to overturn and reconstruct that which nature had already constructed. The struggle to accomplish this made of us a practical, inventive, ingenious people, who care mainly for ends and little for methods, while Europe respects no practical accomplishment that is secured through irregular, unacknowledged methods.

All these matters are reflected in the status of the dental profession here and abroad. Europe can not be brought to believe in a practice not founded in a liberal preliminary education, while we are as a whole too careless concerning antecedents, so long as anything practical is assured. In Europe if a man has a university
education he is popularly supposed to be competent to practice any profession—law, medicine, divinity, or any of the specialties—any distinct instruction being required only to make him acquainted with the tools that he must use. The university degree is supposed to include everything lesser, and hence there is no necessity for any other, that comprising all. We in America have instinctively recognized the desirability of a university training by founding many schools without sufficient endowment for their independent support, thus really cheapening the university course. This has been through the endeavor to extend educational facilities to the masses, here again looking toward ends and not means. The natural consequence of all this to our profession has been that in America to-day are probably found the best skilled operators and the highest development of practical work, while in erudition we are in the rear of several European countries. It may thus be seen that it is difficult to find a common ground on which the professions of the old and the new worlds can stand in equality. Europe will tolerate nothing that does not bear the stamp of regularity. We are satisfied with anything that accomplishes the end sought.

The curricula of the schools of the two continents materially differ, but that could be overlooked or they might be harmonized. The essential variation lies in the methods, or way through which admission within the ranks of the profession is secured. The old countries jealously guard the doors of entrance. We throw them wide, or at the best erect a barrier that is too easily overleaped. Europe declares that the learned professions must be reserved for the learned classes, and that any who enter must come through the door of a liberal education. We urge that the only sufficient qualification is fitness and practical knowledge. Europe will never come to our standpoint. Can we or should we attempt to reach hers? In the process of time this may undoubtedly be brought about. Already in America we see the effect of a comparatively low standard of requirements in the overcrowding of the professional ranks, so that they are losing their distinctive respectability and status, and with that their influence for good is circumscribed. Should this acceptance of the professional tone continue for any length of time, there will be no distinction between the professions and trade. Indeed, we find to-day many who contend that no line of demarcation should be drawn. Colleges of law, medicine and
divinity, with their specialties of dentistry, pharmacy, etc., are so multiplying that the consequence must eventually be self-destruction and the annihilation of all professional sentiment. A limit must be placed on the number of schools, and this can be done only by raising the professional standard to a point that will shut out unworthy and unqualified colleges and their students. When this is done, and our preliminary educational standard is sufficiently advanced, with our practical methods and operative skill we shall be prepared to force the profession of Europe to come to our standard if we are in advance of them, while if they are ahead of us we will be equally bound to reach their level. Even as it is we are fast approaching each other, they growing more practical and we more erudite. To hasten the desirable end, in the opinion of your committee this Association should endeavor to secure the cooperation of our confreres of the different countries by some official reciprocity, and we believe that the best method to accomplish this would be through the appointment of a standing committee on foreign relations, whose duty it shall be to make us better acquainted with European educational methods and curricula, and to inform them of the advantages of ours. This might smooth many of the asperities and remove many of the prejudices which work to the detriment of both at the present time.

The second matter referred to this committee involves our relations with our American confreres living and practicing abroad. This is closely allied to the subject already considered. American dentists practicing in Europe have bitterly complained of the granting of the peculiar American degree to those who are, in foreign countries, considered unqualified. There is no questioning the fact that this has been done in the past. The time once was when foreigners flocked to our shores to complete their dental education by an American course of study and by the securing of an American degree. This was materially checked by irresponsible institutions which conferred their honors too indiscriminately. The American degree was fast falling into such disrepute that it became necessary to do something, and accordingly this national organization of teachers was formed. I need not enlarge upon its great accomplishments. But unfortunately it was not conceived soon enough. Cause for reproach had already been given, and Europe has not hesitated to take advantage of it to her benefit and in her own interests,
and hence the D.D.S. does not now receive the consideration to which of right it is entitled, nor has sufficient credit been accorded to the work of this Association. It takes a long time to live down the bad reputation that may be gained in a day.

Two things are charged by American dentists practicing in Europe: First, that students from the old countries are received by our schools and given advanced standing on the presentation of certificates in foreign tongues which are really worthy no consideration whatever. Second, that diplomas are practically sold by American institutions and degrees conferred in absentia.

There is, unfortunately, no disputing the fact that our confreres abroad have sometimes had cause for complaint that the value of their diplomas has been depreciated, and that they have not been sufficiently protected by the schools granting them. Even since the organization of this association of colleges, its rules governing the admission of students have been violated on different occasions, through ignorance of the value of some of the certificates which the regulations have made necessary for advanced standing. It is also more than probable that worthless and even fraudulent certificates have sometimes been used as pretexts for giving advanced standing in certain American colleges, when their real character should have been well known by the authorities. A foreigner who desires an American degree, and who occupies but a low social position at home, procures a certificate from some unqualified source, perhaps under false representations. It is written in a foreign tongue and sealed with some pretentious seal, possibly that of an emigration or other bureau. This he presents to the American college, assuring the authorities that it represents a definite course of dental study. The dean is perhaps unable or indisposed to have it verified, and it is accepted, the applicant under it is admitted to the senior course and graduated at the end of a single term. Thus after an absence of but a few months the student, perhaps a servant or a barber's apprentice who had become possessed of a little money, returns to his native land and flourishes in the faces of his former associates a diploma that should be the distinguishing characteristic of an educated man, and claims to be the confrere of those who have honestly earned a certificate of fitness from an American school, and upon whose diploma this unmerited scandal and disgrace has thus been brought. It is possible that the institution thus offending
may have been nothing more than careless. It would take weeks to verify the certificate presented, and then it would be too late for entrance. "There are no means at hand by which the value of the document can be ascertained, and so the applicant is given the benefit of the doubt and admitted to advanced standing.

Formal complaint was last year made by American dentists in Switzerland in the case of a man named Stauber, who was admitted to the senior class of a college having membership in this body. He had been permitted to join upon the presentation of a foreign certificate. Culpable negligence seemed to have been exercised, and had it not been for the energetic protest of our confreres abroad the student would have been graduated at the end of a few months. Upon the presentation of the case the college reduced Stauber to the freshman class and he must wait for his diploma. It is further charged that he was matriculated when not in this country, the date of the closing of the time for registration having expired before his arrival in America. Such cases as this should be closely investigated, that the offending college may be punished if guilty or exonerated if innocent.

It has appeared impossible in many instances to determine the character of the certificates presented. The foreign school or pretended school is unknown here. We have no list of such, and great injustice might be done to applicants if the document be refused, provided it be genuine and sufficient. But it is quite proper for every college to insist upon the endorsement of some known authority. If, as it now is, the authorities are conscientious in the matter and ask for a verification of the document presented, the prospective student perhaps brings a countryman who is suborned to give a false interpretation of it. Or he goes to a rival school, representing that the first to which he applied and which calls for the additional testimony had accepted him, but that he had found the college to be inferior to its neighbor, and so he wishes to transfer his matriculation to a better one. That appeals to more than one perverted sense, and he is accepted on his mere assertion, skilfully made, that the document had been approved by the other institution, and is given advanced standing.

As for the determination of preliminary qualifications, that is a yet more difficult affair. The systems of general education in different countries are so diverse that it is almost an impossibility to
decide what may be accepted as the equivalent for the standard of the National Association of Dental Faculties. And so the reception of students from abroad is a matter in which the most conscientious dean may be at fault.

This condition of affairs has long existed. It forms the basis for many bitter complaints on the part of both foreign and American dentists practicing abroad. It very loudly calls for reform, and to your committee it seems that the good name and reputation of this Association is concerned and that we are in honor bound to seek some remedy.

The communications from abroad that have been referred to this committee suggest that a board of European dentists should be appointed by this body, who shall take cognizance of such cases, and whose endorsement of the status of a proposed student shall be necessary for his matriculation in any recognized college. To give to such a foreign and irresponsible board plenary powers in the acceptance of applicants for matriculation from abroad is of course quite impossible. We have no legal or moral right to delegate the authority that has been by law vested in the responsible faculties of our colleges. In some of the states the determination of the qualifications is vested in state authorities, and they could not and would not delegate it to any board whatever. In the State of New York the college officers have nothing whatever to do with the determination of the preliminary qualifications of applicants. They must obtain from the State Regents a dental student's certificate before they can be accepted.

But your committee can see no objection to the naming of an advisory board, whose endorsement of any paper and whose certificate of educational and moral status may be considered sufficient, and it therefore recommends that not more than three qualified persons, resident in each of the principal countries of Europe, be appointed as an advisory board, to whom students from abroad may present their certificates of qualification and moral character for endorsement, or to whom the papers of students from abroad concerning which there is doubt or uncertainty may be referred for authentication and approval. Your committee was advised that this matter would be brought before the American Dental Society of Europe, at its meeting in London, August 1, and that the chairman would be apprised of any action there taken. [Since this report was
presented and adopted the chairman of the committee has received an abstract of the proceedings, in which was recommended the very action taken by the National Association of Dental Faculties at its late annual meeting.]

The second cause of complaint that has been urged before your committee is that degrees from institutions with high sounding titles and names, and which are perhaps endorsed by state officers as having legal status, practically sell their diplomas abroad. This complaint is also one of long standing and your committee believes that it is well founded. The condition is one for which, however, this Association is not responsible. Yet it seriously reflects upon American educational institutions, and is a source of scandal and opprobrium which cannot be ignored by it. In foreign countries the embarrassments of the situation are not comprehended. Under all the European governments it is possible to enact a general law that shall be effectual. We have nearly fifty separate states, each autonomous so far as its domestic affairs are concerned, and all educational matters belong in that category. Hence one state may enact a law under which it is possible to incorporate an institution essentially fraudulent in its character, and the other states are powerless to prevent or correct the evil.

The State of Illinois is a glaring example of this kind of vicious legislation, and nearly or quite all the fraudulent colleges are now located in the City of Chicago, to the great reproach of the state and the profession of dentistry within its borders. That city contains some of the very best of our professional educational institutions, and at the same time the most villainous impostures conceivable. Dentistry in Chicago can boast of as high-toned and eminent practitioners as are found anywhere in the world, and it is disgraced by some who appear to acknowledge none of the usually accepted professional obligations, while using the professional name to further their own illegitimate ends. Unfortunately it is sometimes hard for the uninitiated to tell them apart, for some of the latter have held responsible professional positions, and use that seeming endorsement in the pursuit of their illicit business.

Men unacquainted with professional educational affairs, who know not the wiles of designing tricksters who would take advantage of an innocent law to further their own selfish purposes, are not the best judges of what is proper legislation for the professions.
In an unsuspecting moment and without sufficient consideration there was placed upon the Illinois statute books an enactment which, while assuming to further business interests and honestly intended for their benefit, allows the incorporation under the law of associations that may carry on a fraudulent diploma business. So loosely or so nefariously drawn was this law, that for the merely nominal fee of registration, amounting to less than five dollars, totally unqualified men may be permitted to issue diplomas of qualification in the different professions. This seems a monstrous state of affairs, but it has been suffered to exist for years. The citizens of other states are powerless, for Illinois is supreme within her own jurisdiction, and she continues to protect her criminals in their villainy. The task of securing the repeal of this vicious law is too great for the courage of its reputable men, for ignorance and vice have struck hands in its maintenance. Even the excellent and influential Illinois State Dental Society has looked upon this condition with seeming indifference. As a consequence of the continuance of this demoralizing law, a considerable number of the practitioners of Chicago carry in their pockets, or exhibit on their walls, college charters conferring upon them the power to issue diplomas in dentistry. A number of advertising offices are legally conducted under such names as "The Illinois Academy of Medicine and Dentistry;" "The College of Painless Dentistry," "The Union College of Dentistry," etc., etc., and mirabile dictu, the certificates of the Secretary of State, under the great seal of the State of Illinois, can be obtained certifying to their entire legal respectability and status. It seems to your committee that the decent part of the profession of this grand state should begin an agitation for the repeal of this vicious law. It is earnestly to be hoped that as soon as the professional men of the state are aroused from their lethargy and made to comprehend the enormity of the condition, they will present the matter before the legislature in its proper light, and the disgraceful law will be so amended that it will not apply to educational institutions, and the charters already issued under it will be very promptly canceled.

Some of the so-called dental colleges have no other existence than this state incorporation. They are owned and run by one man, and he perhaps sails under a false name. Of course, if they give no instruction whatever and yet confer degrees, they are amenable to the
law against fraud. But their diplomas are not offered at all in this country, being advertised only abroad. They know very well that if they attempt to ply their trade at home they will speedily be brought to grief, and so they permit no proofs of their work to come to light in America. There is no indication of their business at their published address, and any letters sent to them from this country are carefully left unanswered. Their work is done through European agents. We cannot locate them, and there are no proofs to be obtained in this country. Our confreres abroad complain bitterly of these swindlers, but they do not comprehend the situation, and when we ask them to obtain the proofs of their villainy, they reply that the miserable affairs are under our immediate notice and we should get the testimony here.

Sometimes our professional journals and some of our prominent men, and even professional organizations instituted for the purpose of regulating dental practice here, unwittingly further the objects of these men by falsely charging that respectable schools are practically engaged in the same business of granting irregular degrees, and thus they efface the line of distinction that the reputable colleges have been striving to set up. It is a singular fact that nearly or quite every application which approved colleges receive for irregular degrees comes from Europe, and because of these miserable villifications of respectable schools by American dentists acting with more zeal than discretion and more fervor than knowledge, there is not an American college that is free from these insulting applications.

This is the condition that confronts us in America. This Association has done what it could and advanced as fast as it could. It has been embarrassed by the lack of cooperation, and even by the active opposition of those to whom it had a right to look for help. It has been denounced because it has not taken the radical steps demanded by men who have little comprehension of the difficulties to be met, and who do not understand that the tone of the colleges and the profession as a whole can be advanced only by a movement that is made as a whole. At the most critical moment the ground that had been gained has been lost through the absolute refusal of some of the colleges to vote to sustain the most moderate requirements, and it may almost be a matter for astonishment that so much has been accomplished. This Association has sharply drawn the line between the reputable and the disreputa-
ble schools, and despite the fact that overzealous and unwise men have been industriously engaged in effacing it, and confusing the good with the bad by claiming that all have the same character, in this country the distinction is well known. It should be, and if these ill-advised strictures are abandoned in will soon be as well comprehended abroad. All that is necessary is to scan the list of the members of the National Association of Dental Faculties, and if the name of an institution granting a diploma is not found in it, that document is unacknowledged by this Association. If any college that has a membership in this Association grants a degree or accepts a student irregularly, the faith and honor of every other member is pledged to inflict the most condign punishment upon presentation of the proofs.

But it has been charged that violations of the rules have been committed by members without subsequent punishment. There appears to be an impression that it is the duty of the Association to discipline a college upon mere rumors and to inflict punishment without proofs. This would be the rankest injustice. There have never yet been definite charges made against a college by any responsible party, with accompanying proofs or positive information where evidence could be found, without the most thorough investigation of the case. It has been charged before your committee that the Stauber instance was such an one. But in that case the implicated college corrected the error of its own volition. The remedy for infraction of our regulations thus rests in the hands of every respectable member of our profession, for so carefully has this Association guarded this point that it has appointed a committee with plenary power for the express purpose of investigating charges of irregularity brought between the sessions, thus offering swift as well as exact justice.

As to the irregular colleges, your committee considers it the imperative duty of this body to employ every possible means for their exposure and suppression. We believe that it should protect the good name of American dentistry and American educational institutions. In this faith your committee, through its chairman, authorized the expenditure of a reasonable amount of money in the prosecution of investigations of unrecognized and irregular schools, and secured the cooperation of a thoroughly competent man for this work. As a consequence considerable progress has been
made in the unearthing of some of them, but it will probably take years of persistent effort to accomplish all that is desirable. We have received the most encouraging letters from our confreres in Europe, and have been materially aided by some of them. We have been assured that if such work is continued it must result in the higher appreciation of this Association in Europe, and in the perceptible raising of the estimation in which our degree is there held. Hence we feel warranted in urging upon you increased zeal in the prosecution of the work already commenced.

[Note.—The names and addresses of the irregular colleges, which here follow in the report, are omitted by the publishers of this journal. They can be obtained by addressing the Chairman of the Committee, Dr. W. C. Barrett, 208 Franklin Street, Buffalo, N. Y.]

In view of all the considerations that have been presented in this report, your committee recommends the adoption of the following resolutions: FIRST—Resolved, That a standing committee of five be appointed each year by the President of this Association, to be called the Committee on Foreign Relations, whose duty it shall be to report each year upon the relative status of dentistry in America and Europe, and to suggest any measures that in the opinion of its members will promote the welfare of our common profession and the usefulness of the distinctive American dental degree. SECOND—Resolved, That the Committee on Foreign Relations be instructed to use its utmost diligence in ferreting out fraudulent or irregular colleges, and the granting of degrees irregularly by recognized colleges, should this be done, and to leave undone nothing within their power to bring to justice institutions granting irregular degrees, or degrees irregularly. To this end this Association authorizes the committee to expend any reasonable sum of money, which if necessary shall be raised by some fair assessment of the colleges of this Association. THIRD—Resolved, That an advisory board, to consist of not more than three qualified persons from each of the following named countries of Europe, be appointed by this Association, to the member or members of which the papers of any foreign applicant for matriculation in any American dental college shall be referred for verification or endorsement, it being understood that such papers shall be referred to the member or members of the board appointed for the country of which the applicant is or has last been a resident. The countries to be represented shall be—i, Great
Britain; 2, Holland and Belgium; 3, Denmark, Norway and Sweden; 
4, Russia; 5, Germany; 6, Austria and Hungary; 7, Italy and 
Greece; 8, France; 9, Spain and Portugal; 10, Switzerland and 
Turkey.

W. C. Barrett, 
S. H. Guilford, 
D. J. McMillan, 
F. D. Weisse, 
A. H. Fuller, 

[The resolutions were unanimously adopted and the committee 
continued as "The Standing Committee on Foreign Relations," 
J. D. Patterson being appointed in place of D. J. McMillan, elected 
president of the Association. The committee was authorized to 
appoint the foreign advisory board. It earnestly invites the coopera-
tion of American dentists at home and abroad. Letters should be 
adressed to W. C. Barrett, Chairman, 208 Franklin St., Buffalo, 
N. Y., U. S. A.]

LONGEVITY OF MUSICIANS.—A writer in a French newspaper the other day 
made an interesting announcement respecting the longevity of musicians. 
As a matter of fact, though a few of the most noted musicians of the world 
have died young—to wit, Mozart at 35, Schubert at 31, Bellini at 33, Mendels-
sohn at 38 and Weber when he was but 40—quite a large number have lived 
to be very old men. Those who died between 60 and 75 years of age include 
Bach, Bulow and Rubinstein. Living beyond 75 years came Gluck, Gounod, 
Handel, Liszt, Meyerbeer, Rossini, Spontini and Wagner, while the great 
age of 89 was attained by Aubert and others. Dying at past 80 were Cheru-
bini, Cramer, Lachner, Palestrina, Rameau, Schutz and Taubert. The aver-
age age of musical celebrities is about 67 years.—Medical Record.

EASY METHOD FOR THE REMOVAL OF FOREIGN BODIES FROM THE NASAL 
CAVITY OF CHILDREN.—According to Dr. G. Bieser, the employment of the 
usual methods for removing foreign bodies from the nasal cavities in strug-
gling children and without anesthesia is attended not only with the dangers 
from traumatism, but also with difficulty and occasional failure. The em-
ployment of aero-dynamics may overcome these objections. The method 
advised by the author is as follows: The child is placed in the ordinary posi-
tion for intubation, the assistant holding his hand tightly over the child's 
mouth; one end of a piece of rubber tubing is snugly inserted in the nostril 
opposite the one holding the foreign body, the other end is inserted into the 
operator's mouth; the operator then blows suddenly and vigorously into the 
ostril and dislodges the offending body. The simplicity, cleanliness and 
efficiency of this method are apparent, the child's struggles causing no tra-
umatism.—Pediatrics, July 15.
TEETHING.—The eruption of the teeth is a physiologic and anatomic crisis.—White. * * Diarrhea of teething is natural.—Ellis. * * The fact that this diarrheic tendency lessens during the second and third year is in no way related to dentition, but due to the protective condition of the canal, which the development of the various secretions gives it. Free hydrochloric acid is known to be destructive to fungi up to a certain point; this of course the infant stomach has not. Since fermentation is in no way arrested, yeast fungi are found in large quantities in infant diarrhea. And if physicians who attach importance to the theory of teething were to examine the food served to their diarrheic patients, they would in numerous instances find it contaminated.—Dr. Frank H. Babcock. * * Among the most common pathologic results of difficult dentition are certain affections referable to the cerebro-spinal system, eclampsia being one of the admitted results.—Smith. * * When similar symptoms arise at each epoch of teething and subside with the subsidence of the gingival turgescence, teething must be regarded as the cause.—Smith. * * The evolution of the teeth is one of a number of developmental processes going on in the body, and organs and tissues are prone to disease in proportion to their normal or physiologic activity.—Carmichael. * * Convulsions in teething arise from nervous excitement, from the pain and general disturbance.—Bouchut. * * In teething the child is passing its first climacteric.—Love.

TREATMENT OF SUPPURATION BY BICARBONATE OF SODA. Brucker (Thèse de Bordeaux) has made a study of a fact observed by himself, namely, the influence of the reaction of the blood in the healing of certain conditions. Bearing in mind that the normal alkalinity of the blood shows important variations according to sex, age, and as to whether the blood is arterial or venous in origin, and the diet to which the patient has been addicted, and that in certain pathological conditions these variations are very marked, so that a reduction in the normal alkalinity is observed in certain cases of febrile reaction due to bacterial intoxication, he has found that certain artificial intoxications can be combated by raising the
alkalinity of the blood by the injection of alkaline serum. Going on these grounds Brucker has principally investigated the influence of alkaline dressings in the treatment of local inflammatory affections, and according to his observations such a dressing, whether moist or dry, very rapidly reduces the inflammation, suppurative or otherwise, and causes rapid healing of wounds. This seems independent of any antiseptic property in the proper sense of the word. The method employed by him is to apply the dressing of absorbent wool on ordinary principles, using merely a two per cent solution of bicarbonate of soda, or in some cases vaselin and bicarbonate (1 in 25), or the soda may be applied directly in the form of a powder. He finds that strong solutions do not act more quickly than a two per cent, showing that the chief agent is the alkali and not any antiseptic principle. The same method may be applied for purulent otitis, etc.—British Medical Journal, June, 1898.

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GUAIA COL AS A LOCAL ANESTHETIC. By A. O. Hooker, D.D.S., San Jose, Cal. Pure guaiacol is in the form of hard white crystals, but as generally sold to the trade it is a clear, colorless, oily liquid, with sweetish burning taste, pungent odor and very inflammable. It is the active principle of creosote, of which it forms from 60 to 90 per cent. It is a powerful disinfectant and germicide, and for dental uses is of great value.

As an obtundent for sensitive dentin I believe it to be fully equal to cocain. Placed in a sensitive cavity of decay and thoroughly dried by the use of the hot-air blast, it will penetrate far into the tubuli and render subsequent excavation almost painless. When preparing cavities on the labial surfaces of the incisors and buccal surfaces of the bicuspids, extending well up under the gingival border, a drop of guaiacol placed thereon will enable the operator to tie ligatures or force the gums out of the way with little or no pain. It is also a good styptic, and in those cases just mentioned aids materially in arresting any hemorrhage which may follow.

As a disinfectant and germicide guaiacol is a valuable agent in the treatment of septic root-canals. A little over a year ago I destroyed the pulp of a tooth by the use of arsenic; twenty-four hours after removed the arsenic, opened up and washed out cavity with warm water, then placed a drop of guaiacol in pulp-canal and sealed up with gutta-percha. Thirteen months later the patient
returned and I found the pulp-canal and its contents in a non-septic condition, having given no trouble whatever.

For use hypodermically in extraction guaiacol may be prepared in 1 to 10 or 20 parts of sterilized olive oil. For this purpose it is safer than cocain and can be used in much larger quantities without danger of producing toxic effects. It will also be found useful in connection with arsenic in the destruction of the pulp, allaying or preventing inflammation and pain while the arsenic is doing its work.—Pac. Med. Dent. Gazette, Nov. 1898.

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IMPLANTATION OF FOREIGN OBJECTS IN THE MAXILLÆ. By Dr. C. T. Gramm, Chicago. Read before the Chicago Academy of Medicine, Oct. 14, 1898. He explained the paper to be a preliminary report of a study of bone degeneration. Its practical side dealt with the possibility of implanting in the processes of the maxillæ and having firmly encapsuled there substitutes for the roots of teeth that have been lost by decay, trauma, or pyorrhea alveolaris—substances other than ivory, or roots of living or desiccated teeth, all of which are prone to resorption. The author reviewed the character of the maxillæ and the phenomena of bone regeneration in them and pointed with emphasis to, citing a number of experiments and authorities in support of, the claim that the recuperative forces in this bone are markedly in advance of other bones of the body. He then went on to say: "Whether in the presence of a mechanic irritant, a substitute for natural roots such as I will describe below, from this bony structure, rich in resources for repair and readily adaptable to altered conditions, would develop a sclerotic envelop for the substitute, or whether the process would be one of degeneration and sloughing, is the question to be weighed. It is a question taking us at once into the field of bone resorption and regeneration, bone inflammation and its sequels." The author cited and criticised the experiments and conclusions of thirty-nine authorities who have studied the phenomena of bone development. His own experiments, carried only through the preliminary stages, were performed upon six dogs, and consisted in removing an upper pre-molar in each of them, freely enlarging the socket and implanting an artificial root made of lead, which was held firmly in position by a mechanical device. The apical portions of these lead roots were bulbous, and at their middle were shallow grooves, which
when filled in with fibrous or osseous tissue would favor their retention. Four of these dogs were killed in from three to six weeks after the operations and sections of the jaws removed in order to demonstrate the development of new bone under various conditions. As the result of this work, Dr. Gramm holds that further experiments, in which sufficient time is to be given for the solidification of new growth, will verify the hypothesis which formed the basis of this preliminary work, to-wit, that a mechanic irritant such as he proposed will under favorable conditions cause a sclerotic envelop to be formed about it sufficiently firm to withstand the pressure from articulating teeth. He seeks an analogy in the chronic osteitis in which no rarefaction of bone occurs; in which new growth slowly ossifies, and the Haversian canals and cancellous spaces diminish—a condition commonly known as osseo-sclerosis. The article was illustrated by photomicrographs and lantern-slides from the author's laboratory.

Discussion—Dr. Eugene S. Talbot: About twenty years ago Dr. Younger first brought prominently before the profession the implantation of teeth; however, the better educated men of the profession looked upon this practice unfavorably. He claimed that a tooth which had been out of the mouth indefinitely could be cleaned by scraping off the peridental membrane and debris, disinfected, and after drilling a hole in the jawbone and being implanted would produce a new peridental membrane, and apparently be as good a tooth as any. He went so far as to state that the tooth of a mummy which had been dead for thousands of years would be implanted into the jaw of a patient at the International Medical Congress, held at Berlin, and that it would grow firm and become useful indefinitely. This was done, but the operation was unsuccessful, the tooth lasting only a few days. Many teeth have been implanted, but a very small number have proven a success. I have never heard of nor seen a case where a new membrane had been produced. These teeth have been treated by the system like any other foreign body, and expelled either bodily or by absorption. Therefore, I have never taken kindly to this operation.

Dr. A. E. Baldwin: While congratulating the writer of the paper upon his experimental work, I can not help but agree with the previous speaker in concluding that the experiments are on a line which will not be productive of any great benefit. Ten years
ago in an interview with Dr. Younger he claimed to me that these operations of implantation of teeth, which are directly in the line of this paper, would be recognized as a great success all over the country in a few years. I told him then, as I say now, that if the principles laid down by Dr. Younger, which are apparently the same as those of the writer of this paper, are true, we shall have to relearn our histology and physiology. Nature sometimes tolerates these foreign bodies simply in a mechanical way, but it seems to me as though we have not evidence of any natural union between the implanted bone or tooth and the alveolar process.

Dr. Gramm: The work is incomplete and does not present final conclusions. The criticism which Dr. Talbot passes upon Dr. Younger does not apply to the work under consideration. The resorption of an osseous structure implanted is a probability recognized by histologists fifty years ago. The foreign material implanted in the jaws of these dogs is non-absorbent, hence the interest in this work does not center in the fate of the tooth-root implanted, but rather in the degree of tolerance exhibited by the osseous tissue of the alveolar process. It has not been proven that the alveolar process in particular, this structure of exceeding vitality, will not tolerate a foreign substance, and no general statement, unless founded upon experiments made directly upon maxillae, can be accepted as criticism of undoubted value.—*joum. Am. Med. Assn., Nov. 1898.*

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USEFUL HINTS IN OPERATIVE WORK. By T. P. Hinman, D.D.S., Atlanta, Ga. Read before Georgia State Society, June, 1898. A little soap on the dam about the holes will make it pass between crowded teeth with ease. Soap on the edge of a sandpaper or cuttlefish disk will prevent it from catching the dam.

In the majority of cases it is not necessary to ligate dam in the anterior teeth, especially when the Perry separator is used. The pain of separation with the mechanical separator is not caused so much by the act of separation as by the laceration of the gum by the separator jaws passing too far up. This can be prevented by placing gutta-percha under the arms and allowing it to rest on the teeth.

The Morgan-Maxfield disk is a great time-saver.

To make thin rim disks at a moment's notice, place a disk on the mandril in the handpiece and revolve it rapidly, at the same time holding an instrument against the part nearest the mandril and
gradually passing it outward to about one-eighth of an inch of the edge. This wears off the grit on the central surface of the disk, but leaves fresh grit on the rim.

A little wax on your engine belt will prevent it from slipping; a composition of beeswax and rosin is better.

To devitalize painlessly with arsenic, place a small pledget of the devitalizing agent on freshly exposed dentin as far from exposure as possible; then place on the exposed pulp a pledget of cotton saturated with equal parts of clove oil and carbolic acid. This should be dipped in a few crystals of cocain just before passing into the cavity. Now seal lightly, and in 95 per cent of cases thus treated the result will be good.

Varnishing sensitive cavities with gum mastic dissolved in chloroform will prevent pain from thermal changes after the insertion of a metallic filling, provided the cavity does not extend too near the pulp; if so, varnish, line with cement, then place the metallic filling.

To secure perfect dryness without the dam, have napkins eight inches square of shirt-bosom linen. Make rolls of cotton packed hard and place them over the saliva ducts. Now roll the napkin into a long rope and place around the tooth. While holding in position with the fingers place a dam clamp over the tooth, which will hold the napkin in position and leave both hands free to operate.

Amalgam thoroughly triturated in a mortar works much easier and softer and fully repays the operator for time spent mixing; besides it makes a much more compact filling.

Teague's asbestos and tin cavity disks are excellent for capping nearly exposed pulps. They can be held in place by a little chloroform varnish. Then cement is lightly flowed over them. Besides being an excellent non-conductor they prevent pressure.

The pain of excavating hypersensitive teeth can be greatly reduced by placing a pellet of cotton saturated in pure carbolic acid, then dipped in crystals of cocain hydrochlorate, in the cavity, and then blowing hot air on it for a few minutes. When the cotton is removed quite a layer of dentin will be found anesthetized, and if the operation is repeated the tooth can be excavated without pain.

A small eye tenotome lance is the best for an abscess.

Try saturated solution of silver nitrate in children's teeth, and when the cavities are fully blackened fill with sheet gutta-percha, bridging over interproximal spaces.
A good root-canal filling is made by dissolving sheet gutta-percha in chloroform and then adding iodoform about one-sixth of its entire bulk.

If metals of different potential be placed on the ends of wire which are in series with the milliamperemeter and these metals be placed in the mouth, if the saliva is acid it will cause the generation of a galvanic current which will deflect the needle according to the amount of acid contained therein; or if the saliva is neutral or alkaline there will be no deflection of the needle. The amount of deflection of the needle shows the degree of acidity of the saliva. If an acid mouth be washed with an alkaline solution, such as Philips' milk of magnesia, it becomes neutral.— *Items of Interest, Oct. 1898.*

**REMOVAL OF FOREIGN BODIES FROM THE UPPER AIR-PASSAGES.** Rice describes a patient who said that two hours before he had swallowed a piece of beef-bone, and he located it by putting his finger on the right side of the neck lower down than the tonsil, about the level of the hyoid bone. The author thinks that seventy-five per cent of the foreign bodies that get into the pharynx have passed into the esophagus and stomach by the time the patient has reached the physician. Nevertheless, just as diligent search should be made to locate them. A bone which has wounded the lateral wall of the pharynx leaves a very distinct impression, and the patient is not able to determine whether it is still there or has passed into the food passage—fish-bones, meat-bones, the bristles of tooth-brushes, pins, buttons, coins, and the different things found in the lower pharynx or larynx. We will save time if we first spray a four-per-cent solution of cocain all over the middle pharynx. First use a tongue-depressor and examine the pillars of the pharynx and tonsils very carefully, as bones are frequently caught in these. The tongue may be depressed so low that the top of the epiglottis can be seen without a laryngeal mirror. Examine all this surface. Now use a laryngeal mirror and see if possibly a small bone is lodged between the base of the tongue and the sides of the pharynx. We will have to look very carefully to discover the bristle of a tooth-brush or a very fine fish-bone; they appear no more prominently than a white line, in the laryngeal mirror.

If the foreign body cannot be seen in the middle pharynx, examine the larynx very carefully. If it is in the larynx we shall have
such laryngeal symptoms as coughing, huskiness of voice, and possibly difficult respiration. Another location should not be neglected, the pyriform sinuses. The author removed a large wooden toothpick from the right pyriform sinus a short time ago. The patient had been whittling this piece of wood, and putting it in his mouth, inadvertently drew it into his throat. This could not be seen with the mirror during ordinary respiration, but only when the patient made extraordinary inspiratory efforts.

Once the foreign body is located, we should be able to remove it without much difficulty. Laryngeal forceps with a short bite are more easily applied than those with long opening blades. Every man who does throat work should have at least two pairs of these narrow opening forceps, one opening antero-posteriorly and the other laterally. The difficulty with nearly all these forceps is that the length, which is bent downwards, is too short, and the curve is not apt to be exactly right.

In speaking of the laryngeal applications, the author said that the applicator to reach the vocal cords should certainly be bent down three and one-half inches, and oftentimes four inches. This is also true of the proper length of laryngeal forceps. If a foreign body has entered the food-passage it will as a rule pass safely into the stomach. We may endeavor to locate it by introducing the finger and then later carefully using some variety of probang, such as the umbrella probang or the coin-catcher. Foreign bodies if left to the judicious management of nature will often do less harm than if they are handled by the too enthusiastic practitioner.—Post Graduate.

PERFORATING ULCER OF THE MOUTH. Letulle of Lille has reported an instance of this rare condition in a male, aged 50 years, an alleged alcoholic subject, who presented fairly well-marked symptoms of tabes. The teeth in the left half of the lower jaw were all wanting except the central incisor, those on the right side being healthy. In the upper jaw there were only three teeth left, and apart from the persisting teeth the alveolar border was atrophied; on the right side of the upper jaw there was a cavity involving the alveolar border and the hard palate, opening like a cone into the middle meatus of the nose. The mucous membrane lining it was pale, thickened, but not ulcerated; its sensibility was much impaired. The patient was not aware of this condition, but on being
questioned he said that liquid food had for five months come through the right nostril. This lesion is rare; Baudet has collected eight cases chiefly on the subject of tabes. It may be unilateral or bilateral, but always occurs in the same situation. As to the explanation of the lesion, there are two views: that of Galippe, that it is the result of alveolar pyorrhea aggravated by tabes; and that of Baudet, that it is an atrophic tabetic lesion due to the fifth nerve being affected, which begins by loss of the teeth and atrophy of the jaws, and sometimes terminates by ulceration and perforation into the antrum. The decision between these theories must be left to the future, but probably a combination of the two would be most satisfactory. At present only one case has been examined after death, and that very incompletely.—British Medical Journal.

INDIANA DENTISTRY LAW. Section 5596 of the Revised Statutes of Indiana of 1894 provides for the appointment of a board of examiners consisting of five members, three of whom are to be chosen by the Indiana State Dental Association. This section it was contended, in Ferne vs. State, was unconstitutional, as in violation of a clause in the state constitution forbidding the granting of privileges which shall not, upon the same terms, equally belong to all citizens. It was argued that by said section a special privilege was given to the Indiana State Dental Association of naming members of the board of examiners, and prescribing the standard of qualification. But the supreme court of Indiana holds October 12, 1898, that said section 5596 does not contravene the constitution. It says that it is not necessary that members of the association shall be appointed upon the board. And it looks at the power to appoint as in the nature of a duty, rather than a privilege, insisting that it may not be said to be a special privilege any more than that conferred upon circuit judges to appoint city commissioners or a drainage commissioner, or that the governor, the president of the state university, and superintendents of common schools shall be members of the state board of education, or in many other instances where non-judicial functions are imposed upon judicial officers, or non-executive functions are cast upon the executive, or where men, by reason of their learning, are designated to perform a service to the public. Taking up the suggestion that the act in question does not afford due process of law, in that it fails to extend the right of
appeal from decisions by the board, the court says that it may be seriously doubted if one who does not seek a decision of the board may complain that he could not appeal from its action, and that it may be suggested also, that the general rule is that appeals are recognized as allowable from judicial decisions only, and that boards of the character of that in question do not render judicial decisions. Moreover, the party here charged with unlawfully practicing dentistry, and convicted, objected that the evidence did not support the verdict that he engaged in the practice of dentistry. It showed that he leased and occupied rooms for several months for the declared purpose of practicing dentistry; that he had done dental work for three or more persons; that at times he engaged in filling teeth, and at other times did dental work at the bench. This, the supreme court regards as sufficient to require the inference that he engaged in the practice. It also thinks it quite clear that it is made a crime to practice dentistry "without being registered," registry, within the purpose of the law, relating to the permanent authority to practice dentistry, and that the temporary permit issued by any member of the board of examiners is a protection only until the board shall meet to make the registry.

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VARIATIONS IN NUMBER OF ROOTS IN HUMAN TEETH.
By Edwin Collins. The question of how many roots each individual tooth of the human jaw should possess is one over which the old anatomists were much exercised. Even Bartholomäus Eustachino confesses in his treatise, "De Dentibus" (Lugdini Batavorum, 1707), that it was impossible for him to come to a clear decision on this point. It has since that time been established how many roots individual teeth should normally possess, but it has been shown no less certainly that this number is by no means a fixed one, since it is often exceeded and frequently not attained.

The subject was not long ago ably discussed by Professor Dr. Busch before the German Odontological Society, and the results of his investigations are worthy of attention. In the deciduous teeth, the six front ones, as well in the upper as in the lower jaw, have always the simple root, and it seems fairly certain that the division of the root has never been observed in any one of them. The first molar of the upper jaw has normally three roots; of the lower jaw two roots; and so far as can be ascertained these teeth have never
been found with additional roots. In the case of the second molar, however, such irregularities do occur. Prof. Busch has collected eleven cases in which the upper second molar has shown four well-defined roots instead of its normal three, and eight cases in which the second lower molar has shown three well-defined roots instead of its normal two. Other additions to the normal number of roots in the deciduous teeth do not seem to have been observed.

Much more common are the cases of abnormally numerous root development in the permanent teeth. The upper incisors, it is true, almost invariably exhibit the simple root alone, and only rarely have cases been observed where a fissure running down the length of the root suggested the commencement of division, or of the presence of a small appendix root, so to speak, at the side. Of such rare cases, however, Prof. Busch showed some examples; also the lower cutting teeth, although they often normally possess a double root-canal, very rarely exhibit a division in the point of the root.

The upper cuspid also very rarely shows a divided root. Up to 1896 Prof. Busch had been able to collect only two examples. Strange to say, the case is altogether different with the lower cuspid, he having come across no less than twenty-nine examples with the root divided fairly high up.

As is well known, the upper bicuspid behave strangely in this respect, for the first often shows a somewhat larger crown, and much more often than the second a divided root, and thus approaches more nearly the form of a molar than does the latter, whereas one would expect exactly the reverse to happen, since the second bicuspid is situated next to the molars, and might therefore be expected to approximate the form of the molars. Long ago Corabelli stated that in about 30 per cent of the cases observed by him the first bicuspid had a divided root, and Prof. Busch finds that this agrees entirely with his own experience, whereas the second bicuspid is found much more seldom with a simple divided root. The first bicuspid has the further peculiarity that its buccal root is often again divided, and that this tooth thus terminates in three distinct roots, which never happens to the second bicuspid. Prof. Busch had up to the time he read his paper seen no less than thirty-six examples of the first upper bicuspid provided with three well-defined roots, so that this tooth had thus acquired a form remarkably like that of an upper molar. Indeed, in some few cases it may even be
difficult to distinguish such a bicuspid with three roots from an exceptionally small upper molar.—The Dentist, Nov. 1898.

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SURGICAL TREATMENT OF CONGENITAL CLEFT PALATE. By W. H. G. Logan, D.D.S., Chicago. Read before the Odontographic Society. The causes of congenital cleft palate are not thoroughly understood, yet in the majority of cases its primary cause can be traced to the prenatal or hereditary influences, and at times both seem to have been prominent enough to have resulted in the deformity.

Before considering the value of the different operations to be employed in the cure of a continuous cleft palate, let us discuss the propriety of surgical methods. Where and how is the line to be drawn between the mechanical and surgical mode?

As a result of measurements taken of over one hundred normal palates, I have been led to believe that there exists an almost set ratio in distance between the superior maxillary tuberosities to the distance from the median line on the dorsum of the pharynx to each tuberosity upon said superior maxillary bones. The point upon the dorsum of the pharynx from which the measurement is to be taken should be at a point upon a horizontal line with the palatal portions of the superior maxillary bones in their normal positions, and if after more thorough investigation the above theory proves to be a fact, we shall then be able to state more certainly when success will or will not crown surgical interference.

True success in an operation upon the palate is reached only when the proportions of the surgical velum are sufficient to close the naso-pharyngeal opening during speech; and when a surgeon finds after exhausting all his skill that his patient speaks very imperfectly as a result of the shortness of the velum, he should open the soft palate again and have constructed an obturator which shall in length and breadth give more perfect results. There can be little doubt in any one’s mind who has investigated along this line but that many patients who have been operated upon for the cure of congenital cleft palate would have been by far more benefited if they had fallen into the hands of the former of the artificial vela, while on the other hand just as grave errors have been made by employment of the artificial when surgical interference was indicated. Such mistakes will probably continue until some well
defined principles are laid down, whereby we shall be told the amount of soft tissue necessary to close the naso-pharyngeal opening during speech, and if we have said amount of tissue present.

In the year 1851 the idea of the cure of continuous cleft of hard palate by pressure upon the buccal surfaces of the superior maxillary bones was brought before the profession. The author states, "I was led to try it upon the body of a dead child which died three weeks after birth. By means of a pair of clamps the sides of the fissure were brought readily in contact without any fracture or displacement of the bones." He also states "I repeated the experiment on young dogs, removing a portion of the palatal bones by means of a saw and then applying pressure. The animals did well." He then suggests a plan wherein a horseshoe clamp, with a shelf on its lower border to receive the gums and prevent its slipping, could be used. He did not state or suggest any method for retaining the parts in contact, and as this author does not give us any reason to believe he ever performed this operation upon a living human subject, the only credit which can rightfully be given him is that he was the originator of the idea of pressure upon the buccal surfaces of the maxillary bones as a cure of congenital cleft of hard palate, and not of performing uranoplasty, for uranoplasty was first performed, that is by pressure which results in bringing the superior maxillary bones together in their entirety and maintaining their said relation until union takes place, by Dr. Brophy and subsequently by the late Dr. Garretson, by the following method:

Dr. Garretson forced the superior maxillary bones together by the employment of a modification of the Hoey clamp, which in its natural form was used as an arterial compressor. The parts were retained by the use of compresses placed upon and below the malar bone, secured by adhesive strips applied as in an occipito-labial cravat of Mayo. Dr. Garretson explains another mode of securing the same end as follows: Compresses placed upon the cheeks at a point so when pressure is brought to bear upon same it will carry the bones toward a common center. To produce the pressure he employed a rubber ring over the pads and around the cervico-labial diameter of the head.

Dr. Brophy performs uranoplasty by passing two silver wires through the superior maxillary bones, one in front and the other behind the malar process, while both are above the hard palate.
A lead plate having two eye-holes is then passed upon the wires. The ends of the wires are then twisted until the parts approximate, the edges of the cleft having been properly freshened in the first step of the operation. When the tension is such as to endanger the breaking of the wire he makes an incision through the malar process above the lead plate which is in direction horizontal.

The objections common to both the Garretson and Brophy operations are as follows: That life is endangered by operating so young. Constriction of the dental arch. High vault of the palate. Partial or complete stenosis of the nasal passages when the cleft is extensive. The main objections to both of Garretson's methods were that the retention employed was unreliable and could not always be depended upon to hold the parts in contact until union took place, while Dr. Brophy was criticised because of passing the silver wires through the maxillary bones at a point which necessitated the destruction of the dental germs.

Let me describe an operation which was devised and performed by the essayist in 1897 upon a child six weeks old, for the cure of continuous cleft of hard palate. The patient was anesthetized by the administration of chloroform while in a recumbent position upon the operating table. First step: Two strong silk sutures were passed through the soft tissue and hard palate at a point midway between the edges of the cleft and the superior maxillary ridge. These silk sutures when in position passed through the palatal portion of each superior maxillary. The second step was to substitute silver sutures for the silk, quickly accomplished by fastening the silver sutures to the ends of the silk ones and drawing upon said silk to carry the silver suture to the desired position. The ends of sutures were then passed through opening in lead buttons made to fit each individual case. The third step consisted in forcing the separated edges of the cleft together by an instrument, which I shall term the uranoplastic forcep, so constructed that force can be brought to bear upon any given point along the buccal surface of the superior maxillary bones desired. The uranoplastic forcep was then placed in position and gradual pressure exerted; at the same time tension was made upon the silver sutures so as to bring the palatal portions together on a horizontal line. The last portion of this step is very important, as it will do away with the high vault of palate which follows the other operations, and gives contact of the edges of the
cleft with the least possible constriction to the maxillary ridges. The last step before the wires were twisted which should hold the parts in their proper relation was to remove not less than one line of the edge of the cleft involving bone and soft tissue, including only such areas, however, as should subsequently be held in contact.

The parts were now ready to be carried to position, which was done by twisting the wire sutures, and pressure upon the buccal surfaces by the employment of the uranoplastastic forcep. If the resistance seemed to be such as to endanger the palatal tissue or wire sutures, perpendicular incisions were made through the maxillary bones along their buccal surfaces wherever the resistance seemed greatest. It will be found necessary to employ a number of interrupted silk sutures, to insure constant coaptation of the soft tissue and union throughout the field of operation. I feel that the perpendicular incision is to be preferred frequently to the horizontal for weakening the bones in carrying them together, as the former will not separate the periosteum as does the latter. The silk sutures are removed between the fifth and eighth day, the silver ones remaining six to eight weeks. Antiseptic cleansing of the parts daily consists in the treatment of the wound, but the patient must have care taken of it which is equivalent to that which is received in our best hospitals. Uranoplasty is a major operation in every sense and must have such attention as is due such operations. It will be found advantageous to administer the same food two or three days previous to the operation which is to be employed afterward, every two or three hours when awake, liquids or semi-solids indicating the form the food should be given.

The advantages of this operation over others are: The germs of the teeth will not be disturbed to the same degree. The palatal portions are brought together on a horizontal line, which result is a coaptation of bones in the center with the least possible constriction to the superior maxillary ridges. The high vault of the palate is decreased. The liability of the fibrous union between the separated ends of bone along the buccal surface, if fractures should occur, will be lessened as a result of the incisions made perpendicularly instead of horizontally. The amount of blood lost and length of time necessary to perform uranoplasty is certainly and positively reduced by this procedure.
DIGESTS.

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For my ideas as to the time surgical interference should be employed for cure of cleft of hard palate I am fully and solely indebted to Dr. Brophy, to whom I have been an assistant in surgery for the last three years. They are as follows: First. Operations for closure of cleft in soft or hard palate can and should be performed between the tenth day and tenth month. The more robust the patient the more near the tenth day the operation should be performed. Second. At this period the surgical shock will be less. Third. In proportion to the cleft more soft tissue is present in infancy than at any subsequent period. Fourth. If not performed in infancy the palatal tissue will atrophy as a result of not performing the natural functions. Fifth. The tuberosities can be forced nearer together without danger of extensive fracture, and give us the happy result of elongation of velum palati. Sixth. When the child learns to speak its enunciation is correct and natural, for its palate is normal.

I do not fear dangerous constriction of the dental arch or stenosis of the nasal passage, as claimed by Dr. Marshall in his most excellent work upon oral surgery, which in many ways is the most meritorious book we have on this subject. It has been proven beyond any question of doubt by practical demonstrations that stenosis of the nasal passages will not occur in any case as the result of this operation, and that the occlusion of the teeth will not be destroyed to any great degree.

When continuous cleft of palate is associated with hairlip the palate should be closed first. When intermaxillary bones are detached from both lateral ones, it should be in every case forced back in alignment and secured by employment of silver sutures until union takes place, and never excised.—Review, Nov. 1898.

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REFLEX DISORDERS OF DENTAL ORIGIN. By Henry H. Burchard, M.D., D.D.S., Philadelphia. Read before American Academy of Dental Science, Feb. 2, 1898. Reflex disorders of dental origin cover a wide field in both sensory and motor disturbances throughout the body, varying in latitude from pain referred from one tooth to a neighboring tooth, to referred pain in a limb terminal; from slight twitching of near muscles, to pronounced epileptiform seizures or paralysis. It is impossible in the limits of a small essay to consider all of the manifestations of nervous disturb-
ance having their origin in dental diseases; nor, indeed, is it advisable to do so, as many of the cases are but rare clinical curiosities. There are, however, features of some degree of constancy which have occupied the attention of nearly every dental practitioner. These are the reflex disturbances arising from diseases of the pulp. Many of the cases of reflex disorders recorded in literature are difficult of classification, because reported by the medical practitioner, who, so far as I have been able to determine, has never differentiated diseases of the pulp from those of the pericementum. Reflex pains do occur in connection with diseases of the pericementum, but by far the greatest number of cases are found associated with diseases of the pulp. The reason is clearly set forth by Dr. Black in volume 1 of "The American System of Dentistry."

The pulp in its normal condition does not possess the tactile sense, and like similar organs, refers irritation to which it is subjected to some other point. Such organs however do exhibit some degree of constancy as to the point of reference. For example, as pointed out by Black, affections of the iris have an almost constant point of reference to the brow, those of the hip-joint to the inside of the knee, and so on.

This same constancy is observed in connection with the vast majority of acute pulp-diseases; the pain, being rarely localized in the affected tooth (except in cases of acute and sthenic pulpitis), is referred to some point or points of the corresponding nerve-trunk of the same side, the general rule being that the affections of the pulps of the lower teeth have pain reflected to some point of the course of the inferior maxillary nerve, frequently in the auriculo-temporal branch. Pulp-diseases of the upper teeth are most commonly attended by pain in some point of the superior maxillary nerve. In connection with either, pain may be referred to the first branch of the fifth nerve; this latter reflection is to be regarded as the first of the remote references.

The next reference is to the ear, where not only sensory disturbances may be noted, but also those of special sense. Next in point of frequency are affections of the eye. While many of these are clearly traceable to reflex disturbance of the ciliary ganglion, there are others in which the second cranial nerve is involved. That is to say, while pain is usually confined to the ramifications of the fifth nerve, it may be referred to other nerves whose function is
then disturbed; to the second, resulting in functional diseases of the retina; to the third, fourth, sixth and seventh, in which cases motor disturbances of the muscles about the eye and head are noted; to the eighth, producing disorders of hearing; to the ninth and tenth, when disorders of the tongue, pharynx, larynx, and other parts may be noted, as recorded in dental literature.

The spinal nerves may be affected, resulting in painful diseases of distant parts—the uterus, a thumb, or even a toe. In addition to these should be mentioned the functional disorders of the cerebrum itself, cases of which have been recorded.

To generalize: The acute affections of the pulp are those in which wide reflex disorders are rare. In the chronic diseases, notably in connection with chronic degenerative changes, reflex disorders are common; and *vice versa* in diagnosis; localized pains about the jaws point to the more acute diseases of the pulp; distant pains arouse suspicion of chronic diseases of the organ.

The dental diseases to which such pains are traceable may, for convenience, be grouped under four heads—1. Reflex disorders due to the irritation of the hypersensitivity of dentin. 2. Those associated with acute pulp-diseases. 3. Those arising during the progress of chronic pulp-diseases. 4. Reflex disorders due to diseases of the pericementum.

While it is certain that almost any of these dental causes may be associated with almost any extent of nervous transferrence, it is extremely probable that pains may be and often are ascribed to a dental source when their true origin lies in other organs. The teeth may be the seat as well as the source of reflex pains. This is notably true in patients who suffer from chronic malarial poisoning, from gout, and in some cases from secondary syphilis. In the gout cases, however, it is more than probable that pathological conditions exist in and about the teeth to which general dental pains are due. The test of a dental origin of a distant pain should be, Does the pain disappear promptly upon the correction of the dental disease without any other treatment? The vast majority of localized pains about the head and face are due to diseases of the eyes and teeth. Those of the eyes are most frequently located in the first division of the fifth nerve, and those of teeth in second and third branches. These rules have exceptions, but serve as directing signs in location of the causes of facial and cranial pains.
Reflex Disorders Due to Exposed Dentin. As a general proposition, it may be stated that reflex disorders due to the irritation of hypersensitive dentin are most frequently associated with its peripheral exposure; furthermore, the most common situations of the points of irritation are upon the necks of the teeth, where a limited amount of cementum has become exposed and removed, laying bare the dentin. This rule is also open to wide exceptions, but is a useful guide. Other situations which should be mentioned are upon abraded surfaces of teeth and in superficial cavities. As in all dental disorders, the extent of the reflexes is governed by peculiarities of the individual, being most pronounced and remote in individuals who present a neuralgic dyscrasia. In the ordinary individual such a condition as a neck-exposure of dentin may give rise to indefinitely locating pains about the lips or jaws; in the neuralgic dentin, exposure at the neck of one tooth may be the cause of severe trigeminal neuralgia, with painful spots at the points of nerve emergence, the supraorbital, infraorbital and mental foramina; severe pain in the eye or ear. Cases are recorded when typical neuralgic sore areas have existed and resisted general medication, and been found due to exposed dentin at the neck of a tooth. This exposure may be upon any tooth; more than once it has been located upon the disto-cervical portion of a third molar. In some of these cases deliberate irritation of the exposed dentin may cause a reflex paroxysm, but unfortunately for purposes of immediate diagnosis, it more frequently happens that the pain induced is local. However, a casual relationship is made clear when it is noted that the reflex pain disappears soon after a thorough cauterization of the exposed dentin. A diagnostic sign of the condition is the recurrence of pain upon taking faintly acid or intensely sweet substances into the mouth.

Acute Diseases of the Pulp. While it is true that severe and wide reflex pains may be caused by acute hyperemia and attacks of acute inflammation of the dental pulp, it is rare in these affections that symptoms directly referred to the maxillary region are absent. In the first-named disorder the taking of cold water in the mouth is almost immediately followed by a paroxysm of pain, usually definitely located in the region of the posterior, middle or anterior dental nerves. In acute pulpitis the pains are also directly referred to the maxillary region, although a defined sore spot may present
as a reflex at some portion of the face or scalp, in which event the existence of a dental disease may not be even suspected. It is in connection with repeated venous congestion of the pulp, its chronic inflammation, suppurative and non-suppurative, and still more frequently with the formation of defined calcific masses in the pulp-tissues, that wide reflex disorders are most frequently found.

All of these conditions present one common feature which differentiates them in symptomatology from the acute affections of the pulp, i.e., a lessening instead of an exaltation of the special temperature sense of the pulp. Black has remarked this, and it will be found almost constant. The reaction develops a special peculiarity, notably in the later stages of some of these degenerations, and that is a lessening of response to cold application and an increasing response to heat. The nature and time of response to heat affords a valuable diagnostic sign as to the pathological condition of the pulp. It is most marked in abscess of the pulp, less so in venous hyperemia, and much delayed in extensive calcifications in the pulp substance. These distinctions may be carried to still further differentiations, but are beyond the scope of the present paper.

The vast majority of the common neuralgias, with defined painful areas about the head, are due to one of these dental disorders. Pain in front of or in the ear, pain over or in the eye, with a disposition to press upon the eyeball, tender spots in the occipital region, or in most of the cases of pain at the points of nerve-emergence, all point to a reflex disorder having a dental origin.

In nearly all of these cases pain is unilateral. Should it be found upon both sides of the head it leads to the suspicion of teeth on the other side being affected or to the existence of some optical defect, notably uncorrected astigmatism, hyperopia or myopia. Much confusion may arise through the existence of both dental disorders and optical defects, so that the general injunction of the ophthalmologist to patients, "Have your teeth examined," is reciprocal. The dentist should advise in neuralgic cases, "Have your eyes examined," but should correct or remove all dental disorders to which reflex neuralgias are attributable.

Reflex cranial and other neuralgias are also associated with diseases of the pericementum; the classes of pericemental affections giving rise to them are both septic and non-septic. As with pulp-diseases, reflex neuralgias are most commonly due to chronic rather
that acute pericemental diseases. Of the non-septic cases, a hypertrophy of cementum has been found a frequent cause of some of the most remote cases of reflex neuralgia recorded in medical and dental literature.

As with nodular deposits in the pulp, these growths exist frequently, and give rise to no symptoms whatever; presumably the reason for reflex irritation when it appears is the pressure of the hypertrophic growth upon nerve fibres. Many of these cases are not diagnosed except by a long and tedious process of exclusion, there being frequently no local symptoms which would point to the existence of the dental condition. At the present day suspected cases would of course be unveiled through a radiograph.

Many reflex neuralgias are directly traceable to the existence of septic conditions about the roots of teeth, the proof of the casual association being brought to light by the disappearance of the reflex disturbance when the septic condition about root is remedied or tooth is extracted. It is probable that a large class of ill-defined disorders might be traced to this source, the lack of continuity and clearness of histories, dental and otherwise, obscuring connection between dental and other diseases.—International, Nov. 1898.

* * *

EMERGENCY CALL-LIST OF INSTRUMENTS AND APPLIANCES. By J. T. Codman, D.M.D., Boston. 1 mouth-mirror (or two), to throw light. 1 explorer (or two), to search cavities. 1 large cutter (side), 1 large cutter (end), to break edges and to open cavity. 1 (or two) long, smaller side cutter, 1 (or two) long hoe excavator, 1 short side cutter, 1 short hoe excavator, called excavators, to clean and partly excavate cavity. 1 pair foil-tongs (always necessary). 1 water syringe (convenient). 1 knife file, or separating files (not always wanted). 1 half-round, medium-cut file, for shortening bite. 1 root instrument, for reaching into roots. 1 gum-lance. (Have a sharp knife in your pocket.) 6 small mouth-napkins, to dry with. 1 wad of cotton or absorbent fibre. (Do not forget it!) 1 spool floss silk or thread, to tie pledget in (sometimes). 1 pair scissors, to cut silk. 1 bottle sandarac varnish, to protect cotton filling. 1 bottle nerve-destroying paste, to kill pulps. 1 bottle i, 2, 3 compound or cocain, or any good obtundent. 1 small bottle toothache drops, to leave behind with patient.

On a chance of being obliged to extract an aching tooth, carry
the following forceps: 1 pair upper third molar. 1 pair under third molar. 1 pair upper bicuspid. 1 pair under bicuspid. 1 pair upper central and cuspid. 1 pair under central and cuspid. 1 elevator. (Use your own kind.) The molar forceps may in an emergency be used for all the molars; the bicuspid forceps for the cusps. If not, use the central forceps for them and the remaining teeth.

Put all these implements into a small, neat hand-bag, with a clean towel, and if room add your thinnest office-coat, for comfort. Bring back all your instruments, etc., and your fee, if you can get it,—cash.

I have here made a list of about the smallest number of instruments etc., that I would like to start out with at an unseasonable hour. In the daytime we may perhaps find what we have forgotten to take with us at a neighboring apothecary's, or at some brother dentist's. If we are called to a private house and have left our cotton behind, we may find some there, or an old piece of cotton cloth, which may do poorly to form napkins of; but I modestly propose that this list of mine be copied and securely placed for reference where it can always be found. Each dentist can then subtract or add any other things to the list that he may prefer, or change some to those better suited to his fancy.—International, Nov. 1898.

*   *   *

ANKYLOSIS OF HUMAN TEETH TO THE JAWS. By Mr. Storer Bennett. Read before Odontological Society of Great Britain, Nov. 7, 1898. He said the attachment of teeth to the jaws by means of ankylosis, though common enough in many fishes and reptiles, had hitherto been pronounced by observers either as impossible, or at any rate as never taking place. He should endeavor, however, to show how dangerous was the assumption in pathology that nothing ever occurred simply because it had never been their fortune to meet with it. Some two years ago a specimen resembling a cherry-stone in shape, but bony in appearance, with certain gouge marks on its surface, was sent by Mr. Whatford with the following history: For a considerable time a lady had suffered with profuse discharge through the gum in the region of a lower molar. She consulted a neighboring practitioner who diagnosed a buried root and endeavored to extract it. Failing in his first attempt, ether was administered, and after very great difficulty and an operation occupying nearly an hour, the specimen was removed. Though
seeming to consist of bone, at one point a tiny piece of root seemed visible, and he (Mr. Bennett) removed a section from that portion, and through the microscope found to his surprise that he had a longitudinal section through a root closely embraced by bone, with which at some parts it was so intimately blended that it was impossible to see where one tissue ended and the other began. The tooth and bone in fact were ankylosed. At the Dublin meeting he learned that Mr. Hopewell Smith had a section. The patient was a man also suffering from suppuration for which an upper bicuspid and molar were removed with large masses of bone attached to them. Microscopically those teeth were found to be attached by ankylosis to the bone, no line of demarcation between the two tissues being perceptible. In the bicuspid, which was decalcified before cutting, giant cells filling up the lacunae of Howship were in many places beautifully shown, while the molar, of which a ground section was made, showed with equal beauty and equal certainty that the tooth and bone were ankylosed together. M. Choquet of Paris had sent some lanternslides of a case of ankylosis, which Mr. Bennett exhibited, but he had had no opportunity of examining the original specimens. He thought those three cases were enough to establish the possibility of the occurrence of ankylosis, and a small amount of positive evidence was far more convincing than any amount of negative assertion. Another specimen, however, was presented to him by one of his students, which proved to be as fine a specimen of ankylosis of a lower molar to the bone as any he had hitherto met with. The bone was of the loose cancellated character commonly met with in what had been described in fishes as bone of attachment, but which was of course normal in them though pathological in human beings. Lastly he had reexamined an old specimen which he believed was also a true case of ankylosis. He thought the subject had an important bearing upon the operation of replantation and transplantation of teeth. In replantation it was true if the operation was undertaken early they might hope for the reestablishment of circulation in the still living periosteum, but if the operation were delayed, or in cases of transplantation, where teeth were used which had long been strangers to the mouth, the only chance in which success could be expected was in ankylosis being established. It was interesting to inquire why that condition had been so constantly denied. In the case of joints or of two contigu-
ous bones it was known that ankylosis might occur, and in those cases there might be the disappearance of the intervening capsule, ligament, synovial membrane, cartilage, and periosteum, and a growth of new bone which united the two originally supported by all those tissues. In the case of teeth there was but an intervening periosteum, and why then, asked Mr. Bennett, was disappearance and replacement by osseous tissue considered such an impossibility?

Discussion: Mr. D. Caush asked if Mr. Bennett had attempted differentiation of the tissues by surface staining after the section had been cut. When Mr. Caush first commenced work with exostosis he thought he had found out a thing that he was told was impossible, an ankylosed tooth; but on carefully surface-staining the section he found there was a very thin line of demarcation between the old and new tissue.

Mr. H. Smith said that in M. Choquet's slides there was undoubtedly no trace whatever of the periodontal membrane existing between the cementum and the alveolus.

Mr. Parfitt asked Mr. Bennett what evidence he had that the masses of bone were continuous with the jaw? They seemed to be uncommonly like stalyctic masses, and in none of them was he able to see any definite union with what might be called the normal alveolar process.

Mr. F. J. Bennett considered it impossible to imagine there could be anything but an intimate bony union between the cementum and the tooth. In one specimen there could be no shadow of doubt as to its being a case of ankylosis. In that one case he had come to the conclusion that there was originally an enlargement of the jaw-bone, and that the ankylosis had been caused not primarily by anything connected with the tooth, but by the enlargement of the tissue of the jaw-bone encroaching upon the tooth, and the active cells of the bone eating into the tooth and becoming intimately connected with the tissue. He thought that Mr. B. Sutton's description of follicular odontome furnished a parallel class of cases. Mr. Sutton had pointed out that the follicle of teeth was capable under certain conditions of becoming thickened to a very large extent with the fibrous material and forming a fibrous odontome. Some of the cases shown might be similar. There was no odontome, but there was a localized mass in which the follicle had gone on to its extreme stage. He believed that if the cases were put side by side and read with
Mr. Sutton’s account of the way in which the odontomes formed, it would be found that if the one was admitted to exist, cases of ankylosis might be explained on the same grounds.

Mr. May said he was still unconvinced there was proof of ankylosis being present; and with regard to Mr. F. J. Bennett’s remarks, he did not think an odontome had ever been found ankylosed with the jaw. He could imagine in the specimens shown by Mr. Bennett a condition of inflammation occurring round the root, the first cementum exostosed and becoming more vascular, and then bone occurring just as in the pulp-canal. There was no proof that it was ankylosed to the jaw.

Mr. E. Lloyd-Williams said that in one of the cases shown by Mr. Bennett he had removed a very large number of teeth and a large number of pieces of bone, and he could assure both Mr. May and others that he had in his possession specimens which would show undoubtedly that the tissue was the result of osteitis. He had no doubt whatever in his own mind, both from the clinical history of the case and from the appearance under the microscope, that it was an undoubted case of ankylosis.

Mr. Baldwin asked if the teeth appeared to be dead before the union took place. Judging from the appearance on the screen they seemed to be pulps which had entirely calcified.

Answering Mr. Gabell, Mr. E. Lloyd-Williams said that not only the bones of the maxilla, but the nasal bones were also very much enlarged, and the term osteitis was one which met with the approval of Mr. Sutton, under whose care the case had been.

Mr. S. Bennett briefly replied. He said that two of the specimens at any rate showed evidence of the pulp being calcified, but most of the specimens had been taken from roots and therefore the probability was that the pulp was dead. With regard to the objection that there was no evidence of bony connection between the osseous tissue and jaw, it should be borne in mind that previous suppuration had taken place in all the cases of which he had any history, and the bone ought to be regarded as dead, possibly in process of being removed from jaw.—Jour. Brit. Dent. Assn., Nov. 1898.

Ohio Dental League.—A move is on foot to unite the dentists of Ohio in an organization to raise the standard of the profession, weed out abuses and make war on quackery. There is much talk about taxing the property of the dental colleges, which has not been done heretofore.
Letters.

CONTRADICTION BY DR. N. S. JENKINS.

Dresden, Germany, Nov. 30, 1898.

To the Editor of The Dental Digest:

Dear Sir:—In the October number of the Dental Practitioner and Advertiser appears the extraordinary announcement, that "Dr. Norman W. Kingsley, formerly of New York, has located in Dresden, Germany, as the assistant of Dr. Jenkins. He has charge of the laboratory and prosthetic work."

The only possible basis of such a ridiculous statement is, that when upon a friendly visit at my country house a few years ago Dr. Kingsley, during the illness of one of my partners, although at that time far from well himself, kindly came into town and gave me in some special cases the inestimable advantage of his great skill and wide experience.

As the publication of the Dental Practitioner and Advertiser has been suspended with the October number, I shall be most grateful if you will kindly publish this statement in your esteemed journal, to correct a rumor which is as unjust to my distinguished friend as it is grotesquely flattering to me.

I am, sir,
Yours very faithfully, N. S. Jenkins.

BALTIMORE LETTER.

Dear Digest: Baltimore, December 18, 1898.

In last month's letter we called attention to the unwisdom of having the examinations of the state board conducted in the colleges. We did not then imagine that the bad effects would so soon become manifest; an incident has however occurred which gives force and piquancy to the objections urged. About a month ago the dean of one of the colleges wrote to the president of the board requesting a copy of the questions used in the last examination. The president replied that the board had decided not to make public the questions. It, however, developed, that the dean of the college at which the examination was held was given the questions, at or about that time. It is hard to imagine what reasons the board might give officially for this piece of gross injustice.
It has been said as quite a large number of copies of the questions were printed and only three persons examined, that for economy's sake (surely not of printer's bill) these same questions were to be used in the spring examination. If this was originally the intention of the board, it must not be done, and decidedly not when it is known that these questions, to be used at the next examination when the students from the colleges come almost en masse for certificates, have been during the whole teaching course in the hands of one dean and have been refused another.

No man who is willing to have his public or official actions impartially viewed could consent to this unfairness for a moment. Oriole's impression is that the board has gotten into this unfortunate position, partly from a misapprehension of public obligation and partly from a failure to conceive the scope and extent of the duties of its individual members.

We desire to discuss this matter in a broad and fair-minded way. Public servants should not resent criticism of their official actions as evidences of private or individual unfriendliness. The members of this board hold their positions by the sufferance of the profession in this state and the governor; their actions should be characterized by the utmost regard for the wishes of their creators, so far as it does not conflict with the public statutes which they are appointed to execute.

Now it is a well known fact that many of the features of the law are vague and uncertain, but there was nothing vague or uncertain about the expression of the state society when the subject of dental law was up. The voice was almost unanimous for publicity of transactions. This is not only the demand of the society, but it is the universal custom in other states. Many of the states make a regular provision for the demand for their questions.

The fact that criticisms have been passed upon questions formerly given does not alter the case. If any individual member cannot prepare a set of questions which will be passed upon with tolerable favor, he would better prepare one a week and submit it to an authority for correction, until his requirements meet the public demands. If he has not the time nor ability to prepare more than one set a year, he won't do, that's all.

Oriole has repeatedly committed himself to civil service for the examiners, and would prefer to have men of experience on the
board, but he does not believe that public or professional interest is conserved by the continuance in such offices of men who fail to give evidence by their public acts of fair-mindedness and ability.

Let our board correct its errors, and in its future actions treat all alike, whatever individual preferences are. There are no czars in America and no room for them.

Cordially,

Oriole.

NEW JERSEY LETTER.

To the Editor of The Digest, Newark, N. J., Dec. 21, 1898.

Mr. Editor:—The months seem to roll around with exasperating quickness when one has any special duty to perform which entails thought, as does a monthly letter of this character, and these same months sometimes pass more rapidly than do events to chronicle therein, which leaves one in the position of trying to write something of interest out of a mere nothing.

Dr. J. A. Osmun, president of the state society, is very dangerously sick with pneumonia, following an attack of la grippe, and while his life was despaired of for several days, encouragement has now come that this danger is past—a condition much to be desired by his many warm friends both in and out of the profession.

By reason of his illness the semi-annual meeting and banquet of the state society have been postponed. It may be said, however, that all the committees are actively at work, more especially those vitally connected with the success of the convention, the essay and exhibit committees. We have heard that several new electrical appliances are nearly perfected and will be exhibited at this meeting.

The Central Dental Association held a most important and interesting meeting on the 19th inst., at which time Dr. A. C. Hart, the eminent histologist and microscopist of San Francisco, read a paper on “The Prevention of Decay.” The latter part, which dealt specifically with the subject, is much to be commended.

We were a little surprised and a good deal disappointed at the personal attacks made on Dr. J. Leon Williams, as we considered them unwarranted and entirely out of place. It is beyond dispute that histologists the world over see things under the microscope with widely different eyes, and what is as clear as the midday sun to one is as black as Egyptian darkness to another, and much charity should therefore be allowed. Facts and truth concerning
them will eventually be established, and it is only by individual investigation and comparisons between investigators that the truth will finally be established.

No one can doubt for a moment that Dr. Williams was sincere in his deductions, and it therefore illy became Dr. Hart to attack him in the language used. Dr. Williams has more supporters than has Dr. Hart, and the latter's attitude in the matter will make it all the more difficult for him to gain the support of our workers along this line. To our mind Dr. Hart did not by any means prove conclusively that Dr. Williams was wrong in all the points disputed. The paper will be published soon and the profession will have an opportunity to judge.

The paper was discussed by Dr. I. Norman Broomell of Philadelphia, who also exhibited a number of slides, Dr. M. L. Rhein and John I. Hart, of New York, Dr. Sam'l A. Hopkins of Boston. Dr. R. H. Hofheinz of Rochester, N. Y., also read a paper in discussion.

Among those present at the meeting who are interested practically in histological work were Drs. E. A. and F. T. Bogue of New York, Dr. Louis Shaw of Brooklyn, Dr. Geo. S. Allen of New York, and Dr. Wilson of Elizabeth.

There were about 125 at the meeting, which shows what an interest there is in this subject. We await with interest what Dr. Williams has to say at the next meeting of the Odontological.

We have heard that the annual dinner of the Stomotological Society of New York will be a grand affair.

Yours fraternally (without the sting),

HORNET.

PHILADELPHIA LETTER.

Dear Digest:

PHILADELPHIA, December 20, 1898.

In the September issue of the Dental Register Prof. Taft rebukes Dr. Ottolengui very severely for his recent statements concerning the methods of students while at college, of dental colleges, etc. We agree with Dr. Taft that for Dr. Ottolengui to write such a tirade against the educational system and institutions of his own profession and own country, is astounding. Also that if there were any suggestions for improvement, or any indications of sympathy for the educational efforts in our profession, some of his statements might be overlooked. But such is not the case. It is an arraignment of the teachers of our colleges and the members of our examining boards
that is unwarranted by the facts. Dr. Ottolengui's arm-chair criticism reminds us of Richard Harding Davis' articles on the conduct of the siege and battle of Santiago. It appears through it all, glorious though the victory was, there was a very grave error made in not having Mr. Davis for the commander in chief.

Some months ago there appeared in the International Dental Journal a very interesting communication from Dr. J. B. Hodgkin, of Washington, D. C., in which he asks, "What Is Dentistry?" He cites the case of a student of dentistry who had just been on trial in the courts of the District of Columbia for practicing without a license. The case was one of importance and we expected to hear some comments upon it from our able editors, but so far nothing has been said. Here was a man practicing contrary to law, as was shown in the trial, and yet he was acquitted of the same.

The defendant introduced himself to a number of dentists in Philadelphia, Washington and elsewhere a little over a year ago, and did the same work here as in the latter city, and for which he was arrested. When in this city he exhibited his appliances, which were patented, before the Academy of Stomatology, at our colleges, and in private offices, and made such operations in the mouth as were necessary for the insertion of his form of denture. These consisted of the amputation of the crowns of teeth, opening and filling of root-canals, holes drilled in teeth for the insertion of pins, etc. Then an impression was taken and the denture constructed and placed in the mouth.

Now, if this is not practising dentistry we should like to be enlightened upon the subject. But as Dr. Hodgkin says, the principal interest to the profession at large is the "expert" evidence brought out by the defense as to what constitutes dentistry. The counsel seemed to get very much befogged; they could not tell whether the removal of calculus and treatment of teeth was dentistry or not, nor did they feel sure that crowning or plate work was dentistry. So the jury brought in a verdict of not guilty. Now, if we are to have a jurisprudence, and the courts are to decide such important matters, should it not be definitely cleared up? So the query, "What Is Dentistry," is naturally made.

There appeared a short time ago an attractive little story in several of our daily newspapers, entitled "The Romance of a Tooth." In this article the writer stated that the well-known dean, Dr. E.
C. Kirk, was about to offer himself as a sacrifice to science, by voluntarily having one of his teeth extracted and replanted for the purpose of noting the practical results of so painful an ordeal. The operation of replantation was spoken of as a new idea in dental surgery, in fact as an "entire novelty," which no doubt sounded very wonderful to the average reader, and the "sacrifice" as a noble one. Dr. Kirk must by this time be familiar with the operation and be able to tell his students all about it, but if the article was paid for we do not think the writer gave full value. Replantation has been performed hundreds of times, and when properly done gives very satisfactory results. It was our pleasure a short time ago to examine a lower bicuspid which was so treated nearly twenty years ago, and we found it in a most satisfactory condition. The idea therefore is much older than some other phases of dentistry.

We alluded in our last letter to the dinner given by Dr. H. C. Register at his country residence, to the Philadelphia Dental Club and other invited guests. It was a very enjoyable and successful affair, and the doctor's new home is well fitted for such an entertainment. Outside of about fifty dental practitioners of this city we noted the presence of Drs. Jarvie, Rhein and Peeso, of New York, and Dr. B. Holly Smith of Baltimore. Such social gatherings have a very wholesome effect upon the profession, and everyone went away with the feeling in his heart as well as in his stomach that Dr. Register was a royal good fellow.

Cordially,

THE SPECTATOR.

NEW YORK LETTER.

To the Editor of the Digest, New York, Dec. 20, 1898.

MR. EDITOR:—We do not think we would have penned the following thoughts had we not read the editorial of one of our journals, reflecting upon the year that is passing; but in it are incorporated some views that should not pass unnoticed. Here and there we frequently notice an exposition of views, and they are that somehow man is going to work out a harmony of human existence by his own wisdom, and that dental organizations are ultimately to establish a standard of righteous doings. Can we ignore the fact that there never was but one man who had met that standard, and he was born from above; and it can be but unintentional blasphemy to appear to accept a contrary teaching.
We met a case in a dentist's office lately that illustrated the benefits of crown and bridge work. The patient was about fifty-five years of age, with twenty-six roots left in the mouth. Everything was in a fair state of health and all the pulps living but one. We saw the case in place, and it strongly emphasized the value of practical dentistry. The patient had previously no conception that such results could be achieved. This case was quite an anomaly on account of the irregular position of several of the roots, which had rotated quite out of their normal position. Any practitioner could well be proud of such results, and the fee was well earned.

It would be a step forward if in the advance for larger professional dealings this matter of fees could obliterate the "tinker" methods so common among practitioners, such as bills of "items," like grocers' bills, and some of them three-quarters of a yard in length.

We see that the riot act has been read in the dental school at Buffalo. The students ran matters until the faculty had decided to change the plan of midwinter examinations and give twenty-four hours' notice. This we clipped from the daily press: "Let justice be done, though the heavens fall."

The annual election occurs this month of the Odontological Society, which places the same officers in active service for the ensuing year. The coming anniversary of this body is looked forward to with much interest, as there are to be matters of more than ordinary interest before them for consideration. The New Jersey and First and Second District Societies are invited.

A shock has come to us in the sudden demise of Dr. Wm. Barker of Providence, R. I., which occurred Saturday evening, Dec. 17, from heart disease. Dr. Barker was a descendant of an old Massachusetts family and was born in Springfield, Mass., Aug. 5, 1842. His life until 1859 was passed on a farm, but at that time he left and proceeded to obtain the education which was so much to him in later life. Much of his culture he obtained by reading and private study, and his travel in the far west and southwest was of great value to him.

Being in New York at the time of the opening of the civil war, he enlisted and served throughout the struggle. After following mercantile pursuits he became a dentist in 1875, first opening his office in Connecticut. In 1880 he received his degree from the Boston Dental College, and from 1886 to 1890 was professor of operative
dentistry in that institution. Since that time he was established in Providence; and he had been president of the New England Society and of the American Academy of Dental Science. Besides taking high rank in his profession, he was a fluent after-dinner speaker and a member of several clubs and fraternities. He was also a single-taxer and took great pride in his position as president of the Rhode Island single-tax league.

Dr. Barker had strongly impressed himself upon his profession throughout New England, for he took up his calling with a well-read mind and mature years. In October, 1874, we gave him an opportunity to look into dentistry at our office and he was more than eager to learn everything that might aid him in becoming proficient. He had formerly been engaged in watch-making, which gave him much mechanical ability, and mentally he grasped all questions with unusual ease. His life was more than ordinarily beset with difficulties, but he met them all philosophically.

Dr. Barker will be greatly missed and his removal seems premature. We join with his associates and profession in proffering condolence to his bereaved wife and daughter.

The following extract is from an editorial in the Mail and Express of December 10th, and we think there is a deal of truth in it; for we believe more in the unwritten than in the written code:

In an address recently given at the American Academy of Medicine, Dr. F. T. Rogers of Providence assailsthe code of ethics. The pivotal rule is that no physician shall with impunity publish to the world in paid advertisements his accomplishments in any special line. The code draws exceedingly fine lines in treating the ethics of advertising. Advertising of any kind is thought indicative of the highest irregularity, and is severely frowned upon, yet a young doctor "may put his professional card in the newspapers, announcing simply his name, degree, address and telephone connection." He may even announce in his card that he is doing special work or is giving his time and attention to one or more special lines, provided his advertisement reads "practice limited to" these special lines. He can not say "special attention given to" any particular class of cases without violating the code. The American Medical Association has distinctly declared that cards of physicians in medical or other journals calling attention to themselves as specialists in any branch whatever are in violation of the code, and such wanton advertisers are condemned by the association and tabooed by the profession. A young doctor is permitted to modestly place his name on a door plate, have his cards printed, tell his friends and neighbors he is ready for business, and while the practice is frowned on by his elders, he may publish his bare card in the local paper.
It is this tyrannous and absurd restriction of the code that Dr. Rogers condemns. He shows that, while observing the letter, the provision is constantly violated in spirit. He says:

We constantly see in the press such items as "Dr. A, the head surgeon of ——— hospital, last night lectured before the Biological Club upon appendicitis, a subject upon which he is considered an expert;" or "Mr. A, whose serious illness was chronicled in these columns, is now improving. Dr. B, the eminent surgeon from ———, yesterday performed the successful operation for stone;" or "Mrs. D. who recently went to ——— to consult the famous oculist, Dr. C, has returned with restored sight, the delicate operation for cataract having been successfully performed by the surgeon." Yet these items have appeared in the daily press without complaint, and Drs. A, B and C are all members of the American Medical Association.

It is no argument to assert that the first form is a paid advertisement and the latter a spontaneous outburst of generous appreciation. We were not born yesterday, and we know that these articles do not as a rule appear without tacit consent and oftentimes direct request.

This one feature of newspaper notoriety is the peculiar property of the ethical advertiser. Whether garbed as a news item, an interview on some particular disease or its victims, an ostentatious display of degrees or hospital appointments tacked on to the mere mention of his name, the daily bulletin of the attending physician to an invalided public man, or the more transparent form of the wonderful surgical operation or exhaustive discussion before the medical society—they are all merely an advertisement and as such are either right or wrong. If right, then the other simpler forms of advertising are right; if wrong, then the offenders should not be the judges of the enormity of the faults of others.

Dr. Rogers instances a case in which a physician was expelled from a national medical society for the offense of announcing to his own patients in a printed letter that he had retired from general practice and taken up a specialty, whereas one of his critics allowed a sketch of his life to appear in a Sunday paper with the statement that in his particular line he was unexcelled in this country, that he frequently performed a certain operation in less than a minute, that he caused no pain, had an extensive practice, saw patients from all over this country, and required two assistants in his office. The letter of the first offender probably reached a few hundred people, the advertisement of this greater offender reached hundreds of thousands.

Dr. Rogers scores his professional brethren who thus manage to wriggle themselves into the newspapers by the back door. "The lay press," he says, "has no proper part in the life of a physician save to record his obituary."

"The hundred and one ways of reaching the public through the columns of the daily press should be absolutely tabooed. Successful operations, curious cases, wonderful cures, as reported in our daily papers, but pamper to a morbid craving and serve no other purpose than to antagonize the best efforts of the profession to benefit the human race. Quackery thrives by reason of the false opinion gained by the laity from reading just such trash."

We hail Dr. Rogers as coadjutor and friend. There is probably no newspaper in this or any other city, town or village which is unfamiliar with the insidious approach of the "ethical advertiser." Sometimes he eludes detection, but not often. Let the Doctor knock this absurd rule out of the code of ethics and let the specialist be permitted frankly to announce himself as many agate lines as he wants to, at so much per. Then we will welcome
the ethical advertiser with the glad hand and the open column. The Doctor, too, is a specialist, but until he gets that ridiculous law repealed we dare not announce it, not wishing to have him fired from the American Medical Society.

The proceedings of the California State Dental Association have come to hand and we have had the pleasure, which all should enjoy, of reading Dr. Hart's paper on "Evolution of Decay," which gives his hopes of making enamel immune from decay. His theory is that it can be done by the aid of chemicals that will produce dehydration and that bacteria cannot live without water. Dr. Hart places himself before his readers as a decidedly intelligent writer. We congratulate him and the society that has had his personal presence with them during this month.

Cordially,

New York.

FORMalin for INsect Bites.—As the subject of insect stings is mentioned in a recent annotation, may we point out that "formalin" (recommended some time ago for mosquito bites in one of the medical journals by a Zanzibar correspondent) is an excellent remedy for the irritation produced by the stings of all insects? The "bite" is touched with the moistened stopper of the "formalin" bottle, and as soon as it begins to smart the excess is wiped off; relief is almost instantaneous.—Jour. Am. Med. Assn.

Master Not Obliged to Furnish Medical Attendance.—There are authorities, such as decisions in Illinois and Indiana, holding that where there is an extreme emergency, and an injury has been received by an employe of a corporation, it is within the authority of an agent of the employer, highest in authority at the time and place where the injury occurred, to bind the company by a contract to pay a physician for services rendered to the injured servant. But the supreme court of Colorado says that it is cited to no case, and finds none, where it is held to be the duty of an employer, in the absence of contract, to furnish medical service and to send to a hospital a servant injured while in his service. If, by analogy to the cases just referred to, it can be said that such a duty ever exists independent of contract, which it reiterates is not the law, the court goes on to say it is only in a case of great emergency, and where it is imperative to save life or prevent great harm. The mere fact that an injury was inflicted requiring medical or surgical treatment, or that the locality where it was received was remote from the place where such treatment was accessible, the court declares in Denver and Rio Grande Railroad Company vs. Iles, March 21, 1898, does not make it negligence on the part of the employer if the latter declines a request from the injured servant to be permitted to seek treatment, or does not obtain for the servant, or aid him in obtaining the same. The general rule deduced is that in the absence of contract a master is not obliged to furnish medical attendance to a servant who is injured in the performance of his duty.
The Dental Digest.
PUBLISHED THE TWENTY-EIGHTH DAY OF EVERY MONTH
At 2231 Prairie Avenue, Chicago,
Where All Communications Should be Addressed.

Editorial.

REPORT OF COMMITTEE ON FOREIGN RELATIONS.

We publish in this issue the report of the Committee on Foreign Relations appointed by the Faculties' Association, and commend to our readers a careful study of this important question, which has been so ably presented by said committee. We regard it as one of the most important documents which has ever been given to the profession.

The question of loose dental laws and bogus dental colleges is especially discussed in this report, and Chicago is pointed out as a hot-bed of nefarious practices. We reprint a clipping from the Chicago Journal of Nov. 12, 1898, as an illustration:

"PERSONAL. Justice to Undergraduate Doctors and Dentists.—Undergraduate practitioners furnishing sufficient proof of their practice through the proper officials can have the degree of M.D. or D.D.S. lawfully conferred by a dental medical college without attendance. Address ——, Chicago."

While Chicago seems to be especially disgraced by the number of bogus institutions existing here, the evil is not confined to any one state, for a modification of this same clipping has appeared in papers throughout the country, and we have had letters from several dentists stating that they have been offered from other sources diplomas without attendance, for sums ranging from $25.00 to $100.00, and they asked our opinion of the value of such certificates.

It has frequently been charged by those who are inimical to the Faculties' Association and dental colleges, that legislation which was for the best interests of the profession has often been sidetracked by the educational institutions themselves; the insinuation being made, that since the proposed laws contained stringent reformatory measures which necessarily endangered the prospect of large classes, the colleges naturally opposed the movement.

Without discussing the truth or falsity of such rumors, the fact exists that dental laws throughout the country are wholly inade-
quate, as the instances which we cite, and a host of others which
might be mentioned, readily show. The energies of every honest
practitioner should therefore be roused in an effort to wipe out this
stigma upon the profession; and when the bogus institutions are
abolished, and the reputable colleges graduate only such students
as are competent to practice, then the holders of American degrees
are bound to have a standing in, and to be in demand by the resi-
dents of foreign countries.

Dr. Henry Wade Rogers, President of Northwestern University,
and Dr. W. R. Harper, President of Chicago University, denounced
the fraudulent-degree-conferring institutions (chiefly law and med-
ical) of Chicago at a session of the Illinois Teachers' Association,
Dec. 28, 1898, at Springfield, and a committee of twelve college
presidents was appointed to secure legislation which shall supervise
degree-conferring institutions. An act will be obtained if possible
creating an educational commission of six or nine members, to be
appointed by the governor and confirmed by the senate, and which
shall be vested with the power to grant and to deprive institu-
tions of the degree-conferring rights. This is a great step forward in
abating the evil, and while the legislature will undoubtedly listen
to what the teachers of the state have to say, we would urge every
dentist in Illinois to write the members from his district and impress
upon them the importance of this question.

BEHOLD A SECOND DANIEL COME TO JUDGMENT.

Under the heading of "Mene, Mene, Tekel," etc., the editor of
the Cosmos is out with another diatribe, professedly in reply to our
October editorials. To show how he avoids the points at issue, we
reprint the first three paragraphs of his subterfuge:

"If the editor of the Dental Digest will consult Daniel v, 26 and 27, he
will discover the interpretation of the quotation which heads this communi-
cation; the reason for its selection we shall endeavor to made clear. In the
October Dental Cosmos we criticised what we believed to be certain defects
in the executive management of the affairs of the National Dental Associa-
tion. We likewise asked for more light on the action of the Executive Com-
mittee of that body in opposing a national legislative enactment apparently
conceived in the best interests of the whole dental profession of this country.
The result of this criticism is, under the circumstances, about what was to
have been expected, for it raised a question as to the autocratic supremacy
of one man in the control of the affairs of our National body. Our criticism,
it now seems, was also an interference with his private business interests as the promoter of a dental supply concern, hence the character of his editorial explosion.

"We have read his editorial in the March Digest, to which he refers, and likewise his October effusions, and they strike us as all being of the same cloth and texture. In each of them the main issues are evaded, none of the points at issue are squarely met, and instead of a frank and clear putting of the case we are treated to a tirade of abuse and innuendo respecting the business methods of the S. S. White Dental Mfg. Co. Even were his charges and implications true, which they are not, they are apart from the issue. The business methods of the S. S. White Company are not on trial in this case, but the business methods of the chairman of the Executive Committee of the National Dental Association, and those interested will not be diverted from the consideration of the latter by such transparent devices as the editor of the Digest has resorted to in his October editorials.

"We freely and heartily accord to the chairman of the Executive Committee all the honor and credit which is due for the laborious work he has done for our National Association in the past, and for his noble work in organizing and making effective the Dental Protective Association. No one appreciates more than the editor of this journal the value of that work, or is more willing to accord its promoter the honored position which he has won as a professional benefactor. But the handwriting is already on the wall which announces that even one who has served his profession unselfishly for a long period of years cannot carry water on both shoulders. And further, that a debt of professional gratitude cannot be liquidated by commercial methods. The suspicion has gained currency among thinking members of the profession that the meetings of the National Association are being utilized to alloy that body and the Dental Protective Association in a fellowship amalgamation with the Dental Protective Supply Company for commercial ends, and that the supply business of the chairman of the Executive Committee is a growing factor in his society interests."

It is perfectly absurd for the editor of the Cosmos to state that neither he nor the S. S. White Dental Manufacturing Company is on trial, for when he raises the question of patent law amendments his employers must cut an important figure in the discussion, since they are backing this move; and he as their mouthpiece cannot possibly be ignored. The action taken by the National Dental Association in squelching this pettifogging amendment was perfectly logical, as that body was in possession of the facts in the case. Since the editor of the Cosmos ignores the pertinent queries in our October issue concerning the attitude of the S. S. White Co. on patent law abuse, and endeavors to divert attention from the vital question by harping on the amendment, we shall in our next issue take up the question of patent abuse, and discuss this reform move-
ment in its broader sense. We might state in advance that it will make very interesting reading, and may show up some “friends” of the dental profession in a new light.

The editor of the *Cosmos* is an adept at making insinuations, but he seems to find it difficult to present facts in support thereof. We challenge him to name one act in our official career that will show any neglect of duty, or to point out anything which is dishonorable or unprofessional. As he has held official positions, we would ask if he can say as much? Furthermore, we have no “private” interests in the supply business, as the organization to which he refers is a stock company composed of dentists, and is destined to be many fold more “protective” to the interests of the dental profession than the Protective Association, with its comparatively limited field, can ever be.

The great majority of our readers can bear witness to the fact that the agents and traveling salesmen of the Dental Trust have for some time misrepresented and belittled the work of the Protective Association and Supply Company, and have circulated all manner of malicious slanders against the writer. It is easy to understand why they may have been instructed to do this, for the Trust has never shown any interest in the Protective Association nor helped it in any way, and has openly opposed the Supply Company. Since this combination sees very clearly the field of future usefulness before the Supply Company, and the power for good which it can be in the hands of the dentists, it naturally wishes to hinder it in every way.

We thank the editor of the *Cosmos* for his commendation of our work; but since he has such a high appreciation of our labor in the Protective Association, and the value of the same, we would ask why the *Cosmos* in all these years has never given the Protective Association any support whatever. A little commendation of the Association when it was struggling in infancy would have been much more appreciated and of far greater value than praise to ourselves individually at this time.

We suspect that it is introspection which causes the editor of the *Cosmos* to raise the question of “carrying water on both shoulders,” for he is certainly in the most inconsistent position of any man in the profession to-day. How can he reconcile to his own conscience the fact that he is in the employ of the Dental Trust, a monopoly
conducted on questionable lines, and not having the best interests of the profession in view, and at the same time is dean of a dental college, the students of which are supposed to be educated for professional men?

The remainder and greater part of the editorial in question is taken up in quoting the editorials from two other trade journals, which regret that we do not retire from active society work, and the editor of the Cosmos supports this view. It is a significant fact that all this disinterested advice comes from Trust organs. It is incontestible that the Dental Trust is not conducted for the benefit of the profession, and those in its employ, in any capacity, must often necessarily oppose measures which are designed for the best interests of the profession. It therefore seems to us that the proper course for those who are in any way connected with this unlawful combination is to retire from active society work, since, with their views biased and their actions ordered on certain questions, they can not honestly serve their fellows. We ask our readers if this is not a consistent suggestion?

Notices.

LUZERNE AND LACKAWANA DENTAL SOCIETY.

The annual election of this society, held in Wilkesbarre, Pa., Dec. 20, resulted as follows: President, T. W. Thomas; Vice-President, Geo. C. Knox; Recording Secretary, H. D. Matten; Corresponding Secretary, E. J. Donnegan; Treasurer, Dr. Nellie Carle.

WISCONSIN DENTAL EXAMINERS.

The Wisconsin State Board of Dental Examiners will hold its next session in Milwaukee, at the Hotel Pfister, Tuesday, Jan. 17, 1899, at 9 a. m., for examination of candidates to practice.

W. H. Carson, Sec'y, Goldsmith Bldg., Milwaukee.

CLEVELAND DENTAL SOCIETY.

At the monthly meeting of the Cleveland Dental Society, held Dec. 5, 1898, the following officers were elected for the ensuing year: President, H. M. Ambler; Vice-President, W. A. Siddall; Secretary, Geo. M. Wasser; Treasurer, E. B. Lodge; Critic, W. H. Whitlar.

EVANSVILLE DENTAL SOCIETY.

At the regular monthly meeting of the Evansville (Indiana) Dental Society, held Dec. 19, 1898, the following officers were elected: President,
S. B. Lewis; Vice-President, S. C. Smith; Secretary, C. C. George; Treasurer, C. E. Pittman; Editor, F. J. Raymond; Purchasing Agent, M. M. Haas.

OHIO STATE DENTAL SOCIETY.

The officers elected for 1899 at the recent meeting of the Ohio State Dental Society are as follows: President, L. P. Bethel, Kent; First Vice-President, L. L. Barber, Toledo; Second Vice-President, H. F. Harvey, Cleveland; Secretary, S. D. Ruggles, Portsmouth; Treasurer, C. I. Keeley, Hamilton.

JEFFERSON COUNTY DENTAL SOCIETY.

At the annual meeting of the Jefferson County Dental Society, held at Watertown, N. Y., Dec. 12, 1898, the following officers were elected for the ensuing year: President, Geo. P. Manville, Adams; Vice-President, Geo. B. Barker, Watertown; Secretary and Treasurer, W. B. Payne, Watertown; Executive Committee, C. A. Fuller and F. P. Denny, Watertown.

CHICAGO DENTAL SOCIETY.

The Chicago Dental Society will celebrate its thirty-fifth anniversary on Friday and Saturday, Feb. 3d and 4th, 1899, by holding a two days' meeting, with clinics, papers and discussions, ending with a banquet Saturday night. A cordial invitation is extended to the profession resident and abroad to be present. Printed programs may be had upon application.

Jos. W. Wassall, Sec'y Com. of Arrangements.

Stewart Bldg., Chicago.

WASHINGTON DENTAL SOCIETY.

At the annual meeting and banquet of the Washington Dental Society, held at Washington, D. C., Dec. 20, 1898, the name was changed to "The District of Columbia Dental Society." The election of officers resulted as follows: President, C. W. Appler; Vice-President, R. W. Talbott; Secretary, H. J. Allen; Treasurer, M. F. Finley; Librarian, H. B. Noble; Essayist, W. A. Lyon. A resolution was passed pledging the support of the society to the proposed new law governing the practice of dentistry.

ODONTOLOGICAL SOCIETY OF ROCKFORD.

SOUTHERN BRANCH OF NATIONAL DENTAL ASSOCIATION.

The Southern Branch of the National Dental Association, by invitation of the Louisiana State Dental Society, will hold its second annual meeting in New Orleans, Feb. 9, 10, 11 and 13, 1899; Mardi Gras beginning the following day. Circulars will be issued later giving details as to railroad and hotel rates, etc. All members of the National Dental Association and the American Medical Association are cordially invited to be guests of the Southern Branch.

WM. ERNEST WALKER,
President Southern Branch National Dental Association.

RECENT PATENTS RELATING TO DENTISTRY.


614,376. Dental plugger, Walter V. Elliott, Elmira, N. Y.


614,760. Tonsilotome, Gustav F. Richter, New York, N. Y.

614,829. Dental engine, Charles Brown, assignor of one-half to L. C. Danzel, Chicago.

615,316. Handpiece and frame for dental saws, John F. Snedaker, Ogden, Utah.

615,357. Tooth-brush holder, Chet Johnson and W. P. Guilfoyle, Binghamton, N. Y.


News Summary.


DR. J. H. VERE, a dentist of West Brighton, N. Y., died Dec. 3, 1898.

DR. CHARLES W. ROSE, a dentist of Cincinnati, O., died Nov. 4, 1898.

DR. WILLIAM EHN, 35 years old, a dentist of Springfield, Mass., died suddenly Nov. 27, 1898.

DR. L. J. WHITE, a young dentist of Abbeyville, S. C., died Nov. 21, 1898, from accidental poisoning.

STEPHEN HEXTER, the cheerful and ubiquitous agent for "Borolyptol," has removed to 199 Market St., Chicago.

DR. ARTHUR BEAUMONT, 50 years old, a dentist of New York City, committed suicide Dec. 5, 1898, while despondent over financial difficulties.

THE SOLITARY TOOTH OF BUDDHA will be kept in a temple in Ceylon, India, and the cof fer containing it will be adorned with jewels worth $350,000.
DR. CLARENCE A. WELLS, 47 years old, a dentist of Newark, N. J., who had practiced in that city 25 years, died Dec. 11, 1898, from paralysis of the heart.

EXPLOSION AT OHIO STATE MEETING.—Dr. J. B. Beauman of Columbus, and Dr. C. H. Harroun of Toledo, were severely burned by the explosion of a gasoline soldering apparatus which was being used in a clinic at the Ohio State Meeting.

CINCINNATI COLLEGE OF DENTISTRY PROFESSORS have been charged with violating the code, in that the college advertised its clinics by distributing handbills. Action will be taken by the Cincinnati Academy of Medicine at its January meeting.

TO EDUCATE THE PUBLIC CONCERNING THE CARE OF THEIR TEETH.—The Odontological Society of Western Pennsylvania has decided to publish in newspapers throughout that section articles on properly caring for the teeth. The articles shall be strictly impersonal but authoritative, non-technical yet scientific.

REFLECTED LIGHT FOR THE OPERATING CHAIR.—Fasten a white shade on spring roller in the usual manner to the top of the window. To reflect the light down on the chair, draw the shade out horizontally by means of a cord passing through a pulley suspended from the ceiling or to the wall at the rear of the chair.

THE NORTH METROPOLITAN DISTRICT DENTAL SOCIETY gave a banquet Dec. 6, 1898, to its members, the members of the South Metropolitan, and the dentists of Salem, Marblehead and Lynn. It was a great success, an interesting paper and discussion were heard, and at the close of the banquet a local society was organized.

SUBSTITUTE FOR UNFILLED RUBBER PLATES.—Where rubber fails to fill out in vulcanizing, and the case does not require working over, a substantial substitute to fill in with is any of the cements, colored with a small pinch of crocus powder for red, or ivory black for black rubber. With these powders the rubbers can be closely imitated.—W. W. Grant in Ohio Journal.

TORONTO WILL CARE FOR ITS CHILDREN’S TEETH.—The management committee of the public school board of Toronto, Canada, have instructed their solicitor to petition the legislature to pass a law empowering the board to insist on having a dentist’s certificate before admitting children to the schools; also to have power to order an examination by a dentist at any time.

MICHIGAN PROSECUTES ILLEGAL PRACTITIONERS.—Complaint was made Dec. 20 by W. A. Dorland, President of the Michigan State Dental Association, against three resident dentists, charged with being illegal practitioners, and they were notified to appear in police court. As the law is very strict on this question the prosecution does not anticipate much difficulty in obtaining a conviction.

DR. OTTOLENGUI AS A MORALIST.—While we wish Dr. Bethel every success in his new venture, "Information," we must severely criticise the story by Dr. R. Ottolengui in the last issue, as it presents the worst side of hu-
NEWS SUMMARY.

manity, and can have only an injurious effect upon the young people who may chance to see it in their dentists' offices. We are surprised that Dr. Ottolengui would write or Dr. Bethel publish such trash.

SUE FOR THEIR DIPLOMAS.—Dentists and physicians in Missouri will watch with interest the result of the mandamus suit of S. Pollock and C. C. Clark to compel the state board of dental examiners to register their diplomas from the Kansas City College of Dental Surgery. It is now on trial before Judge Gates of the circuit court. The board holds that the college will not comply with the law in that it does not require a full two years' course from every matriculate.

EXTRACTION OF A TOOTH BY THE AID OF A RUBBER BAND.—Dr. Bennett had to extract a tooth of a hemophile. As he knew the condition of the patient from previous experience, he was afraid to use the forceps. He put a tight rubber band about the tooth; in a few days the tooth was removed without a drop of blood, although it was considerably painful. Bourdet in 1757 used the above method successfully and it is claimed Japanese and Chinese dentists employ it also.—L'Odontologie.

NEW BILL TO REGULATE THE PRACTICE OF DENTISTRY IN THE DISTRICT OF COLUMBIA.—The new bill provides that no corporation not incorporated by act of congress shall practice in the District without a special permit from the commissioners. The board of examiners is to consist of five reputable resident dentists. All licenses are to come from them, and by a vote of four any license may be revoked. The draft states that every dentist must practice under his own name, and this will hinder corporations from employing nonregistered dentists.

LOST NASAL BONE REPLACED WITH RABBIT BONE.—At the last meeting of the clinical society Mr. Watson Cheyne showed a case in which freshly removed rabbit bone had been used to replace large portions of nasal bone which had been lost by the patient eight years before in consequence of an accidental injury. Last January Mr. Cheyne performed the operation. He first raised a flap of skin from the right side of the nose, going down to and freely exposing the peristeum. He then removed the femur from the rabbit, split it into several pieces, and laid these on the exposed periosteum, replacing the flap so as to cover them in. The wound healed without suppuration and the result was excellent.

DR. LORENZO DOW WALTER, reputed to have been the oldest dentist in New York state, if not in the country, died suddenly November 16. He was born in Little Lakes, N. Y., March 19, 1813, and about 1836 took up the practice of dentistry at Fort Plain. After working at his profession in several small towns he went to Rochester in 1862 and practiced for three years. He then started a dental supply business, but gave it up and resumed the practice of his profession. He later became instructor of operative dentistry in the Cincinnati Dental College. In 1865 he returned to Rochester and practiced dentistry until three years ago, when he retired. Dr. Walter was a man of remarkable character, and the dentists of Rochester feel that they have lost one of the fathers of their profession.
Use of Salt.—Some diversity of opinion has existed among physiologists as to the physiological signification of eating salt. According to Bunge, the use of sodium chloride with food is to counteract the effects of the potassium salts predominating, especially in vegetable diet, while other physiologists regard salt purely in the nature of a condiment with no special action. M. Leon Fredericq, writing in the *Bulletin de l'Academie Royale de Belgique*, describes his observations on certain salts used by the natives of the Congo Free State. These salts are produced by the incineration of aquatic plants, and are placed on the market in the form of cakes produced by evaporation of the solution formed by dissolving the residue. An analysis shows them to consist almost entirely of chlorid and sulphate of potassium, the former largely preponderating, and the presence of sodium being detectable only by the spectroscope. The fact that salts of potassium are thus used for cooking purposes seems to negative the views of Bunge, and to support the opinion previously advanced by Lapicque, that the use of salt is primarily to improve the flavor of food.
7 DAYS

THIS BOOK MAY BE KEPT FOR
7 DAYS ONLY
IT CANNOT BE RENEWED