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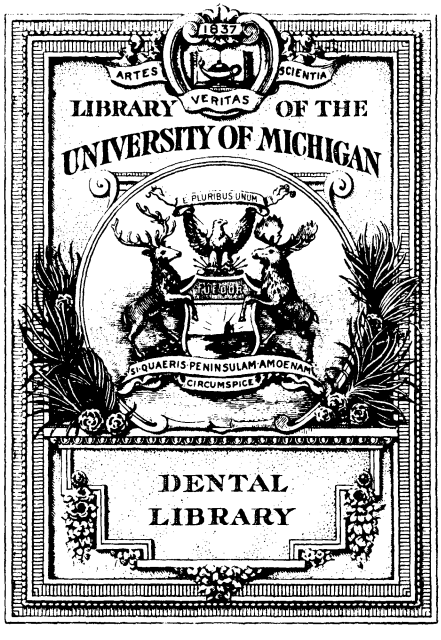

AMERICAN DENTAL JOURNAL

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LISTERINE

The best antiseptic for a dentist's prescription

1881+25=1906

A fourth of a century of continued, satisfactory employment of Listerine has demonstrated to many practitioners that Listerine is the best antiseptic to prescribe for daily use by the patient in the care and preservation of the teeth. The mild, stimulating effect of the free boric acid radical in Listerine is of the highest importance in maintaining a healthy equilibrium of the fluids of the oral cavity. At best, alkalies simply temporarily neutralize the acid-forming ferments which the carbohydrates of food produce in the mouth,—a true antiseptic prevents that fermentative change.

Literature will be forwarded upon request, containing a brief résumé of recent bacteriological investigations supporting the above argument.

Lambert Pharmacal Co.

St. Louis, U. S. A.

PROGRESSIVE COURSE OF PRACTICAL INSTRUCTION

ORTHODONTIA.

BY J. N. M'DOWELL, D. D. S.,
PROFESSOR OF ORTHODONTIA, COLLEGE OF DENTISTRY, UNIVERSITY OF ILLINOIS.

CHAPTER XIX.

RETRUSION OF THE LOWER JAW TREATMENTS.

In this chapter the treatment of cases is confined exclusively to those cases where there is distal occlusion of all the lower teeth when in contact with the upper. To make a clear and satisfactory distinction of the cases coming under this class, they are divided into mouth breathers and normal breathers.

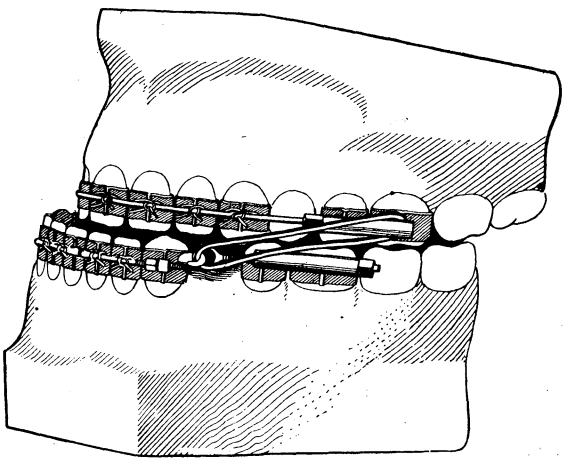


Fig. 1.

CHARACTERISTICS OF THE MOUTH BREATHER.

Retrusion of the lower jaw;
Occlusion of all the lower teeth, distal;
The upper arch is narrow and contracted, frequently V-shaped;

The upper teeth are protruded and elongated;

The lower arch is contracted and the anterior teeth elongated;

Upper lip short and usually the nose undeveloped.

Changeable area, the alveolar process of the lateral halves and the anterior part of both the upper and lower arches, including sometimes the forward movement of the lower maxilla.

In every case of mouth-breathing the facial apearance is involved as the result of distal occlusion, and the considerations in the treatment is first, restore normal occlusion or improve it; and second, to restore facial outline or improve it. These two considerations must be kept in view. If, on account of the patient's age it is im-

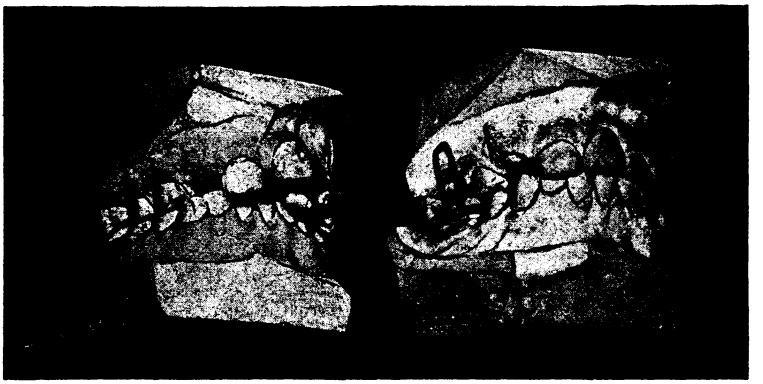


Fig. 2.

possible to change the occlusion to normal by moving the lower jaw forward, then it becomes necessary to improve the condition by moving the upper anterior teeth back, gaining space by extracting one or two teeth in the upper arch. This method will at least more perfectly harmonize the arches and improve the occlusion of the anterior teeth, as well as improve the facial appearance. Another important thing that must not be lost sight of is that the cause of mouth-breathing must be eliminated before a permanent success can be expected in the treatment of the mouth-breathing class. Everything must be done to restore normal breathing and the full development of the upper lip function, which seems to play such an important part in sustaining the anterior teeth in position. To gain that end, the treatment of the mouth-breathing class is divided into *surgical* and *mechanical.*

If the age of the patient is favorable, that is, not over 10 or 12 years, a complete relief from mouth-breathing may be hoped for at once and ultimately complete restoration to normal occlusion by moving the lower jaw forward. The younger the case, the more favorable it is for moving the lower jaw forward. After the twelfth year, unless unusually favorable, a permanent success can not be hoped for by moving the jaw forward.

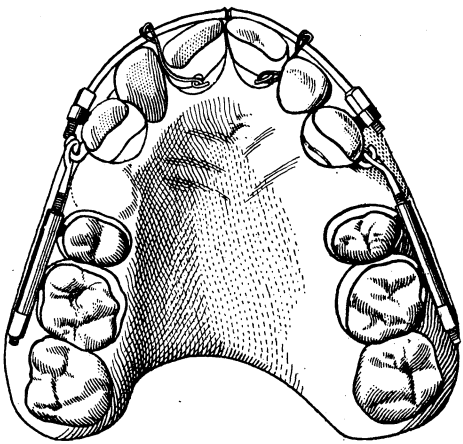


Fig. 6.

TREATMENT.

First, Surgical.—Enlarged tonsils must be removed; growths in the nose or about the posterior nares must be removed; the attachment of the frenum labii to the upper lip, if overdeveloped, and every effort made to restore normal breathing. Instruct the patient to draw the upper lip down and practice continually breathing through the nose, night and day. It is at night that the patient relaxes the vigilance of the day and indulges in mouth-breathing. At first a broad bandage under the chin and over the head had better be used until the natural habit of keeping the mouth closed is formed in the child. A good plan is to use sticking plaster, a piece about ¼ inch wide and 1 inch long and after retiring, close the lip; put the plaster on in perpendicular form and hold on until it is firm in position; remove with warm water in the morning.

Second, Mechanical.—It must be remembered that the complete success of this method of treatment depends upon the age and condition of the case. The lateral halves of both the arches *must be expanded.* This expanding of the arches *induces a new occlusional contact.* At first there is a tendency to strike on the apex of the cusp, and the patient in an endeavor to find a more comfortable occlusional contact bites a little farther forward as the arches are expanded. As soon as the lateral expansion of the upper is nicely started, elongate the distal and depress the anterior teeth by using the spring from the wire arch, soldering the tubes on the molar bands so that they point below the incisors, and springing the arches up, in the notches cut in the bands on the incisors, which elongates the distal teeth and depresses the incisors. The arches for lateral expansion should be bent so as to exert a strong lateral pressure. After

Fig. 3.

the teeth have been expanded an eighth of an inch at least, the rubber ligature can be put on and removed about once a week. The pressure will be that of drawing the lower jaw forward and the upper anterior teeth backward. Fig. 1 shows the method of using the rubber ligature in drawing back the lower jaw; it should be used just the reverse to draw the lower jaw forward. Mouth-breathers, as a rule, do not use their lips very much in speaking. There seems

to be a lack of functional activity of the upper lip. The patient should be instructed to keep the lower lip well out and even with the upper lip as much as possible and eliminate the habit of allowing it to continually rest under and distal to the upper anterior teeth. The patient should also continually draw the upper lip down with the lower and use the lips in speaking.

PUTTING ON THE APPLIANCE.

Fig. 2 represents the typical form of the mouth-breathing class. Complete distal occlusion with unusual irregularity and prominence of the upper anterior teeth, and the lower elongated until they touch the soft tissues of the upper arch. The photograph of this case, Fig. 3, shows the typical characteristics of the mouth-breather, open mouth and the inability to close without distorting the features, on account of the prominence of the upper teeth, and short upper lip.

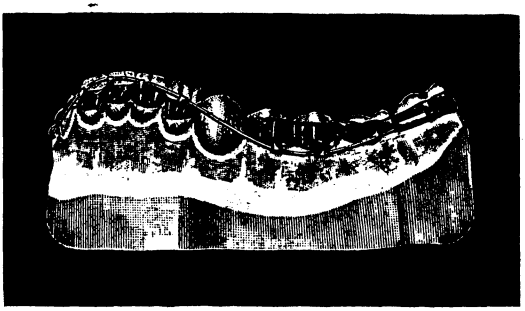


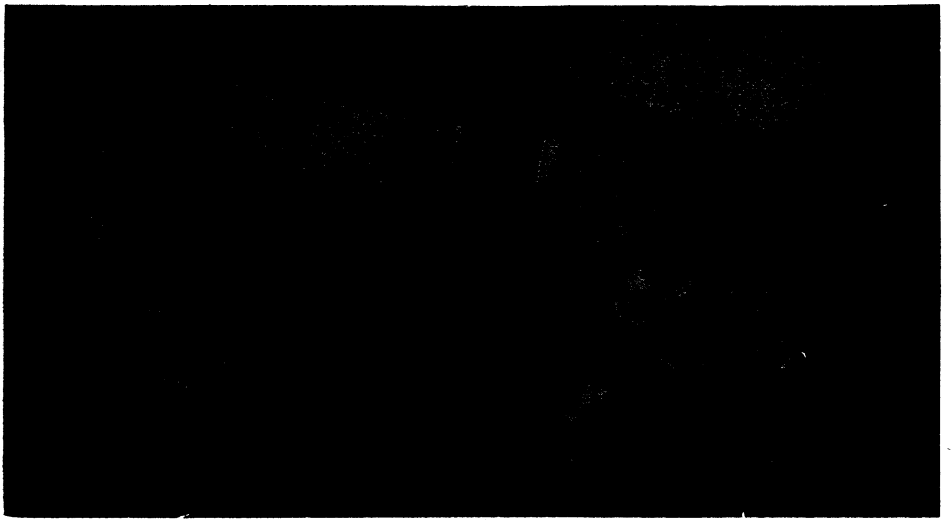
Fig. 4.

TREATMENT.

Band the upper molar teeth; solder tubes on the buccal side for the ends of the arch. Band the anterior teeth and cut notches in the soldered joints; rest the arch in position, same as Fig. 1. Bend the arch so there will be very strong lateral pressure for expanding the lateral halves of the arch. Put the nuts on distal to the tube; then ligate only the teeth on each lateral half of the arch at first. Instruct the patient to tighten nuts twice a week. Go where you will in any large city, you will find patients from the hands of physicians wearing large, heavy iron bars, cumbersome, unsightly and crude, walking

about the street. When an arm is broken it has to be carried in a splint for weeks. Let the patients know in the beginning that if they care for the treatment and want it to be a success they must carry out your instruction to the letter or quit. So if it becomes necessary in the end to wear a head gear to aid the movement, make the comparison to the patients.

On the lower teeth place the wire arch bent so there will be lateral spring pressure. As the lower anterior teeth occlude against the soft tissues of the roof of the mouth, it is necessary to open the bite of the distal teeth and depress the anterior teeth. To gain this the



A Fig. 5. B

tubing on the molars should be soldered pointing downward slightly, so that the wire arch will have to be sprung into position. On the centrals this gives a downward pressure on the incisors and an upward pressure on the molars, similar to Dr. Case's method (Fig. 4), leaving out the lugs on the bicuspids. After a few weeks, when lateral movement is nicely started and the patient is getting used to the appliance, remove the upper arch and soft solder a spur parallel with the arch near the cuspids one on each side the hook, rubber ligatures cover this back to the tubing on the lower, just the reverse of Fig. 2.

After 12 years of age the development of the bones, muscles and position of the lower jaw is such that every condition is against the moving of the lower jaw forward and successfully keeping it there. If it be impossible to restore to the normal, then an improvement is possible at least. The occlusion and the facial apearance can be improved. The surgical treatment must be carried out, nasal growths, enlarged tonsils, etc., removed and every effort made to permit normal or nasal breathing. Fig. 5 illustrates the condition of the occlusion of a mouth-breather at the age of 20. Here the conditions are well established, everything being unfavorable for the movement of the lower jaw, the glenoid fossa being well developed and all the soft tissues well molded into position long ago.

TREATMENT TO IMPROVE THE CONDITION OF THE OCCLUSION AND THE FACIAL APPEARANCE, BY REDUCING THE PROMINENCE OF THE UPPER TEETH AND THE LIPS.

It is necessary to extract two teeth in the upper arch (the first bicuspids) to harmonize the upper arches with the lower and improve the occlusion. It is necessary to move the upper anterior teeth backward and to depress the lower anterior teeth and elongate the distal lower teeth. Lateral expansion is seldom necessary when teeth are extracted, unless it is confined to one or two teeth. The main consideration here is to reduce the prominence of the upper anterior teeth and build out the lower. It would be impossible to move these teeth backward directly without opening the bite, as the upper teeth strike against the cutting edge of the lower, which has a tendency to drive the uppers out again every time stress is applied in closing the teeth. When it is necessary to open the bite, always put on the appliance on the lower arch first, same as Fig. 4. With the spring pressure for elongating the distal and depressing the anterior, the bite can always be opened sufficiently to move the upper backward. It is necessary, owing to the age and development of the bony process to secure stationary anchorage if possible. When teeth are extracted, the treatment consists in moving the upper anterior teeth backward. This point must be remembered that all of the teeth are movable and will move proportionately to the pressure brought to bear on them, whether they are being aligned or are used for anchorage. If all of the anterior teeth are to be moved backward, considerable bony

structure has to be plowed through; part of the pressure must come from the anchorage on the distal teeth, and the other part from the rubber ligatures. It is impossible to expect to move all the anterior teeth backward with the distal teeth and not expect the distal to move forward some. The distal teeth are strong and large, and will often offer great resistance at first, but will yield in time to pressure, consequently the greater care must be used, and stationary anchorage secured if possible. The treatment of the case when extraction is necessary is just the opposite to that as shown in Fig. 5, the extraction being in the upper arch instead of the lower.

PUTTING ON APPLIANCES FOR TREATMENT OF CASES LIKE FIG. 5.

Band the second bicuspid and first molar, and second molar, if possible. Solder these bands together. Solder the tubes for small traction screws on the first molar band. Then solder a hook on the distal surface of the cuspid band, Fig. 6. Then try the traction screw on several times to see if all fit properly. It is best to try on piece by piece so that when all is ready to put on it will be accurate. On the mesial surface of the cuspid bands solder small short tubes for the ends of a short arch to pass through. See Fig. 6, spurs for rubber ligatures not shown in the cut. Band the centrals and laterals and cut notches for the arch. Then put on nuts to rest against the tube on the mesial surface of the cuspids, and one on the distal side of staple to hold the arch on. On the wire arch nearest to the cuspids solder two spurs to use the rubber ligature on. The spurs on the arch should be soldered pointing forward and close to the arch just mesial to the cuspids. By this double spur method and rubber ligature direct pressure is brought to bear upon the cuspids to aid in the movement, a pressure absolutely necessary to prevent the forward movement of the anchor teeth. By the use of the nuts on the short arch, pressure can be brought to bear on the cuspids only, or on all of the anterior teeth as desired. To move the teeth backward on one side only use the method employed in Fig. This backward movement can be aided by inserting rubber wedges between latral and cuspid on day and the next between the lateral and central, changing back and forth to take up the movement as the cuspid is moved back.

(To be continued.)

PROSTHETIC DENTISTRY.

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CHAPTER XLI.

It may seem inconsistent to advocate that hard biting on a bridge tends to make it last longer than to be over careful and subject it to little stress, but I believe that such is the case, nevertheless. When the patient denies nature its natural course invariably some organ or subordinary must pay the price for violation. Now the bridge in question being sparingly employed the pillars or roots or teeth upon which it rests not receiving sufficient strain and pressure, they according to a well understood law of nature, as already cited, become loose, elongated and oft useless.

As soon as anyone or both of the basic anchors or roots of the teeth become loose the cement which holds the bridge will be injured, since the constant moving of the pillars will ultimately fracture the thin film of cement which holds the bridge, and shortly the entire bridge will suffer destruction.

Hence the subject which must interest the prosthetist, is how shall the bridge be constructed so as to withstand the various shocks accompanying the force of mastication. This latter element is the primal objection to employing porcelain in a thin veneer character, since it can not under present treatment be made to endure pressure when not in bulk. This induces me to entertain the thought that gold, for band and telescope purposes, will still continue to hold a prominent place in restorative dentistry.

The question might arise in the minds of the readers as to what the pressure might be during normal mastication, and this problem presents a very interesting phase which has engaged the attention of both operative and prosthetic dentists. Regardless of what the exact figures are, regarding this unsettled query, the facts, nevertheless, remain that our patients expect to enjoy their meals, regardless of what we as practitioners pronounce as the "normal pressure"; they are indifferent to these incidents and are oft forgetful

of our admonishments, hence our frequent disappointments. The advice I would give is that no bridge should be set unless the patient be instructed regarding its cleanliness and care, and if you have been induced through force of circumstances to set it on weak roots or you have made it frail, then do not dismiss the patient without informing them of the lapses or insufficiencies, for the force of mastication, if not controlled or properly directed, will yield results contrary to prayers or good intentions.

Hence, if we are to produce the best and most lasting results. we must not be unmindful of the underlying principle of use and disuse. The necessity for conserving nature and her agreeable environments is well illustrated in every instance where disregard is given to the alveolar septa and interdental gum tissue, the loss of teeth and discomfort is known.

From the pen of W. R. Clack, of Clear Lake, Iowa, we have an excellent description of his method of preserving the integrity of the interproximal space, or better, interdeucal space.

"The performance of dental operations on the human teeth does not remove the cause of the trouble unless there has been a complete eradication of that condition which led to the original cause of the breaking down of the tooth.

"Where the interproximal space is not protected by making a point of contact on fillings or crowns we have a condition which invites disease. Where we deal with cavities in the approximal surfaces and do not return the teeth and parts to a condition of normality we have abnormal conditions and these always invite disease."

He then describes the following:

"Fig. 1 shows the loss of an upper right first molar, with cavities of the third class in the disto-occlusal surface of the first bicuspid and the mesio-occlusal surface of the second bicuspid. Any attempt at mastication on these teeth was productive of great discomfort and pain. This patient, a boy eighteen years of age, came to have the bicuspids and both lower first molars—which were in the same condition—extracted.

"The pulps were removed from both bicuspids and the root-canals filled. A week afterward a gold filling was made in the disto-occlusal surface of the first bicuspid, involving the lingual cusp, the

buccal cusp being well supported by dentin. There was absolutely no dentin left in the second bicuspid, so I had to resort to a gold shell crown with long contact points, as seen in Fig. 2. This cast,

FIG. 1.

FIG. 2.

FIG. 3.

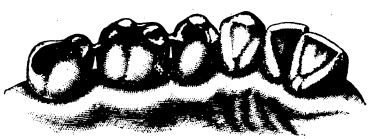


FIG. 4.

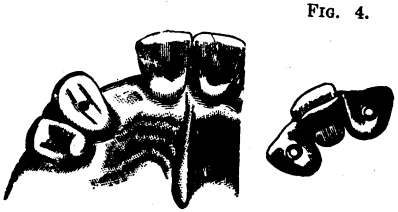


FIG. 5.

FIG. 6.

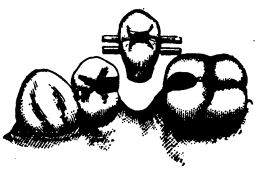


FIG. 7

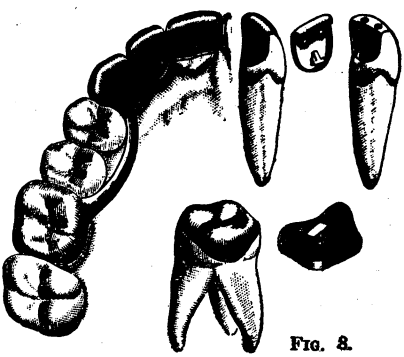
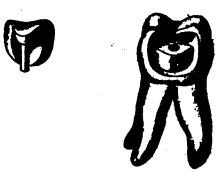


FIG. 8.



taken June 17, shows how quickly nature will do her part if we only make it possible. The gum has cuddled down behind the protection of those contact points, and the interproximal spaces are completely filled with healthy gum tissue."

Dr. Black has this to say of the foregoing method:

"There are occasional cases coming before us where the restoration of the interproximal gum tissues seems to depend materially upon the smallness of the contact; cases where I have often bridged across with a platinoiridium wire instead of building out the filling, for the purpose of dividing the food and causing it to glide buccally and lingually, in that way constantly cleaning the space. It will do it, and those cases will get well with that small contact, whereas they would continue to hold debris, the patient not being sufficiently careful, if we made the contact of the ordinary form."

The migration of teeth which have lost contact points, either through careless operative or prosthetic work, should receive greater attention. People of this day lose too many of their teeth—not by decay, but by loss of articulation. By this I mean the extraction of a single tooth in a normal upper or lower denture will bring about, provided no substitute is replaced, a migration of the entire teeth of this disturbed denture, and later we find the teeth suffering with gomphiasis, and soreness and tenderness, inducing the practitioner to extract one or more until eventually all are eliminated. All because of loss of immediate articulation, i. e., the neighboring tooth has been removed, hence the entire family of the have been afflicted.

In order to stop this migration when but one tooth was missing Dr. Wilbur F. Litch, of Philadelphia, devised the simple appliance as shown in Fig. 4. The gold backing being swaged and adjusted and an impression taken with the backings *in situ* and then invested and soldered with artificial tooth positioned.

Later Dr. E. T. Starr, Philadelphia, shows in Figs. 5 and 6 the four-stop porcelain tooth that remedies a radical defect in the two-stop sub, which is liable to rotation on its trunion-like stops; whereas these duplex stops maintain the verticality of the sub in its stopping relation to the piers. Furthermore, these platinum stops provided for union by baked body or by solder to form clear span or saddle-span bridges of every Bing type.

These early attempts to correct mal-occlusion and incidentally restore the dental arch, are interesting since they indicate a proceedure, though at that unknowingly followed which in the days to come

will form in possibly an improved form a most important branch of prosthetic work.

Another praisworthy effort to keep the arch correct and normal was made by Dr. W. E. Griswold, Denver, Colo. Fig. 7 shows cusp-caps with pins for socket anchorage in live piers. He illustrates many forms of this style of bridge work, applicable to all anterior and posterior teeth and though it could not be successfully employed in large cases because of lack of strength, it has merits which commend it for certain small cases.

Dr. T. C. Trigger, of St. Thomas, Ontario, Canada, has presented a most excellent method for assuring restoration of the contact point in prosthetic work. He writes:

"If the operator should find it necessary, he could fruther increase the retention of the inlay by using both pins and countersunk depressions, or by using a small tube sufficiently long to obtain a strong anchorage at the base of the cavity, extending it as high as the surface of the core. To secure this in position, it would be well to solder at the lower end a small plate of metal, as will best suit the extent of the cavity. This tube attachment (Fig. 12) is cemented permanently in an upright position, so that the wire anchorage, which is attached to the matrix, will accurately pass within the already cemented post in the core.

"The hollow post which is fastened in the tooth should extend slightly beyond the core, so that when the matrix is compressed over it, it will produce a slight indentation which will indicate where to penetrate the matrix for the anchorage post, which should fit the hollow tube accurately.

"To make the contour, cut a piece of 22-karat gold and apply it to the vacant side of the inlay; wax it in position. Finally insert the matrix and all its attachments in plaster (no sand being used) to hold them in place while the filling-in process is accomplished. Twenty-karat solder should be used for soldering the work throughout, as by this means, when completed, it will have a decidedly rich appearance. (Fig. 8.)"

We will continue our study of the restorations of oral disturbances in the coming chapter.

DENTAL THERAPEUTICS.

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In the discussion of drugs and their actions the subject of pathology can not be divorced from all questions that come up for the therapeutic application of medicines. In the discussion of the question of drug action it is apparently quite necessary to consider the animal upon which the drug is applied, as well as to determine just what changes may be produced upon the animal that has received the dose.

There are a great number of drugs that induce changes in the living organism. In the inorganic materia medica there is classified under this head salts, bases and acids. Such elements, however, as mercury and phosphorus sometimes affect living tissue without ever having been changed by chemical manipulation before they enter the living animal substance. In such cases the tissue itself acts upon these substances in practically the same way as though the tissue of the body were a chemical reagent; thus breaking up these compounds, or, we might say, elements into compounds that may be easily taken up by the tissues and cells of the body and distributed to various points of the animal organism, where they have a special affinity for a particular kind of tissue or cell.

While the inorganic elements are quite incapable of being broken up and being disseminated through the body before they are chemically changed outside of the living tissue, still they are all more or less capable of acting or being acted upon by the body in a way that their effects may be noted in certain tissues and cells of the body. In this way their effects are productive of either benficial or unfavorable effects that may render the body extremely susceptible to the action of many other things.

Organic chemistry is constantly offering many compounds artificially produced, or, in other words, that undergo chemical changes that render them extremely easy of assimilation in the animal body.

The hydrocarbons, alcohol, ether, phenol, ketones, aldehydes and acids are usually the forms in which many therapeutic agents come into our hands for the purpose of treating pathological lesions. Outside of the above named list there are many other agents that come to us as drugs for the purpose of treating disease.

We have discussed at some length many of these agents and especially those which belong to the group of metals and bases. We have also called attention to the group that comes from plant and are usually classified as alkaloids. These are called by some substituted ammonias. They are more or less alkaline in reaction and contain carbon, hydrogen, nitrogen, and in the majority of instances, oxygen. The reason probably for them being called ammonia substitutes is that they readily combine with acids without eliminating hydrogen from their combination, and the salts that are formed in this reaction resembling that of ammonia. Owing to this peculiar chemical combination the alkaloids in their classification have been restricted to the compounds of pyridin and quinolin. If we were to look at the alkaloids only as a chemical compound the above named two groups would be the only ones that really would come under this head, but owing to the fact that these plant compounds have a peculiar effect on the physiology of the animal body and are built up chemically so much like the pyridin and quinolin groups that others have been classified as belonging to the alkaloidial group. Racines are taken from plants characterized by the smooth, shining fractory bodies. They are insoluble in water and soluble in ether, chloroform, benzol, and the volatile oils. They come from the oxidation processes in plants, most likely the oxidation of the volatile oils in plants. They are most always anhydrides and acids. The racines are usually a combination of several different substances. They are local irritants and some are extremely poisonous in very minute quantities. You take, for instance, the ricin, it is an intensely poisonous globulin and is one of the extracts from the seeds of ricinus communis.

Castor oil is also found in this group and many times may contain minute quantities of this substance. But as a rule when the castor oil is properly refined it contains none of the ricines, because this substance is not in the same group of chemical compounds from which castor oil is extracted and therefore should not be present. About one sixteenth-hundredth of a grain of ricin to one kilogram

of an animal is sufficient, when injected, to destroy the life of the animal. Therefore a man weighing 150 pounds could not stand more than one-sixteenth of a grain of ricin when injected subcutaneously; if the drug is taken by the mouth, however, its effect is very much lessened and in many instances completely destroyed, on account of fact that the digestive ferments completely destroy the agent. It will be seen, however, that ricin is one of the most deadly alkaloids, when subcutaneously administered, that we have. One of the peculiarities of the agent is that its effect after injection is slow and it may be several days before the animal succumbs to a lethal dose of the drug. The first symptoms of its effects is noted by a loss of appetite and diarrhea. A post mortem examination of the animal after death shows hemorrhagic spots in the intestinal tract, and the serous cavities contain blood. From the foregoing statement, that the intestinal mucus membrane contains ecchymotic spots, it is an indication that the drug makes its escape from the body through the intestinal mucous membrane, thus accounting for the extreme irritation in the intestinal mucous membrane. When the drug is introduced subcutaneously it causes extreme irritation to the adjacent tissue where it is introduced, and in some instances it is claimed that it will cause slight formation of pus.

A microscopic examination of the various tissues of the body after death from this drug shows small foci of necrosed tissue in the liver, spleen, intestines, stomach, and other organs. The mucous membrane of the nose and throat becomes irritated by the inhalation of the powder, and in many persons this substance may be extremely irritative. When a drop of the diluted solution of ricin is added to a test tube of defibrinated blood the corpuscles fall to the bottom, leaving a clear serous fluid at the top. If attempts are made to filter the blood through ordinary filter paper it will be found that the corpuscles will not pass through.

From these so-called toxalbumins has arisen the so-called serum therapy, which seems to play such an important role in scientific medicine at the present time. Ehrlich found that if an animal be given small doses of ricin and the dose be gradually increased that the animal soon became immune to the substance, and it could be injected into animals in large doses with impunity. Therefore in like manner might it be possible for animals to be immunized against the effects

of many bacterial toxines after passing them through a susceptible animal and the serum from the affected animal be taken and injected into an animal that has been exposed to the same infectious disease, thus rendering the animal immune from the disease of the first animal. These facts are based upon well known and well observed biological phenomena. Many of the susceptible tissues and organs of the body are rendered immune to the action of many substances that are classed as toxalbumins. The immunity that is established in the body by substances, as above indicated, are not in themselves antidotes to their own poisoning, but when the alkaloid is introduced into the tissues there is formed anti substances, which are, in other words, antitoxines, and are formed in the body when these poisons are introduced.

The toxalbumins and their effects on the animal are quite different from that found in such substances as morphine and belladonna. When either of the last two named substances is administered in the animal in small quantities and the dose is gradually increased, instead of there being formed an antitoxic substance the tissues of the body simply become tolerant to the poisonous drugs and after awhile the effects of the agent renders the tissue and cells incapable of being acted upon by the agent, while in the case of such substance as the toxalbumins the tissues are made to form a neutralizing product in the body that renders the active poison incapable of producing its effects. In one case we have the rendering of the tissues tolerant to large quantities of drugs, while in the other we render the body capable of neutralizing large quantities of the poisonous agent. This perhaps is one of the best illustrations of really what artificial immunity is. In some places it was found that by feeding cattle on the waste products, in the manufacturing of castor oil from the castor bean, that the animals became poisoned from the refuse of the castor bean after the oil had been extracted. The true cause was due to sufficient quantities of ricin being present there.

Among the toxalbumins there is another agent in this class and its effect is very much like that of ricin in its general characteristics. We have reference here to *aborin,* which is obtained from the seeds of abrus precatorius, or in other words, jequirity bean, the peculiar scarlet and black beans which are ofttimes formed in necklaces in some countries. These beans contain two poisons which are

extracted, one being a globulin and the other an albuminose. The first one named here induces very much the same symptoms as has just been described in the case of ricin. Aborin has been used in granulated lids of the eyes, because an acute inflammation is supposed to improve the condition in the case by doing away with a chronic inflammatory process. It has been thought by some that this is rather an exceedingly dangerous remedy in such cases.

Crotin is another toxalbumin found principally in the crotin tiglium. This substance does not pass into the crotin oil when it is extracted, but is obtained practically from the same source as the two toxalbumins that we have just mentioned. This substance is practically the same chemically as the above named compounds. It may be said that crotin does not cause agglutination of the blood cells of certain animals, while ricin and aborin will produce this agglutinating process in most all animals, so far as is known. These so-called toxalbumins, as found and described here, differ in so many ways from the condition and chemical behavior of many other alkaloids. They also seem to have a close relation to the toxalbumins that are found in many of the poisonous products of snake venom, and also seem to produce many of the symptoms and general biological characteristics of the substance found in the body of animals when they have been artificially immunized; which is produced by the inoculation of the animal with certain toxines taken from the bacterial cell to render the body immune to the second introduction of bacterial poisons. These all bear some of the most interesting phenomena observed in the physiological processes of both the animal and the vegetable kingdom. These toxalbumins are eliminated from the body principally through the intestinal epithelial cells, for which they apparently have the greatest affinity, yet in the salivary secretions and in the pancreatic secretions their poisonous properties are quickly and easily neutralized. This phase of the subject differs so much from many, and perhaps we might say all of the toxins derived from other sources.

It has been my privilege to study the effects of many of these drugs on animals and more especially the toxines that are extracted from the bacterial cell, to see the interesting progress that is made in the establishment of immunity of certain animals and the effects of many of these toxalbumins and allied substances. While

the discussion of such a subject as this is not germane to the subject of direct application of the treatment of disease, still if one is able to understand some of the principles and phenomena that go to make up the life processes in the tissues, also in rendering the body immune to the effects of certain drugs or toxic products, he is in a far better position to properly administer therapeutic agents in pathological lesions.

(To be continued.)

AFTER EFFECTS OF ANAESTHETICS—(COOK).

After the administration of chloroform or ether there may be evidences of acute nephritis, albuminuria and glycosuria with casts, which are not at all uncommon. Chloroform causes the diminution of glycogen of the liver, thus increasing the amount of sugar in the blood. These after effects are usually much more pronounced in ether than that of chloroform. However, if the quantities of each are taken into consideration it might be easily observed how it is possible that the effects of ether would be greater than that of chloroform, for the reason that chloroform will produce anesthesia with far less of the agent than is necessary in that of ether.

OPERATIVE DENTISTRY.

Shop Talks.

BY R. B. TULLER, D. D. S.,
CLINICAL PROFESSOR OF OPERATIVE DENTISTRY, CHICAGO COLLEGE OF DENTAL SURGERY.

No. X.

EROSION OR DENUDATION.

One of the most difficult problems the dentist has to consider and deal with, is erosion of the teeth; for the reason that the etiology and the remedy are both somewhat obscure propositions, inasmuch as authorities differ in opinions as to the cause, and no cure has as yet been discovered that may consistently be used at all times.

It usually makes its appearance near the gum lines on several teeth but never encroaching, so far as I have observed, on the territory under the edge of the gum as caries frequently do. On the contrary its inroads progress in the opposite direction, the deepest part of the erosion being usually midway of the extremes of attack. Many cases of erosion look as though the work of destruction had been done with a three-cornered file, and then the surfaces highly polished.

Now, if caries began an attack at the gum line, the deepest part of the wasting away would be, ordinarily, beneath where it began. Erosion carries its center of attack or deepest part continually away from the gum. Of course, while there is wasting away of enamel and dentine in either case, there is no similarity to the two diseases. Caries, however, may follow in the trend of the erosion because the conditions in advanced stages may favor lodgement of food that promotes carious germs.

Erosion would appear to be a chemical action rather than a disease in the usual acceptance of the term. In fact the particular erosion under discussion just now is called chemical erosion, and it is claimed to be due to an acid condition. But if this condition prevailed throughout the oral cavity, not alone would the labial and buccal surfaces of teeth be attacked, but all surfaces; and, furthermore, such acids as we know will dissolve enamel and dentine leave surfaces corroded rather than highly polished.

Now, whatever the agent is that does this peculiar work of destruction of the hardest tissue in the body, one thing is very certain: that the mucous surface of lips or cheek against the outer surfaces of each serves to hold the agent in contact; and through some morbid condition of mucus, aids and abets the nefarious work that is going on.

Tests for acidity have frequently been made of these mucous surfaces and they are not more acid, usually, than other parts of the mouth, and no more than mouths with no erosion, or not as much.

So, what the thing is that causes erosion, is somewhat in doubt.

In some cases of this disease the tissues or condition seems to arrive at a period of self arrest, and there may be no recurrence. The disease stops short of its own accord.

In my personal practice I have had cases under observation for a period of from ten to fifteen years, without feeling called upon to insert fillings as a protection. In a number of instances, in late years, I have found the conditions, with slight modification of cavity shapes, favorable to the introduction of porcelain inlays. Fillings of gold, when filling seemed advisable to check or remedy the defects have been found of little value, and oxyphosphate fillings seem to resist the disease even if they have to be frequently renewed. If gold is for any reason preferred to porcelain, the gold inlay is better than the usual filling; for the reason that it is held in place by the cement, and has the advantages of a cement filling.

I have some patients suffering with this disease in a marked degree from the second bicuspid on the one side, to the same tooth on the other side and on both upper and lower teeth. The cases are too extensive for resort to filling, even if that were a sure and satisfactory remedy, and as these were both male patients who wore mustaches and who cared little for appearances if teeth were exposed to view, I have resorted to occasional painting of the surfaces affected with a solution of nitrate of silver which, while making the teeth black and unsightly, seems to check the inroads of the disease.

This has led me, in several other cases, to prepare the places for cement or for inlays, and then treat them to nitrate of silver previous to their insertion, and believe this to be good practice, not only in these cases, but in a general way as concerns cavities of carious formation.

Following this method with porcelain as a filling it is my belief that many problematic troubles of this kind may be overcome, and if carefully done as concerns the application of nitrate of silver, no discoloration need appear.

There comes a time in these eroded teeth, usually, when we are called upon to restore the lost parts in some way, and as has before been said porcelain inlays are indicated. As these are, however, something of a luxury, and as oxy-phosphate cement is not satisfactory in appearance in such exposed places, we can turn now to silicate filling material recently introduced to the profession. How effective it may be in stopping the ravages of the erosion remains to be found out, but, treating it as a temporary filling if we must, the silicate material when shades are properly selected, presents a more natural appearance if finish has been carefully done, than even porcelain. It is possible that this substance may be subject to the same chemical influence that the teeth are, but it is worthy of a fair trial. In a previous article I discussed it as a material for filling deficiencies in enamel and so far as a defaced appearance goes the cases are quite similar.

What I have said about treatment with nitrate of silver might apply as well where this silicate substance is to be used, observing care to not apply only where the filling will cover when inserted, and of course drying the cavity in the usual way before inserting.

It must also be remembered that Ascher's artificial enamel or Harvardid, proprietary names for silicate cements, will not adhere to tooth substance as does oxyphosphate cements and hence it is necessary usually to make some little retention as we would do, for instance, for amalgam. In some instances the oxyphosphate of zinc cements may be used as a lining and thus serve to give the silicate cement a firmer hold where a retentive shape is not easy to secure.

Of course we have to deal also with mechanical erosion, or an erosion due partly to mechanical wear and partly, it would seem, to chemical action as the saucer shaped pits found at times at the incisal edges and occlusal surfaces of teeth. The character of these places differs from erosion on the labial and buccal surfaces, for while they are polished in appearance they are rounded out and not angular in shape, and after certain influences have passed away that produces the pits, there is not a continued eating away as in the

first, and filling with gold or gold and platinum, if filling is indicated, may be done with satisfactory results as to durability, while as before said true chemical erosion does not seem to be bettered much by gold fillings—they fail in a short time.

The Royal Dentist.—Dr. Joseph Samade, royal dentist to the Khedive of Egypt, has studied surgery in Chicago for three years and never been lionized.

So relieved was the Egyptian at the conclusion of his triumphant ordeal that he ripped off his incog and revealed himself in full oriental splendor for the edification of a few select North Siders.

Then the royal jaw-fixer, who can trace his lineage back to as fine a line of mummies as ever dazzled the Amalgamated Association of Undertakers, packed away his diploma, lighted an Egyptian cigarette made on South Halsted street and departed to fill a long-felt cavity in Alexandria.

The royal cuspid of the particular Rameses who happens to be the Khedive at present writing, has been awaiting a pure filler for the three years of Dr. Samade's absence. It happened this way:

One day the Khedive felt a pain in his wisdom tooth. He sent for the royal dentist. Dr. Samade did the stage business of grave examination, stroking whiskers, hemming, hawing and then deciding that something would have to be done.

He mixed a little mortar, unlimbered the royal trowel and puttied up the cavity after the custom approved by long usage. But he forgot all about the nerve. The Khedive didn't. When he bit into the royal plug of Smyrna figs at luncheon this particular live little nerve did a bread jump that imperiled college records.

"Banished to America," roared the Khedive to the doctor.

"Out of my sight until you learn how to dent!"

The diploma of Dr. Samade's school shows that he has won the title P. D.—which stands for painless dentistry.—*Chicago American.*

ORIGINAL CONTRIBUTIONS

TOOTHSOME TOPICS.

BY R. B. TULLER.

I had a call the other day—a professional social call.

It was no less a person than Dr. A. Dubkin Chumpley, D. D. S.

My waiting room was full, but I had time to see Chumpley.

I took him into my little private retiring room and told my maid to tell patients I was busy and would see them at the earliest moment.

Time is money, but I had rather lose my usual stipend of fifty per day than miss a heart to heart talk with Chumpley. He is *so* genuine.

"Chump, old boy," I exclaimed, familiarly, "I am glad to see you. How are you anyway?"

"Fine and dandy, Doc," he replied—familiarly and optimistically. "Fine and dandy."

"Why don't you never come out and see me? Say, I hain't no downtown dentist—not yit—but I've got the finest little office outside of downtown.

"Course, I hain't fixed up so well as you fellers, but I got bigger rooms. We hain't got no sky scrapers out there, but its a three-story building, and I'm as high up as I could get. Best building around there and I like to be up high; 3d story. Good air and good light. I stand in pretty well with the landlord and he sends me lots of business. He runs a beer joint on the first floor and in summer a beer garden in back. Handy, summer evenings.

"Sunday is my busy day, mostly gold crowns on front teeth. I can make a front tooth gold crown in half an hour and put it on; and dance with some of the girls afterwards in the garden. Come out some Sunday.

"I'm jest on my way to Frink and Young's. Can't stay long. I got to git me a new spit box—you know, what you call— cuspod door. I've often wondered about that name. Most of them big fangled names has some kind of a root to 'em. I know what cuspid is—

course, any feller who went to college knows—and I know what door is; but I'll be hanged, Doc, if I can see what the sense is in cuspid door. S'pose its all right, though. Some kind of Latin I s'pose. I couldn't never see no sense in Latin. I like just plain ordinary names. Spit tune is good enough fer me; though I couldn't never see what the tune was for, either. I s'pose it's a corruptation of spit-tin. They used to be tin. Maybe it was originally spit *in*.

"You got a glass one, fountain affair? What did that cost? I ought to git me one of them. Has yours got one of them saliva juice pipes to it? Say them are great things. Wonder if I could get one of them without the cus-spit tune?

"Hain't got no water on my floor but mother lives on the second floor, and I can drop a hose down through the floor.

"Say, Doc, I want to tell ye; I don't have very good luck killin' nerves. I *kill* 'em all right; but they all kick like mules. The worst of it is they come back in the night. I have to take out the stuff, and then the dum things won't stop aching and I can't make 'em.

"My method? the way I go at it to kill 'em? Why, I clean all the rot I can out of the cavity—and that aint much sometimes—and then I take a pellet of cotton and sozzle it in carbolic acid, anl then into arsenic and chuck it in, and smear cement over it. I tell 'em it has got to howl some, and by crackey, it does! Too much, sometimes.

"Say, I've had arsenic kill the gum all around the tooth and not stop the nerve at that. It is funny how it works sometimes.

"That's one reason I want to get me a down town office. 'Taint no place for an office right where you live. I'll bet I have to git up ten or fifteen nights a month to pull teeth or stop 'em aching—if I can; and I'm getting tired of it.

"Say, Doc, did you ever try this Dent's toothache gum? There's a thing, whatever it is, that will stop a toothache to beat the band—sometimes, very often. I keep some on hand all the time. 'Specially for night work. You can take a little piece of the waxy stuff and chuck it in in two minutes, and send 'em off till morning.

"But sometimes—I don't know how it is—but sometimes it don't work and by the time I'm asleep again, back they come jangling my bell. How do you 'spose that is, that it works so nice one time and worse others? Never used it? Well, say, I wouldn't be without it—for night work. I generally git rid of them till morning with it.

"Say, do you know that castor oil is a mighty good thing for that particular kind of toothache when you are killing the nerve and they howl so—'specially when they come back second time and you don't know what else to do? I tell 'em it has *got* to ache for awhile and to go home and take a big dose of castor oil, and when that operates the ache will soon go away. I'll bet I've cured a hundred cases that way in the last two years.

"It is my own discovery and I was going to write a paper on it for the Graphic Society, but ding it! I ain't much on the write; and I can't make more than a page of it, and that's too short. I'm going to bring it down some day and git you to help me drag it out, so as to make a good paper.

"And another thing: I've got a dandy way to make plates stick up, too. I've got some chewing gum that gits awfully sticky when you chaw it awhile. I give 'em a chunk of that, tell 'em to chaw it and then put the gob on the plate and press it up into the mouth until it spreads out all over. She sticks, you bet! May have to change it occasionally, but gum is cheap and they don't mind it.

"Say, Doc, what's good for high pertrofy? I've had two or three bad cases lately—got 'em yit. I lanced 'em and squeezed em but didn't get nothin' out—'cept blood. Syringed out with dioxogen and they healed right up, but the swellin' ain't gone down any, and it is hard as bone.

"Think I ought to open right up and use cure ett? What is 'cure ett', Doc? Think I know but ain't sure. It's a cure they did not have when I went to college. I don't remember it. Gee! they are gitten' up sompen new all the time. Who got that up? Buckley or Geo. Cook? I thought I'd get some anyway and try it. S'pose there is directions with it.

"Have you tried any of this new porcelain made out of ashes—ashes porcelain? That is the slickest thing out. I hain't got no furnace—don't have to have any for this. Just mix her up like cement and paste it in and she bakes in the tooth. Oh, I don't know the temperature, but it bakes and gets awful hard and looks just like tooth. Can't tell it at all. I do all my inlay work with it—'cept gold.

"Do you make any gold inlays? Lemme tell you sumpen: You can make good inlays—dandy ones—out of 'malgam and they'll

look like gold. I take an impression, then send 'em away. Then I take plaster cast off the impression and I have an eruption of the cavity. This I fill most full with 'malgam, and then I use some sponge gold, and plaster all over the 'malgam. Let her stand over night, and it will be hard. Then I polish her up and gold plate the whole business in a solution I got. She looks dandy, and I get the nicest kind of a fit and she'll stand wear.

"No, sir, I don't think there's no skin game in that—not any more than makin' holler inlays and filling up with cement, by gum! I never could make one of them holler inlays anyway. Must git some feller to show me. I make some fillings, too, of 'malgum and gold; specially them that is long and teejus operations. It beats all, Doc, what a lot of fellers there is who hain't got no head, sweatin' over two or three hour fillings. I'm all the time using my head. Wouldn't know what to do without it.

"I have some other surgical work out there too, aside from high pertrofy. I had a case the other day of antrium of the upper maxilary jaw—a pusillanimous case. Had to pull out a good sound first molar tooth to get in, and went up through with a bur. Then I soaked in a big syringe full of dioxogin and *say,* I never was so scared in my life! The suds that came out of her nose and mouth was somethin' fierce. She jumped up and sat down about ten times, the suds boiling all over everything. But, say, it done the business. It cleaned it out good, and that was the end of it. A week later when she came back the antrium was gone. I could'nt get a syringe up in there at all. But, say, I *was* scared at first. Thought I had gone up and tapped her brain. You wouldn't know now that she had had an antrium.

"Some of them people out there are the ignorentist lot you ever saw. When this woman came in she she had headaches and shootin' pains and she thought she had pneumonia, but I diagnosed the case at once as antrium, and she didn't know what it was any more than a needle in a hay stack. There are lots of people that have got antrium and don't know it. They call it pneurolgia.

"Say that's a word I got stuck on in the college. I spelt it new ralgy and got called down good and hard. I looked it up then and never forgot it. Pneumonia is the same way.

"Say there was one thing they learned us at college that was

all rot. Gee! the bother I have with that. Prof. Gladhand used to say over and over again to emphasize it, 'Gentlemen, don't never attempt to do nothing without first adjusting the rubber dam.' Anything he said we boys thought was gospel.

"Many a day I sweat and worried to get a rubber on all the upper or lower teeth to scale 'em, and maybe with all my work and care have it tear and let the saliva through, and many times I had to begin all over. Then when I got it on it was in the way and a confounded nuisance anyway for cleaning teeth. You couldn't see and you couldn't work. One day I got mad, yanked the thing off and slung it out of the window, and I hain't never used no rubber dam since for cleanin' teeth, and I'll bet none of you bang up fellers down town don't do it neither. I used to use up more rubber than the job was worth. Since I cut out the dam business I can clean a set of teeth in fifteen minutes, and have it all over with.

"Lemme tell you how I got ahead of a woman who tried to beat me out of a set of upper and lower teeth. Couldn't get any money. After a long time I went there one evening to collect. She said she would be over in the morning, sure, with the cash. That was old. But I did not get sore. I chatted pleasantly, took out a couple of pieces of that sticky gum (I call honey-tar gum), put one in my mouth and gave her the other. 'New kind,' I said, 'try it. I make it.' She took it and wasn't long before her upper and lower teeth was glued together. She began to claw and talk Choctaw, and I said, 'Wait, I'll relieve you,' and jest took hold and took both plates out together. Then I put 'em in a paper and said I'd have to soak 'em in alcohol or benzine to get it off the gum, and I'd take 'em to the office and she could get 'em when she came over with the money in the morning. Then to show there was no hard feelings I offered her another piece. She looked kind of funny at me out of her eyes; and I said, 'Good evening. Come over and get 'em in the morning as early as you like.' She came, and I got my money. There are several ways to use gum.

"Well, s' long. I got to git over to the dental depot and get back. Come and see me. Good-bye. Have a piece of Honey-tar? No?

(Toothsome Topics every month.)

A LETTER FROM DR. HASKELL.

MR. EDITOR—I want to call the attention of your readers once more to the subject of bicuspids and molars. Out of the great variety of molds of all the various manufacturers of teeth, there are but few shaped as they should be, in accordance with nature. All the better class of dentists have long realized the serious faults of these teeth, and whatever complaint they have made no notice has been taken of it by the manufacturers.

In the first place very many of the moulds are small, almost insignificant, having no masticating surface. Then very often they are all out of proportion to the anterior teeth, as for instance large fronts, and small bicuspids and molars, and vice versa.

But the crying evil is found in the lingual cusps of the upper teeth, and position of the pins. In nature the lingual cusps of the upper teeth are shorter than the buccal and in the lower are longer. The great trouble here is in the fact that as usually made both cusps are of equal length, and it is impossible to bring these teeth in proper alignment without grinding the lingual cusp very much. Then we find there is so little porcelain above the pins it is necessary to grind it nearly all away.

What is the remedy? Why, simply to make the lingual cusp shorter and also place the pins lower so as to allow of double the amount of porcelain over them.

Having pleaded in vain with the manufacturers for many years to make this change, at last I appealed to the youngest of the class and as a result they have produced several moulds of bicuspids and molars absolutely typical ones in all respects, good shape, good size, good masticating surface and with the lingual cusps shorter, the pins set lower, and so having plenty of porcelain over the pins.

The specific moulds are 86, 87, 90, 48, 56. Any dentist having an assortment of these moulds will need to order only fronts. Personally I have had great satisfaction in the use of these moulds. I may add that the fronts of moulds 86, 90 and 55 are all remarkably shapely teeth.

There are other good fronts, but with execrable bicuspids and molars, like all other makes of teeth. I think any dentist once using these bicuspids and molars will not use others. L. P. HASKELL.

PROCEEDINGS OF SOCIETIES

TALK ON PYORRHEA BEFORE THE NORTHERN INDIANA DENTAL SOCIETY AT HAMMOND, SEPTEMBER 18-19.

BY J. P. BUCKLEY, PH. G., D. D. S., CHICAGO.

Mr. President, Ladies and Gentlemen: I feel very much like the Presbyterian minister this afternoon. The Methodist and Presbyterian were discussing various subjects and their conversation drifted into the preparation of their sermons. The Methodist said that he rested on Monday, Tuesday he went to his library, sat down to his books, and if he worked hard by Friday night he had his sermon written and learned, then he rested on Saturday, that he might be in good physical as well as mental vigor to impress his people on Sunday. The Presbyterian said: "That is all wrong; all during the week you are working and the devil is watching you; he goes around to your various members and tells them what you are going to say and fortifies them against that; and when you speak on Sunday your words fall on barren soil." The Methodist said, "There may be something in that; how do you prepare your sermon?" The Presbyterian says, "I don't think anything about my sermon during the week. I have a good time, go around and visit the various members of the church. Sunday morning comes, I get up, go to the church, walk up to the pulpit, throw open the bible and the devil himself don't know what I am going to say." (Laughter.)

Dr. Bell and Dr. Smith came to me about two weeks ago and asked me to come down here and give a talk. I told them that I had told this society more than I knew last year. They said that Dr. Mawhinney would read a paper so I told them I would discuss his paper. Last night I called Dr. Mawhinney up at 5 o'clock in my office and said "I suppose your paper will be on pyorrhea?" and he said, "I am not going to read; am only going to talk." Now after you have listened to his talk he tells you that Dr. Buckley will get up and touch upon the various points that he has not touched upon.

If there is anything about this subject, so-called pyorrhea, that he has not mentioned I don't know what it is. It makes it good for you that he gave this practical talk but exceedingly bad and difficult for me.

Before I take up the subject I want to say one word, Mr. President, by way of appreciation of the friendship which I believe I have with the men who constitute this society, the dentists in the northern part of this State. As a great many of you know I was born and reared in Lake County, and fourteen or fifteen years ago it was my pleasure to meet in this city and in other towns in this county, not to discuss pyorrhea but to discuss ways and measures of molding the characters of the young boys and girls of this county that they might make useful citizens. While I have had the pleasure of attending many teachers' associations in Lake County this is the first time I have ever had the pleasure of attending a dental association in the county where I was raised, and I appreciate that, and I am glad to be down here and in my feeble way lend what little assistance I can to the success of this meeting.

My remarks on this subject must necessarily be of a general character, because Dr. Mawhinney has gone in many instances and in many phases of the subject into detail, so I believe you will pardon me if the nature of my remarks is somewhat more general.

Pyorrhea, so-called—like Dr. Mawhinney I don't like the term, but this disease called pyorrhea is a broad subject. It is a subject which should command the attention of every dentist; it is a subject which takes and holds your attention; and the best men in our profession, such men as he who has just spoken to you, have given years of their lives trying to study these conditions. If you are familiar with dental literature, and I know that you are, you know that the very best men we have in our profession have written volumes upon this subject. You have Harlan, Kirk, Younger, Black, Pierce, Talbot and others whose names I could mention, the very best men in the profession, and notwithstanding the fact that this subject has been studied from the pathological standpoint by these men, it is a subject which today we know the least about, so far as its real pathology is concerned, than any other subject I know. Dr. Mawhinney named several things which would cause this disease, but he is unable either in his talk here today or in his excellent book to state

definitely the causes of the disease. Now this is what should enlist the young men of the profession, for it is a broad subject. I know that at this society last year the man who has a reputation for treating, no for *curing* this disease, gave a clinic, and as I watched him work I asked him what was the cause of the trouble, and he very gently informed me that he did not know and that he cared less. To make his remarks more strongly impressive upon me, I presume, he gave me an illustration, and he said: "Supposing you were walking along the street and saw a man falling off a bicycle, and he had broken his limb. How would that man appreciate it for you to stand there and question him as to how he came along the road, and how he happened to fall off the wheel, how he happened to break his limb? What he wants is for you to set that limb, for you to cure the condition or help him out of the condition which he is in." Now I thought then, ladies and gentlemen, as he gave me that illustration, and I think now, that the best service that could have been rendered the victim was not to set the limb after it was broken and keep it in position, but to inform him of that error in the road that he might avoid the accident; the best thing you could have done for him would have been to notify him, put him on his guard, instead of having to set the limb. Now it seems to me that the best thing we can do for our patients is not to cure pyorrhea after they are once affected with this disease, but the best service we can render our patients is to find the cause of this disease and then suggest some kind of treatment, whether it be hygienic measures, regulating diet, or whether it be some systematic treatment to prevent the trouble.

Now I am not a critic, although some think that I am. I don't want to appear hypercritical here this afternoon, but I am going to say that I believe a mistake has been made by men who have studied this disease. They seemingly have spent more time, as is gleaned from the literature on the subject, in trying to name it; they have spent more time trying to find a name which after all was only suggestive of some characteristic symptom, than they have trying to find out the real cause of the disease. You know that Dr. Talbot, who has perhaps done more original work along this line than any one else, suggested the name interstitial gingivitis. I believe it was Dr. Senn, of Chicago, who called it infectious alveolitis, which is not a bad name. Dr. Pierce, from the character of the deposits which

he removed from the teeth and which caused so much of the trouble, presumed, perhaps correctly, and I believe very correctly in some cases, that these deposits came from the blood, which blood, for the reasons which Dr. Mawhinney has shown here this afternoon, were charged, supercharged, overcharged with those substances which should have been eliminated by the way of the kidneys; and then Dr. Pierce suggested the name gouty perecementitis because of the relation of this disease to rheumatism and gout. Now, we have had all these names and many others, and these men have spent more time, it seems to me, in trying to find out what to call this disorder than they have trying to find out the real cause and how to prevent the disease.

Now I believe we are making a mistake today in dental schools and dental colleges in teaching this subject. We ought not to say that we can follow any one line of treatment, for the cases which come to us are not all alike. We should classify the different cases. When you study the cases that present themselves you will find that they can be grouped into at least three classes. I want to take up just a moment of your time in calling your attention to three classes of this disorder. Now every one of you have had cases come to you where the gum was inflamed because salivary deposits had accumulated around the neck of the tooth; the teeth are not loose, as yet, there is perhaps no pus; that is a class of cases that every one of you have seen. The primary cause of the gingivitis is the deposits which accumulated from the saliva because the patients neglected their teeth; they permitted salivary deposits to accumulate; the salivary deposit ultimately was the cause of serumal deposits, which are sometimes present just under the margin of the gum. Now the cause of that class of pyorrhea is neglect on the part of the patient absolutely. You know how to treat this case; simply scale the deposit in the manner Dr. Mawhinney has told you to scale; it is not a difficult task in this case to remove that deposit. This, by the way, is the class to which Dr. Talbott can properly give the name interstitial gingivitis. Now there is another class which is almost opposite to the class to which I have called your attention. You have no gingivitis; absolutely none. Instead of the gums being congested they are anemic, drawing away from the neck of the tooth. In this particular class you often have a deposit on the roots of the teeth; you have

a rapid destruction of the pericementum; the teeth getting loose; the prognosis in this class is not altogether good. The cause of this condition or this class of pyorrhea is not neglect because it occurs in the mouths of your best patient, it occurs in the mouths of those patients who will come to you every month if you ask them to do it, willingly, for you to examine the teeth. Here we have a condition which all of us are not able to cure. The prognosis of this particular class of pyorrhea, as I have said, is not altogether encouraging. The cause of it may be, doubtless is, and I hope some one in the near future will prove it to be, *a specific germ* which acts upon these tissues. Now we have still another class, a third class. I am dividing these into classes for clinical reasons because we can accomplish better results in treating when we divide the different cases into certain classes. The third class is a class of cases the first symptom of which is often neuralgia; we find in every instance deposits upon the roots of the teeth but not always do you have an opening or a break at the gingival. You don't always have an opening which reaches from the gingival margin down to this deposit; there is no pus in the beginning of this disease. This is the kind of pyorrhea where Dr. Mawhinney lanced the gum and removed the deposit. I think in some instances there is an opening at the margin; sometimes there is and sometimes there is not. This is a class of pyorrhea that is not as frequent; we do not see as many cases as we do of the other two, especially of the second class. This class is the class where Pierce was justified in calling the disorder gouty pericementitis. Now don't misunderstand me when I say that this third class of cases is associated with a gouty diathesis. In every one of these cases you will find that the patient gives the history that their father or mother, or their grandfather or their grandmother at some time have had rheumatism or that they had predisposition to rheumatism. The treatment of the first class is purely local, as we have first to remove the cause of the gingivitis. Tell your patient to come in more frequently, that salivary deposits may not accumulate, and use on the gums Talbot's remedy.

℞ Zinci iodidi, ...gr. xv
Aquæ, ...m x
Iodi, (crys.), ...gr. xxv
Glycerini, ...ʒ i—m
Sig. As directed.

I am going to be brief and not hold you too long. The first thing we want to do in treating the second class, where we have pus flowing from the pocket, there may or may not be deposits, the first thing you want to do is to extract all of the hopelessly loose teeth, which Dr. Mawhinney did not emphasize. He did say that you should fix these teeth in the jaw. By fixing them I thought he was going to say to extract them, but he modified that and told you to fix them in the jaw. There is absolutely no use of you losing time treating hopelessly loose teeth, and then after three, four, five or six months, or at the end of a year's time having to extract them, the thing which you should have done in the first place. Then, after you have extracted all hopelessly loose teeth you want to do that which Dr. Mawhinney told you to do, station the remaining teeth in the jaw, put all these teeth which you, from your past experience, can reasonably believe can be saved, fasten them in the jaw by means of some staying appliance whether it be temporary or some kind of a permanent apparatus. Then after you have the teeth stationed in the jaw you can begin your scaling. Now I want to emphasize a point here and that is to begin at some particular spot in the mouth, on some particular tooth, and stay with that tooth until it is scaled, and after you have worked on that tooth a sufficient length of time to have it thoroughly scaled then you can proceed to the second one. I always begin at the root of the upper right third molar; but that is a great deal like the Indiana boy who started out to plow a new field, and an Indiana boy is a great boy to make the first furrow straight, and this was his idea as he started out, but he had an awkward team, one that went from one side to the other, and the boy having his eyes on that bee line said "gee," "haw," the team simply moving from one side to the other; finally in discouragement he said, "Well, darn you, go where you want to, it has all got to be plowed anyway." Now it don't make any difference whether you begin on the first upper or the lower third molar, but I think the best way is to follow some system, begin on some one tooth in every mouth and stay with that tooth until it is finished.

Now after you have extracted the hopelessly loose teeth, after you have stationed these teeth in the jaw, after you have scaled them thoroughly, you don't want to expect too much from medicine. Den-

tists make a mistake in expecting to effect a cure in a short time. It takes time in readjusting the abnormal conditions to the normal; you simply want to assist nature in this process.

In treating this second class of cases, there are three things you should do with medicines: *Disinfect* the pocket, *stimulate* the sluggish pericemental membrane and *constringe* the gum tissue. First wash out the pocket with a warm medicated water (aqua cinnamomum); dry pocket and inject a solution of hydrogen dioxide, having a long needle in the syringe and placing the blunt point at the bottom of the pocket. This will disinfect and the effervescence will remove any deposit which was loosened from the root, but which was not removed from the pocket. The sluggish membrane can be stimulated by again drying the pocket and injecting a 25 per cent, and in bad pus cases a 50 per cent, solution of pheno-sulphonic acid. A glass syringe with a platinum point and asbestos packed piston should be used, injecting enough to thoroughly cauterize the pocket. The patient should now be dismissed for a few days, prescribing a mouth wash to be used in the interval. When the patient returns the pus formation should be checked. If it is not, your first work was not thoroughly done. If the pus is checked and pocket is healing all that is needed in the way of medicine is to constringe the gum tissue. This can be done nicely by using Talbot's remedy about twice a week. The patient should be instructed how to properly brush the teeth and massage the gums.

The local treatment of the third class is the same practically as the treatment already outlined. In conjunction with this, the patients' diet should be regulated. Instruct them to drink plenty of water, refrain from eating much nitrogenous food, such as red meats, etc., and take good healthful exercise in the open air.

Now I think, Mr. Chairman, I have wandered enough in talking on this subject. I want to again thank you for the kind attention you have given me in my hurried talk over this subject. I thank you. (Applause.)

THERAPEUTICS OF PYORRHOEA ALVEOLARIS.*

BY DR. ELGIN MAWHINNEY, CHICAGO.

I want to assure you that is a great pleasure for me to come and talk to you today. Indiana was the cradle of my professional career; many of you knew me then.

In common with most people I always have a longing for the scenes of my childhood.

I shall not attempt to bring you any new message regarding the etiology of pyorrhœa, but shall confine my remarks to its therapeutics.

To begin with, I want to say that I do not cure all cases of pyorrhœa alveolaris that come to me. I have no cure-all panacea for this class of troubles, and if there is one known I do not know what it is.

The term pyorrhœa alveolaris, although from the etymology of the word should signify a specific morbid condition, is in reality applied by the profession generally to a great variety of disturbances of normal tissues about the jaws. This term has become so generally used by the entire profession that it seems folly to attempt to change it.

The first essential in treatment of this class of disturbances is proper diagnosis.

There are so many different conditions presenting in different cases which are due to distinct causes that we must know exactly what the conditions are in a given case before treatment can be intelligently undertaken. In some cases the cause may be wholly of constitutional origin, or in addition thereto there may be a local irritant present, or it may be entirely due to local infection or other local causes.

The trouble in a given case may be due primarily to local conditions, such as overhanging fillings, ill-fitting crowns, poor contact points and the like, which must be corrected before curative treatment should be attempted.

Dr. Talbot points out, I think correctly, many of the constitutional causes which must receive attention before permanent cure can be hoped for in many cases.

*Delivered before the annual meeting of the Northern Indiana Dental Society at Hammond, Ind., September 18, 1906.

Many of Dr. Talbot's theories are not accepted by all of us, but certain of his conclusions cannot be gainsaid.

His studies of the subject of auto-intoxication as a causative factor in many cases are conclusive. He uses the term auto-intoxication to signify poisoning of the individual through the circulation in the blood stream of poisonous products developed in the system, particularly in the intestinal tract, liver, kidneys, which re-enter the circulation and are stored up or excreted by the various glands.

In this class of cases systematic treatment is the first essential, and I believe should be carried on by the physician at the same time the dentist is attending to the local conditions.

Local treatment alone will never affect a permanent cure in this class of cases.

Every case of pyorrhœa alveolaris can be benefited by careful attention to bodily hygiene, with special reference to diet.

All patients suffering from any manifestation of this trouble can be greatly benefited by careful diet, eschewing meats and sugars and drinking large quantities of wholesome water.

In my opinion the reasons why the country dentist has so much trouble in treating pyorrhœa alveolaris are these: First, he does not feel that his patient will appreciate the effort sufficiently to pay him well for his time; second, difficulty in controlling the time of patients; third, lack of proper finger training to enable the operator to successfully clean the teeth roots.

I think you are making a great mistake when you conclude that country patients do not appreciate the value of such services.

If they do not, are you not the one to blame? Have you made an effort to show the patient the need and value of such services, or do you in common with a whole lot of others say to the patient you will lose your teeth sooner or later; your trouble cannot be cured; you had better not spend money on it?

When you do attempt treatment of a case, do you make the same effort that you do for filling operations? Do you make treatment appointments, or do you say to the patient, "Come in in a few days again," and when they do come in you are too busy with other work to stop and give the case thorough attention? Right here is where the patient is educated not to appreciate the value of services. Enough said as to this phase of the question.

The actual management of cases requires, first, that we determine what is actually taking place in a given case, find out the cause, explore accurately the extent of the pus pockets, how much peridental membrane and alveolar wall is involved, how much necrotic tissue is present, are any teeth loose, what is the exciting cause, the local irritant.

The next step is to properly clean the teeth, and here the average dentist most often fails. The requirements for properly scaling the teeth are proper instruments and thorough finger training, so as to be able to use them. Fingers whose touch-sensitiveness has been blunted by working in plaster, finishing rubber plates, etc., cannot have that delicate sense of touch which will enable one to tell accurately just when all deposits are removed and also avoid scratching or grooving the root. It needs years of careful finger training in practical work to develop that necessary delicate sense of touch.

I use mostly the instruments designed by Dr. Younger and a few of my own design.

Instruments must be delicate, so shaped as to reach every surface of every root and work with both chiseling and pulling motion, and be stiff enough not to spring over the deposit without removing it.

Instruments should be in such form as to enable thorough sterilization. The blade must bear such relation to the shaft or handle that the instrument will not roll or slip out of perfect control while working.

Concentration of effort on one particular tooth until it is thoroughly clean is an absolute necessity.

The mouth should be cleaned of all unclean mucus and debris and antisepticised before scaling is begun. Antiseptic solutions should be freely syringed into the pockets while scaling is being done, that all dislodged substances may be thoroughly removed.

In all cases of deep pockets, difficult of access, I simplify the work by previously packing the pocket with gauze saturated in 25% phenol-sulphonic acid, or aromatic sulphuric acid will often do quite as well. The packing should be left for 24 hours, when the gum will be crowded away from the tooth neck where the pocket is so as to enable you to see to a great extent exactly what you are doing and scale the root without much pain or laceration of tissue.

The phenol-sulphonic acid has a tendency to soften the calculus, making its removal much easier.

For the purpose of reducing the pain incident to scaling I recommend packing the pocket with a rope of cotton saturated in a 1% cocaine adrenlin solution and allow to remain five minutes.

Care should be exercised to pack absorbent cotton around the tooth so as to keep dry and also absorb any excess of anesthetic, and thus avoid its effect upon the throat, etc.

I get much better results from using anesthetic in this manner than from hypodermic injections.

After the tooth is cleaned and the pocket thoroughly washed out, I usually use some acid such as 20% phenol-sulphonic, 20% trichloracetic, pure lactic acid, aromatic sulphuric acid in the deep pockets.

If there is a good deal of necrotic tissue and pus I sometimes pack the pocket with gauze saturated in the first named acid and let it remain twenty-four hours.

There are some cases, particularly the labial of upper and lower incisors and lingual of upper molars, where the pocket is high up and the alveolar wall gone over it, that it is easier to reach it through an incision in the gum tissues over the pocket.

I sometimes make such an incision, and use the previously mentioned pack to open up the pocket before scaling, then proceed as before.

If the tooth neck is very sensitive after scaling I use chloride of zinc 20% in tincture of iodine. If there is much regeneration of tissue needed I use Dr. Talbot's glycerol iodine and zinc. If simple astringent is needed I use iodide zinc crystals.

If stimulation is needed I use resorcin.

If I have been thorough in my work I do not expect to see any pus at the second sitting. If pus is present I always assume I have left some deposit on that root, and make another attempt to remove it.

I usually see these cases every second day at first, then every third day, and so on until I see them once a month, and when they are finally dismissed I insist on seeing the case every three months.

The gums should receive thorough massaging frequently. Teach the patient to do this.

I prescribe a mouth-wash and powder which I think meets the needs of each case, and do not rely on stock mouth-washes.

In very bad cases, where there is considerable recession of the gum and sensitive tooth necks, I prescribe Phillips' milk of magnesia, held in the mouth by means of a saturated piece of gauze held under the lip on retiring.

If there are teeth present that are very loose in the socket they must be fixed by some band or splint or ligature,—any method that will hold it rigid and is easily kept clean.

In upper molar teeth it sometimes happens that one root only is badly affected, which suggests the removal of that root.

The root canals of such a tooth must be filled previous to excising. When a pocket ceases to exude pus and the soft tissue lies down close to the tooth, don't force it away again, but dry the tooth neck and adjacent soft tissue and let the medicine used flow into the pocket.

In conclusion I wish to urge you to be ever on the outlook for this trouble and learn to recognize it early, when treatment will bring most certain results.

When these cases become far advanced, unless very favorable general conditions are present, treatment becomes very difficult and the prognosis discouraging.

ABSTRACTS AND SELECTIONS

ETHYL CHLORIDE*

A PAPER READ BEFORE THE HULL AND EAST RIDING SECTION OF THE NORTH MIDLAND BRANCH, FEBRUARY 24, 1906.

BY F. C. EVE (HULL), M. B., B. S. CANTAB.

MR. PRESIDENT AND GENTLEMEN—I am well aware of the honor I am receiving in being allowed to address you tonight on a subject of which you all have so much knowledge; and I trust you will regard this paper rather as an introduction to a subsequent discussion, in which we may all hear the experiences of individual members. I had better explain at once that I could not profitably cover the whole ground of dental anesthesia which had been suggested as a title to my paper. I have therefore taken the liberty of dealing only with ethyl chloride anesthesia, as this will occupy all my time, and has the advantage that its reputation is still in a state of flux.

It is probable that the wave of enthusiasm which has passed over the medical and dental professions in respect of this anesthetic is already beginning to decline, and it may be expected that the inertia of public opinion will carry it during the next year or two even below the position to which it is justly entitled.

Perhaps before going further I had better define my title to speak on this subject, for if this paper were merely a compilation it would be worthless. I believe I was the first to use ethyl chloride in Hull, or at any rate I was the first to write a paper about it, which I did to the Hull Medical Society two years ago. I was also the first about here (and possibly anywhere) to use ethyl chloride in the bag of an ordinary Clover's inhaler. Before that it had only been given in special apparatuses. The good fortune to acquire this special experience was due to my position as almost the sole anesthetist at the Hull Royal Infirmary for three and a half years, during which time I sometimes give as many as nineteen anesthetics in a day. As

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a result, I have acquired a considerable affection for ethyl chloride, tempered, however, with a good deal of respect for its occasionally treacherous nature and for its limitations. And now to plunge into details. The history I will not trouble you with, except to say that it is not really a *new* anesthetic, Snow having used it in 1851, and later Clover tried it in 1,800 cases which he recorded in 1880. But several deaths occurred, probably due to imperfect manufacture, and the drug was allowed to hibernate for years. Several brands of ethyl chloride can now be relied upon as absolutely pure, and, according to the *Lancet,* these are Hedley's, Kuhn's and the brand known as Kelene. Some brands are impure, and some tubes are unbranded and should obviously not be used. Next, as to the administration, I believe that all special apparatus is unnecessary, but perhaps I am bigoted, having scarcely ever used anything except an ordinary Clover's ether apparatus.

The minimum dose is about 3 cc. for a child, 4 for a woman, and 5 for a large man. This dose is delivered into the bag of the Clover's apparatus and the opening occluded with the thumb or hand until the patient has got accustomed to the mask. He is then directed to fill his chest with air and at once the bag is applied to the facepiece, so that the following expiration distends the bag. He is warned that his next breath may be rather choky, and a mouthful of air given if necessary. But from this onward until full anesthesia all air must be excluded if possible. Hence the necessity of having the bag moderately dilated at the outset. The bag itself should also be of a fair size. Anesthesia is complete wonderfully quick, sometimes in four or five breaths—at any rate under a minute—and is announced by muscular relaxation, dilated pupils, loss of ocular reflexes, and finally stertor. Respiration appears to be stimulated and in spite of the short commons of air the complexion remains beautiful. This absence of cyanosis in the absence of fresh air is a perpetual puzzle to me. If the facepiece is removed when stertor is induced, an anesthesia of one, two, or even three minutes may be expected. Then the patient wakes up quite quickly and frequently smiling, and the operator is pleased and the anesthetist thinks how clever he is. Then come the after-effects, but of these we will speak later and in a less cheerful key.

This is the outline of an ordinary anesthesia, and this method

has the one drawback that the patient's first inspiration meets the concentrated vapor. Personally, I think this is not a serious inconvenience and is easily humored by removing the facepiece a little. But a special apparatus will have a tube and tap to admit the drug gradually. Unfortunately this tube is often pointing in the wrong direction and you can not measure the ethyl chloride unless the tube is vertical. Dr. Smith, at the infirmary here, has got over this difficulty by making a little hole in the thick rubber neck of the bag just big enough to admit the snout of the tube. This enables him to spray in a few drops at a time and avoid a concentrated vapor. But unless given with skill, the patient feels choked from too little air before he is under. Skilfully given it is a most pleasant induction. The ordinary hole in the ether chamber may also be utilized for introducing the ethyl chloride, but even with the points at zero, this volatile drug is not quite securely imprisoned. If the ether chamber has a glass top you can see when the drug has all evaporated.

Somnoform, which is a mixture of ethyl chloride and methyl bromide, is agreed on all hands now to have no advantages over the pure ethyl chloride. It is more expensive and more dangerous. It was excellently boomed and probably helped to introduce ethyl chloride. Mr. Storey gave me some to try in the early days, but after some half dozen successful cases a man's pulse went a little irregular and I gave it up for good. Narcotile is another mixture, but I have no experience with it. The ordinary ethyl chloride for freezing the skin is impure and is said to be dangerous as an anesthetic.

When a nervous patient refuses a dental anesthetic which is clearly for her good, a feeble anesthesia may be induced by packing one cheek with gauze and then spraying this freely with pure ethyl chloride. Mr. Storey informed me of the successful use of this device, but of course there is too great an admixture with air for good anesthesia.

In hospitals or for frequent use, it is best to buy it in 2s tubes holding 60 cc. with a spring tap. These leak slowly, however (or used to), so for infrequent use the glass bulbs holding 3, 4 or 5 cc. are best.

Of course in any method involving rebreathing, the bag must be kept scrupulously clean and better, occasionally boiled. The rinsing of the bag with water (in abundance (after each anesthetic should

always be done by the anesthetist himself. Recently I used a bag in which this duty had been relegated to a nurse, and it was in a filthy condition inside.

Now to consider the *after-effects*. Frequently these are delightfully slight, but on the whole it must be admitted that they compare very unfavorably with gas, specially if the patient is unprepared. Still, they can usually find their way home without the help of a friend in half an hour or so, so that ethyl chloride in this way is superior to ether or chloroform.

The after-effects usually consist of vomiting, which is rather frequent (say one-third of the cases), headache, and occasionally collapse.

It is said that by giving a more ample dose one can admit more air and thus diminish rebreathing and lessen the after effects. With the same object in mind it is better to leave the patient undisturbed on the couch or chair for a quarter of an hour, lest moving causes vomiting. After half an hour a cup of tea or bovril will usually be comforting. No food should have been taken for three hours before ethyl chloride, and of course the bladder should be empty. An aperient is best taken two nights before. If the usual plan is followed, of a purge the night before, the bowels may not have quieted down, or the patient may feel rather exhausted by the purge.

The clothing, specially about the abdomen, should be loosened, because it must be remembered that ethyl chloride generally produces muscular relaxation in which the chest muscles of respiration participate. Hence respiration may have to be carried out entirely by the diaphragm, which can not act if the abdomen is laced up. Muscular relaxation does not always occur and may not do so at all in the jaw muscles. Hence the advisability of a mouth-prop before starting the anesthetic.

It is of course essential to have a clear conception of the position of affairs at the back of the throat during deep anesthesia from any anesthetic. The coughing reflex and the swallowing reflex have both been paralyzed, so that the larynx is changed from an exquisitely sensitive and ever vigilant sentinel to a stupid yawning tube up and down which currents of air are being violently forced. Clearly, then, if blood or mucous, vomitus, or a tooth fragment are allowed to gravitate to the back of the throat during deep anesthesia, there is

great risk of their being inspired into the lungs. Any danger of this can always be obviated by making the mouth and cheek occupy a lower level than the top of the larynx. If circumstances make it essential that the back of the throat must be pointing anywhere heavenwards, both anesthetist and operator must realize the danger and be very anxious, careful and alert. I have done a post mortem on a bonny girl, aged 25, in whom a tooth was inspired under ether several months before. During a lingering illness resembling consumption an abscess formed at the base of the lung communicating with the trachea by a long, broad, straight, bronchiectetic tube. Though we were lucky enough to locate and drain this small abscess, yet she died of hemaptysis, a victim of unrealized responsibility. I have also done a post mortem on a woman suffocated by a piece of tripe which had been vomited and then inhaled past the vocal cords to the end of the trachea. Inhalation of food is, of course, a fruitful source of pneumonia, and it is surprising that it does not more often follow anesthesia. If a recumbent patient vomits it is of course imperative at once to rotate the head so that the vomitus drains away from the back of the throat. Now ninety-nine people out of one hundred will do this, but will at the same time pcsh forward the angle of the jaw. This appears to be bad practice, as this pushes forward the root of the tongue, and still further exposes the larynx. The head should simply be rotated by pushing firmly on one temple till the mouth is dependent.

You must forgive this digression into realms of rather obvious details, but I do feel that when once the coughing reflex has been abolished by any anesthetic whatever, the responsibility of guarding the open, sucking larynx from foreign material is very great and not half realized.

And now to pass on to the other dangers of ethyl chloride, those of over dosage or idiosyncrasy. Ethyl chloride is supposed to kill by paralyzing the respiratory center and leaving the chest in a position of forced inspiration. Well, personally, I have no great terror of death from respiratory failure (unless the center is permanently injured as in cerebellar tumors), for artificial respiration is such a good substitute that it can be kept up until the excess of anesthetic be eliminated. It is the failure of the heart or vasomotor centers that are so sudden, overwhelming and lethal. It is this catastrophe

which is always a possibility with chloroform anesthesia, even in the best hands, and which prevents me even from using chloroform where any other anesthetic is possible. Well, I am afraid from three cases I have heard of that ethyl chloride shares this unfortunate peculiarity with chloroform, though in slighter degree. And since it is a more volatile drug there is a much greater chance of artificial respiration being successful in averting death. Probably the uncanny way in which ethyl chloride seems to stave off cyanosis when no fresh air is admitted rather adds to its danger by depriving one of the warning which cyanosis gives with ether or gas.

I have never ventured to produce cyanosis myself with ethyl chloride, but I hear from the Children's Hospital, where this anesthetic is very freely used, that cyanosis may be induced in children with impunity. This clearly shows that children take ethyl chloride very well, as I can hear of no ill effects at that hospital, where it is always used for all minor operations, including numerous circumcisions and adenoids. As to the risk of death under ethyl chloride, it is supposed to lie between ether (which is about 1 in 16,000) and gas (which is given as 1 in 100,000), but I doubt whether it is as safe as ether is in experienced hands. Personally, I always feel absolute confidence in ether, as it appears never to produce those sudden treacherous cardiac calamities which are the only emergencies which can not be foreseen or guarded against. I know of no less than eighteen deaths from ethyl chloride in the literature, nearly half being dental cases, and two being in children.

Now for a few cases: I was myself anesthetized with ethyl chloride the other day, merely for the sake of the experience, and I will relate my sensations. It was given by Dr. Smith with a face-piece and Clover's bag, and the drug sprayed in gradually through the hole in the rubber neck of the bag. There was absolutely no discomfort from the concentration of the vapor, nor did the airway feel at all inadequate, as some allege. There was perhaps trifling discomfort from rebreathing the same air. Soon, however, outlines became hazy, and for a few heart beats there was throbbing in the head of painful intensity. Then with absolute suddenness came utter darkness, the ego ceased to exist and nirvana was attained. All this occupied forty-five seconds. I was under for a minute with slightly dilated pupils and fixed eyeballs, and the mask was removed imme-

diately the eyes became fixed. In spite of this and the small dose (only 3 cc.), there was one minute's anesthesia. Then came a realistic dream, disturbed by irritating voices asking senseless questions quite out of harmony with the reality of the dream. Then in a flash full consciousness returned and I told the questioners what I really thought about them. In ten minutes I could smoke a pipe, but speech was still a trifle blurred, and I felt rather as if treading on air for half an hour. Nausea and vomiting and headache were quite absent. However, I slept badly that night, awoke next morning with a "brown taste in my mouth" (as they say in New York), and was not fully in the enjoyment of life all next day. Half an hour afterward my blood pressure was 135 mm. of Hg. (higher than usual). So that, though the anesthesia was not unpleasant, the after effects of even this small dose were by no means negligible.

Dr. Holford, at the Infirmary, kindly tells me of the case of a stalwart nurse from whom he was extracting two teeth in the sitting position. She became cyanotic, stopped breathing, and had quickly to be thrown on to a table and artificial respiration performed, after which she quickly recovered. To the same gentleman I owe the following most interesting case: In a healthy, middle aged man, who had dined off beef and potatoes three hours previously, Dr. Holford was about to remove an enlarged bursa of the knee cap. Local anesthesia with an injection of a smallish dose (3 grs.) of 2 per cent eucaine was first tried, but proved unavailing. General anesthesia was then induced with 5 cc. of ethyl chloride from a Clover's inhaler. To continue the anesthesia a second 5 cc. had been added, soon after which the man became rigid, and pulse and respiration ceased. Cyanosis soon became extreme, pressure of the fingers on the chest leaving sluggish white islands on a purple ground. The veins, too, became enormously engorged, in spite of vigorous artificial respiration. A vein in the arm was accordingly hastily divided by Mr. Holford, and to his horror merely emptied itself without bleeding further, in itself almost a proof of death. By this time the rigidity of the muscles had passed off except in the clenched jaws, which still resisted all efforts of the anesthetist. In consequence of this and the bleeding elbow, artificial respiration had to be conducted by standing on a chair beside the table and leaning the whole weight rhythmically upon the ribs. This was continued for about two minutes and

still no pulse or respiration returned, and still the horrible cyanosis continued. The only spark of hope remaining was the gush of blood from the vein which followed each compression of the chest. But now each gush became greater, and soon blood literally poured from the arm, so that a pint was quickly let free from the embarrassed circulation; and the man lived once more. Science, promptitude, presence of mind and perseverance have their reward; the little operation is completed, and next day the man feels himself again. Examination of his chest reveals nothing abnormal. The anesthetist was heavily handicapped by both the man's pupils being fixed by old iritis. The lessons learned are: (1) To give ethyl chloride warily after eucaine; (2) that it is safer to proceed with ether rather than to give a second dose of ethyl chloride; and (3) that with cyanosis and distended veins, life may be brought back by venesection reinforcing artificial respiration. We also note in this case a commendable absence of those futile remedies which crowd the text-books. Strychnine, for instance, in a really pulseless man might as well be injected into his pocket as under his skin. Amyl nitrite is feeble and may do harm; battery to me sounds like a laboratory toy; chest slapping, hot or cold sponges, tongue traction, are all feeble remedies. And since all slight emergencies may be the early stages of grave ones, I think that in practically all cases one should resort promptly to the two great fundamental remedies: (1) Establish the air way; (2) artificial respiration. For this latter, beside ventilating the lungs, does produce a slight but definite circulation of the blood even after the heart has ceased to beat.

And now to sum up and crystallize our ideas on this in many ways excellent anesthetic, and you must not be misled by my having of necessity dwelt chiefly on the dangers of this drug; for the advantages are many, namely: Cheapness, portability, pleasant to take, easy to administer, quick to "go under" and "come out," safe when not underestimated, considerable duration of anesthesia, excellent for children, instead of gas, very good for alcoholics and hysterics, unrivalled as a preliminary to ether, convenient in that it allows anesthesia in the sitting position, and that as a rule the patient can soon get home without the help of a friend. Finally, there is an absence of that cyanosis which increases bleeding and strains the right heart. The drawbacks are (1) the risk to life, which is prob-

ably as great as with etherization, and in which this drug betrays an unpleasant relationship to $CHCl_3$; (2) the after effects, such as vomiting, headache and collapse, which are unpleasantly frequent. These, however, are less than after an equivalent length of anesthesia with chloroform or ether.

Hence, for the operation (dental or otherwise) lasting from one to three minutes, it is the best anesthetic, and has come to stay. At all events I submit this statement to discussion. At the time, it is a charming anesthetic for the patient, operator and anesthetist. Afterward it is often trying for the patient, and cumbers the waiting room of the dentist, and endangers his carpet. But gas should still be used whenever possible, and the prevalent notion that ethyl chloride is anything like as safe as gas must be discarded.

Clearly, ethyl chloride must not be administered by dentists, and preferably not by a doctor, single handed. It should be given only by those who are qualified to deal with the gravest anesthetic emergencies.

My thanks are due to the residents at the Royal Infirmary and the Children's Hospital for placing their large and recent experience at my disposal, and especially to Dr. Holford and Dr. Smith. Also to you, gentlemen, for a very patient hearing, and in anticipation I will thank any who have worked with ethyl chloride for stating their experiences of it.

DISCUSSION.

Mr. Audas asked if the prone position was necessary with this drug.

Mr. Storey congratulated Dr. Eve on his paper, and said his routine practice for extracting many temporary teeth for children was to administer about 1 cc. of the drug, allowing only three or four inhalations.

Mr. Audas mentioned cases in which he used the drug as a local anesthetic, but its action became general, to mutual satisfaction of himself and patient.

Mr. J. L. Charter said he was charmed with it at first, but soon found its limitations.

Mr. G. Fisher asked if the vomiting was due to swallowing the drug, and said that strong acetic acid inhibited vomiting.

Mr. H. King asked if vomiting was proportional to amount of ethyl chloride given.

Dr. Eve, in replying, said that he always used the prone position for ethyl chloride. Vomiting was lessened by giving a little air, and might be produced by swallowing blood, etc., in which the drug was dissolved. If patients were carefully prepared there was little or no vomiting, which if it occurred he stopped by giving iodine in minim doses.

ORAL HYGIENE.

BY ALBERT J. WRIGHT, D. D. S., BROOKLYN, N. Y.

Oral hygiene gives a theme for practical thought which is of great value to the dentist, and we have no better antiseptic for encouraging oral hygiene than Glyco-Thymoline. I always instruct my patients in the daily use of this solution, and urge upon them the importance of such a measure. The dental profession to-day is not only caring for diseased conditions of the oral cavity, but it is giving careful consideration to prophylactic treatments which will arrest or prevent disease. To maintain a healthy condition of the mouth and its secretions I find Glyco-Thymoline invaluable. It will inhibit the propagation of bacterial life and neutralize destructive acids. The continued use will also guard against attacks of acute inflammatory diseases such as tonsilitis, diphtheria or catarrhal pharyngitis. Another fact I have noticed—the daily use of Glyco-Thymoline as a mouth wash means that toothache is made a thing of the past. Why? Because Glyco-Thymoline, through its peculiar exosmotic property, rapidly depletes any existing congestion, stimulates capillary circulation, checking or preventing inflammatory processes. Without *inflammation* there can be no *toothache*.

NOTICES OF MEETINGS

IOWA STATE BOARD OF DENTAL EXAMINERS.

The Iowa State Board of Dental Examiners will hold its next meeting for examination at Iowa City, February 6, 7, 8, 9, 1907.

Candidates will be furnished with proper blanks and such other information as is necessary upon application to the secretary.

All applications must be filed with the secretary five days prior to the date of examination.

Address all communications to

E. D. BROWER, D. D. S., Sec'y.
Le Mars, Iowa.

TWENTY-FIFTH ANNIVERSARY REUNION, CELEBRATION AND CLINIC OF THE CHICAGO COLLEGE OF DENTAL SURGERY ALUMNI ASSOCIATION.

On January 16 and 17, 1907, the Alumni Association of the Chicago College of Dental Surgery will celebrate the twenty-fifth anniversary of the establishment of the college by holding a grand reunion and clinic. Arrangements have been made for a number of papers, a very extensive clinic, a theater party and a banquet. A railroad rate of a fare and a third for the round trip from all points in the United States and Canada on the certificate plan has been arranged for.

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

J. P. BUCKLEY,
R. C. BROPHY,
Committee on Publicity.

BANQUET TO DR. G. V. BLACK.

The Fraternal Dental Society and the St. Louis Society of Dental Science will unite in giving a banquet in honor of Dr. G. V. Black, at the Jefferson Hotel, St. Louis, the evening of January 15,

1907. The afternoon of the same day Dr. Black will deliver an illustrated lecture on some phase of operative dentistry.

The long and untiring efforts and valuable scientific contributions of Dr. Black easily make him the foremost dental scientist the world has ever produced. No dentist, living or dead, so much deserves the thanks and praise of his professional associates. A most cordial invitation is extended to the members of the profession to be present at both lecture and banquet and assist in honoring Dr. Black. Those desiring covers reserved for banquet will remit $5.00, price per plate, to Dr. Richard Summa, secretary, Oriel building, St. Louis, before January 12.

GEO. A. BOWMAN, Chairman.
A. H. FULLER,
EDWARD H. ANGLE,
D. O. M. LECRON,
ADAM FLICKINGER,
WM. CONRAD,
BURTON LEE THORPE,
Committee.

SOUTH DAKOTA STATE BOARD.

The next examination of the South Dakota State Board of Dental Examiners will be held at Sioux Falls, S. D., January 29, 30, 31, 1907, beginning at 1:30 p. m. All candidates for examination must bring diploma from reputable dental colleges or affidavit of having been engaged in the practice of dentistry for at least three years immediately preceding said examination. Instruments and materials necessary to do all kinds of operative and prosthetic work will be needed at this examination. Vulcanizer and lathes will be furnished by the board. All applications must positively be in the hands of the secretary by January 22d.

G. W. COLLINS, Secretary,
Vermillion, S. D.

EDITORIAL

We note with considerable interest the loss of life in the dental chair usually due to anæsthetics. Those agents which produce unconsciousness are always attended with more or less hazardous risks, and we are more and more surprised that chloroform should be given for the extraction of teeth in the dentist's operating chair. The large percentage of deaths that are noted from chloroform and ether is the result of their administration in dental offices. While unquestionably many deaths from these agents take place in hospital operating rooms, still the general public is not apprised of such a fact through the current newspapers. While on the other hand, if an individual dies in the operating chair in a dentist's office, it is soon made public property and becomes the gossip of the community, thus not only injuring the individual dentist who is so unfortunate as to have such an accident, but it places the dental profession as a whole in an embarrassing position with our medical brethren or the general practitioner of medicine.

The number of deaths in dental offices is certainly becoming alarming, and it should make a dentist more cautious in the handling of general anæsthetics. Somnoform, which has recently become very popular, is receiving its share of fatalities as well as other anæsthetics. Nitrous oxide gas had its ups and downs for many years and came into general use, but occasionally we also hear of deaths from that anæsthetic.

In looking up the statistics of this subject we note that the deaths from nitrous oxide gas and somnoform have appeared in advertising offices almost exclusively. Perhaps one of the reasons for this is due to the fact that they extract a great many more teeth than does the dentist who carries on a straight-forward ethical practice, so-called, and they become careless and administer anæsthetics promiscuously, regardless of the condition of the individual. Within a very short period of time, not over two or three months, there has been recorded (not authentically) three deaths resulting from the

use of somnoform; one of these is beyond question a well established death, the others are deaths surrounded with more or less misgivings. One seems, according to the statement of a physician, to have taken place some hours after the administration of the anæsthetic. The woman had reached her home and died very soon afterward. The physician who seems to have known her physical condition, claims that she should never have taken a general anæsthetic. This more and more confirms the fact that the requirements for determining the physical condition of people before taking a general anæsthetic should be thoroughly gone into. In other words, a person who feels the incompetency of making a thorough physical examination of the patient should never attempt such administration, except by the suggestion of a physician who is competent to make such a determination.

We are constantly being asked, has the dentist a right to administer a general anæsthetic? We would say that he has, provided he is competent.

However, a strange fact is noted in the education of the dental student—he gets more didactic training on this subject than many medical students, but does not become so familiar with the practical determination of organic lesions of the body, neither is he as competent in two or three years after leaving school to make such an examination and determine the physical condition of the patient as he is when he leaves the school.

Therefore it is pretty safe to state that if an individual has not kept himself posted on physical examinations of the human body, he is quite incompetent to administer general anæsthetics. Two very interesting papers were read before the Illinois State Dental Association and published in the *Dental Review,* under the transactions of that association, on anæsthetics. One under the heading of "A Plea for the Conservative Use of Anæsthetics, Narcotics and Sedatives in Dental Practice," by Dr. C. P. Pruyn, and was published in the *Dental Review,* August number, 1906. Another by Dr. J. W. Ritter on "Somnoform: Its Use and a Few Experiences with It," published in the *Dental Review,* October number, 1906. They are contributions that are worthy of consideration to every practitioner and especially so to the younger men.

It should be borne in mind, however, that a few unfavorable

results should not condemn an agent, and for that reason we should prepare ourselves to understand thoroughly what to do in cases of trouble from the use of an agent like somnoforme. Every person who contemplates the use of these agents should first experiment on animals and determine their actions, taking every precaution to study the heart's action, the blood pressure, and the various changes produced in the animal during its administration.

PERSONAL AND GENERAL

Dr. Frank Beers, a dentist at Bushkill, Pa., died October 29th of heart disease.

Dr. Thomas M. Guier, a young dentist, died at East Baltimore, Md., of tuberculosis.

Dr. C. H. Harvey, a dentist, was drowned October 29th by falling from the pier at Erie, Pa.

Dr. F. G. Kelly, a dentist at Erie Pa., suffered the complete loss of his dental office through fire recently.

Spears-Morgan.—A. A. Spears, a dentist, of Brazil, Ind., and Miss Laura Morgan were married October 31st.

Mentzer-Sheiner.—Dr. Evan W. Mentzer, of Reading, Pa., and Miss Tacy Belle Sheiner, of Lebanon, were married October 18th.

New Building for College.—The New York College of Dental Surgery will erect a fireproof building which will cost $200,000.

Ball Player Enters Profession.—A. J. Coakley, the star pitcher of the Philadelphia Athletics, has matriculated at the University of Pennsylvania.

Whitmer-Little.—Dr. E. E. Whitmer, a dentist at Newport, Pa., and Mrs. Belle E. Little, of Niagara Falls, N. Y., were married October 23d.

Dr. George F. Reese died at his summer residence at Rockaway Park, N. Y., of heart disease. He had practiced dentistry for forty years in Brooklyn.

Dissolved.—The firm of Moore & Kepler, at Decatur, Ill., has been dissolved. Dr. Moore retaining the old office and Dr. Kepler moving into another office.

Joffe-Joffe.—Dr. M. S. Joffe, a well-known dentist of the Eastern District, and Miss Anna L. Joffe, of Chicago, were married October 18th in Brooklyn, N. Y.

Dr. Thadius Speece, a dentist in Quincy, Ohio, caught his foot between two rails on the railroad crossing and was killed. He was 38 years of age.

Dentist Missing.—Dr. J. I. McMillan, who for thirty years practiced dentistry in Leetonia, Ohio, disappeared October 4th and can not be located by his friends.

Porter-Montgomery.—Dr. James Madison Porter, dentist, of Midland, and Miss Pansy Montgomery, of Piedmont, W. Va., were married in Pittsburg, October 30th.

Dr. Daniel B. Freeman, one of the pioneers of the profession in Chicago, died at Bethel, Vt., recently. He was in the practice of dentistry in Chicago from 1867 to 1904.

Dr. W. B. Pearson, a dentist at Anamosa, Iowa, died in Colorado Springs, October 12th. He was a graduate of the Northwestern University in 1903. He died of tuberculosis.

Harvey E. Starr, a dental student at Ann Arbor, died of typhoid fever after an illness of three weeks. He was a resident of Moscow, N. Y., and a member of the Xi Psi Phi fraternity.

Seriously Burned.—Dr. F. L. Smith, a dentist at Columbus, Ohio, was seriously burned from an explosion of a reservoir containing calcium carbide gas. It is feared that he may lose his eye sight.

Mandamus Dental Board.—Dr. U. G. Crandall, of Jefferson City, Mo., has mandamused the State Board to compel it to give him examination as to his qualifications to practice dentistry in the State of Missouri.

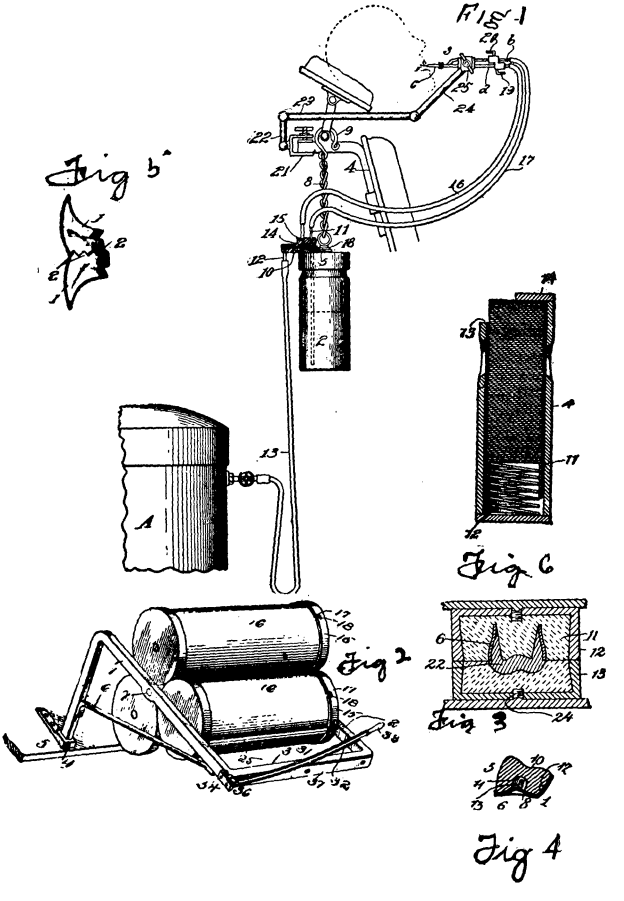
Fire in a Dental School.—The State Dental College in Dallas, Texas, suffered a heavy loss from fire in the building in which the college was located October 24th. The loss was heavy and no insurance.

Student Maimed.—John McMullen, of Hutchinson, Minn., a junior student, suffered an accident while hunting. His gun was accidentally discharged, mangling his left hand so badly that amputation was necessary.

REMOVALS.

Drs. R. A. Bowie from Vicksburg, Mich., to Three Rivers; A. B. Crawford from Grand Rapids, Wis., to Marshfield; J. C. Sawyer from Dowagiac, Mich., to Michigan City, Ind.; James Sorensen from Neenah, Wis., to Fond Du Lac; J. S. Compton from Cincinnati, Ohio, to Ashland, Ky.; Carson Gow from Upland to Bridgeport, W. Va.; J. J. Henchey from Troy to Bridgeport, Conn.; W. T. Page from Ogle county to Chapin, Ill.; Balbridge from Mount Vernon, Ind., to Vincennes; F. W. Fuerman from Chicago to Ft. Dodge, Iowa; H. Hammon from Chicago to Meridosia, Ill.; C. M. B. Ross from Manning, Iowa, to Des Moines; Clarence A. Webb from Des Moines, Iowa, to Los Angeles, Cal.

DENTAL PATENTS



834,594. Obtunding Apparatus.—Crittenden Van Wyck, San Francisco, Cal. Filed May 7, 1906. Serial No. 315,540. Fig. 1. Claim.—1. In obtunding apparatus, the combination with a chair, of an ejector, means for adjustably supporting the ejector on the chair with respect to the patient's mouth, and suitable connections with the ejector for the anesthetizing agent.

834,790. Dental and Surgeon's Cabinet.—William C. Wolford, Confluence, Pa. Filed April 23, 1906. Serial No. 313,212. Fig. 2. Claim.—1. A cabinet of the character described consisting of side rails, pins journaled in said side rails, a plurality of caps supported by said pins, cylinders detachably mounted between said caps and having longitudinally-disposed slots formed therein, a knife pivotally supported by one of said rails, a locking-button slidably mounted upon one of said pins and adapted to hold said cylinders in a fixed position relative to said rails, shafts journaled in said cylinders and adapted to support rolls of rubber cloth, means to support said rails, and means to temporarily hold the ends of said cloth or bandage in the slots of said cylinders, substantially as described.

833,883 Process for Forming Dental Structures.—John A. Lentz, Phoenix, Ariz. Filed August 30, 1905. Serial No. 276,428. Fig. 3. Claim.—1. The herein described process of making metal-containing structures which consists of forming a mold of predetermined part of such structure in suitable molding, investing, heat-resisting material contained in one of the registrable parts of a separable molding machine.

834,515. Artificial Denture.—Ernest De Witt R. Garden, Tarrytown, N. Y. Filed April 5, 1906. Serial No. 310,113. Fig. 4. Claim.—The herein-described artificial dentures comprising crown, a bridge connecting them and having a flanged edge and an anchor-loop, a facing on the bridge engaged by the flanged edge thereof, having a cavity to receive the anchor-loop and also having a recess on its inner side, and cement in said cavity and recess securing the facing to the loop and to the bridge.

832,587. Artificial Tooth.—Robert Brewster, Chicago, Ill. Filed October 3, 1904. Serial No. 226,985. Fig. 4. Claim.—1. An improved artificial tooth having its occlusal surface divided into a plurality of elongated parallel inclined planes or knife edges.

2. Improved artificial teeth having their occlusal surface divided into a plurality of elongated parallel interlocking inclined planes or knife edges, and the outer surfaces of which are continuous.

831,489. Dental Disk-Holder.—Jacob A. Thomas, Hanover, Pa. Filed January 2, 1906. Serial No. 294,141. Fig. 5. Claim.—A disk-holder comprising a casing provided with one or more disk-receiving chambers and having its top open at one side to expose approximately one-half of the top disks and to provide an opening through which a plurality of disks may be introduced for filling the holder.

834,676. Dentifrice.—Herman C. G. Luyties, St. Louis, Mo. Filed February 23, 1903. Serial No. 302,471. Fig. 6. Claim.—1. A dentifrice composition containing strontium peroxid and an abrading powder.

2. A dentifrice composition containing strontium peroxid, boracic acid and an abrading powder substantially in the proportions and for the purpose specified.

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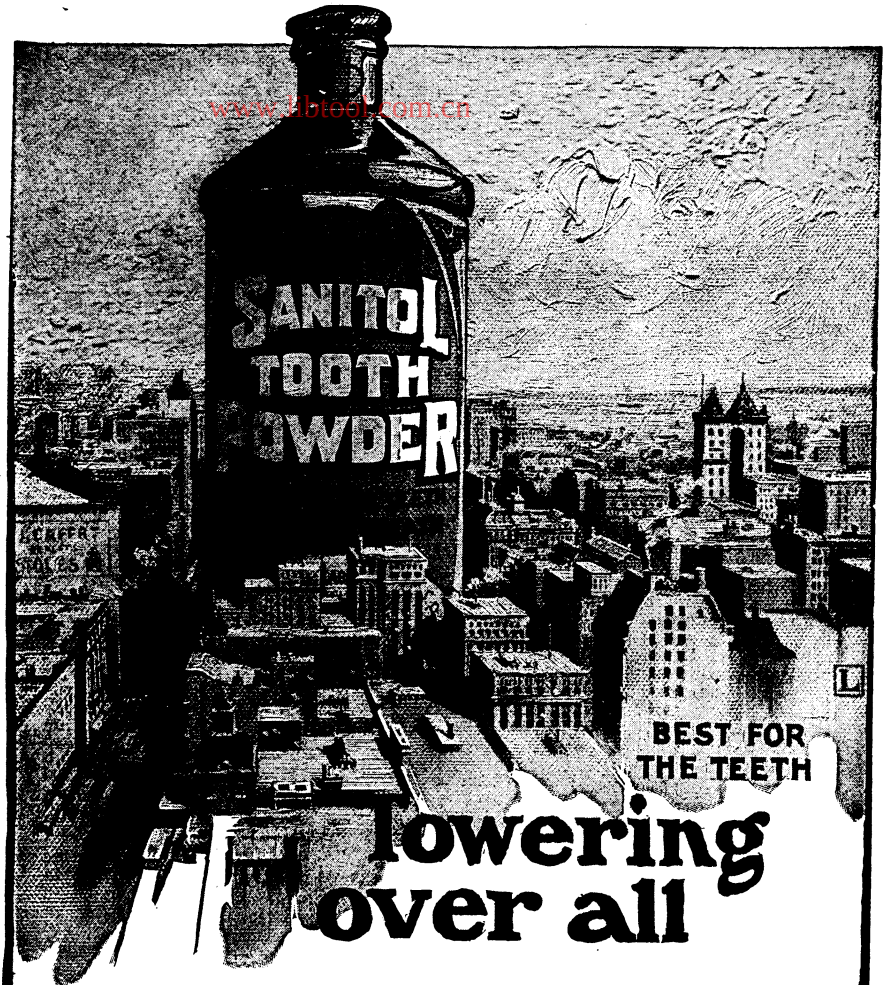

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THE AMERICAN DENTAL JOURNAL

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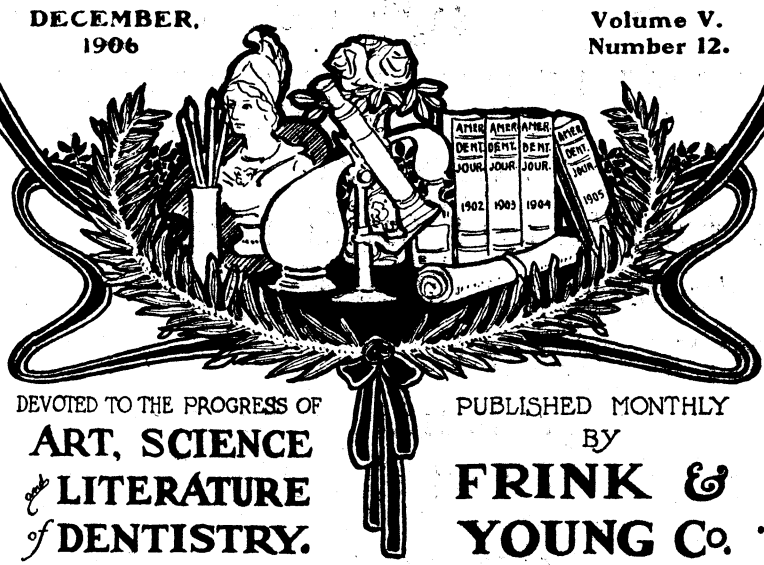

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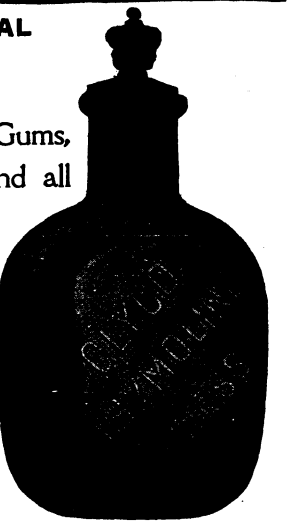

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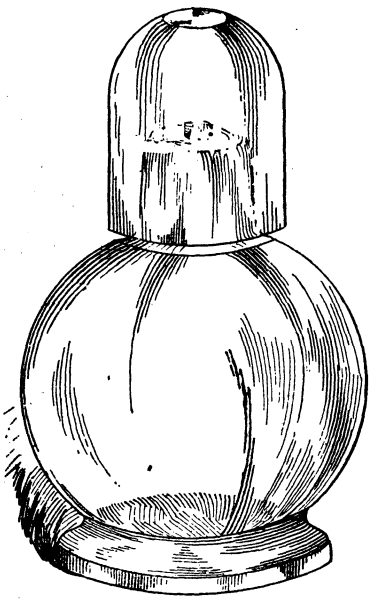

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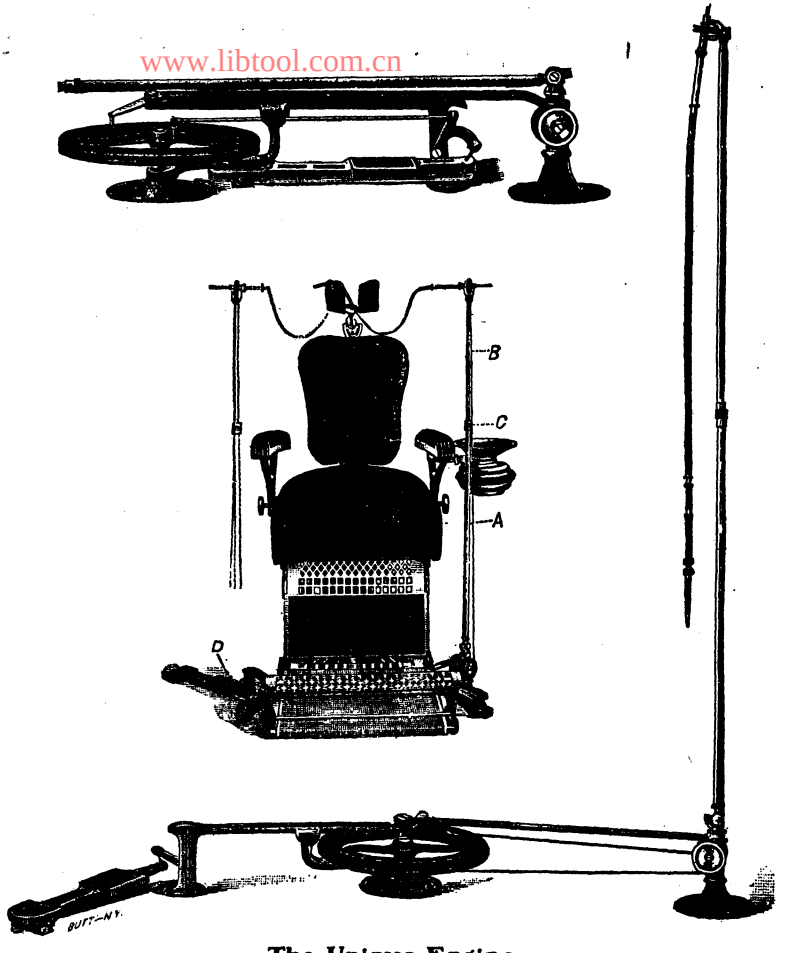


The Unique Engine

The cut tells the story
Will do the work of any engine
The driving wheel is ball-bearing
They were made to sell for $40.00
There are only a few of them left
No more will be made
And the price with No. 7 hand-piece is $15.00

FRINK & YOUNG COMPANY

No. 1

No. 2

TOOTH CLEANING MANDRELS

These are found very useful in cleaning teeth. Ordinary rubber tubing is used, giving you a fresh and clean piece in every case.

The illustration shows how the rubber is adjusted.

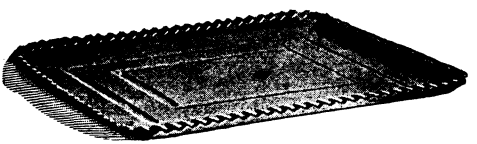
Dr. A. W. Harlan suggests and recommends the smaller size (No. 2). These Mandrels save time and money by the extreme service and by the rapid adjustment of the rubber tubes.

Price, with 6 inches of Tubing, 35 cents each.

FRINK & YOUNG, 606-607-609 Masonic Temple CHICAGO, ILL.

The Griswold Sterilizing Tray

For the Bracket Table



Seven Reasons Why You Should Use It

1st—It is clean and neat, patients always remarking its hygienic merits.
2nd—Increases the capacity of your table, the edges being fluted so instruments stay where they are put, with the points always towards you, easily picked up and no rolling or falling off.
3rd—Will not stain with drugs, easily washed, and always has polished white surface.
4th—You save its cost in paper napkins or laundry in a short time.
5th—Your table is instantly cleaned when through with patient, as it is removed, instruments and all and another Tray substituted.
6th—To use as a sterilizer, place over laboratory stove with a little water, reversing points, soon boils on account large heating surface, sterilizing points and shanks, yet handles are not heated, so they can be quickly wiped and returned to case.
7th—Made to fit large size tables; small ones made larger by its use. Made of extra heavy steel plate, double coated with white porcelain, with blue edges.

Two sizes, 13x13, for Allen Table and 12½x14½ for Holmes.

Indestructible if used right.

Price: First quality, $2.00 each.

Order from your dealer or direct from

W. E. GRISWOLD

1302 Masonic Temple - - CHICAGO, ILLINOIS

The name **"WILSON"** is our personal guarantee of the quality of our product, and the confidence it begets is the basis of our success. Please do not miss the opportunity to specify **WILSON'S** when ordering anaesthetics.

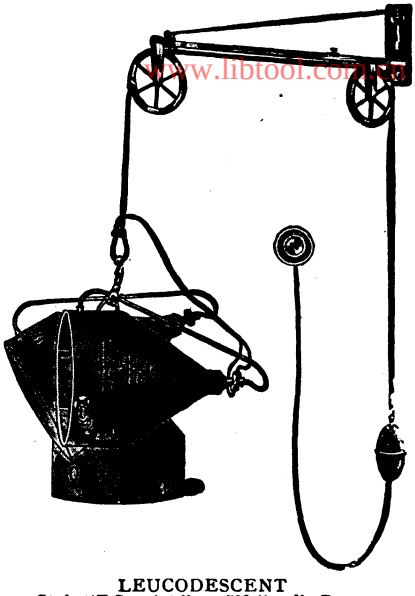
It satisfies every desire, is non-secret and guaranteed.

75c per ounce in one and two ounce bottles; 6 oz., $4.00; 12 oz., $7.50.

CENTRAL CHEMICAL CO.

WELLSVILLE, N. Y., U. S. A.

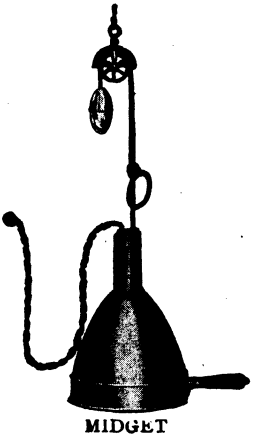
34 Rue de L'Echiquier, Paris, France



LEUCODESCENT
Style "F Special." 500 Candle Power.

YOU would consider your office incomplete without a Leucodescent Therapeutic Lamp if you knew what it really is, what it will do and the reasons why it does it.

You would then see that it would be to your advantage to have it.



MIDGET
(Not Leucodescent Type)
50 c. p. 10-inch parabolic reflector, uses about 1 amp. of current $14.99

Our new booklet will tell you all in a few words.

Volume No. 1 of the Leucodescent Bulletins, containing clinical reports, will tell you

What the Results From Its Use Are

Both the booklet and Vol. 1 will be sent you on request.

MIDGET JR.
(Not Leucodescent Type)
32 c. p. 5-inch parabolic reflector, uses about ½ amp. of current $6.67
Three extra globes, red, violet and yellow at $1.25..$3.75
Sold individually at above prices or Midget outfit complete $19.98

Spear-Marshall Company

1223 Republic Building, State and Adams Sts., Chicago

No. 61. OPEN

NEW YORK CABINET, No. 61

It is different in design and arrangement from any Dental Cabinet ever offered for sale. Notice particularly the large tray and long-handled instrument racks. These provide the most convenient place possible for disks, strips, pliers, gold foil, gold cylinders, burrs, mandrels, all cone socket instruments, plugger points, polishing points, separator files, separators, clamps, mallets, rubber dam punch, holder, shears, plate punch, wedge cutter, all long-handled instruments, etc.; in short, everything one is liable to need quickly is at your fingers' tips, and it is not necessary to open and close a lot of drawers or trays. Other features are glass-covered slides that pull from either end, and also from front.

The medicine closet is entirely closed off from the balance of the Cabinet and nicely arranged for all sizes of bottles.

Enameled Lined Drawer for Soiled Linen. **A Convenient Filing Block and Zinc Tray.**
Drawers Specially Arranged for Forceps. **Glass Knobs on All the Drawers.**

The Cabinet closed presents a fine appearance. It surely will be to your advantage to get a complete description of this most convenient of all Dental Cabinets before placing your order elsewhere.

PRICE—Quarter-Sawed Oak, - $110.00 Mahogany, - $125.00

Write us, or any prominent dealer, for catalog, and our late circular of Low Cabinets

THE AMERICAN CABINET CO., Two Rivers, Wis.

Is the strength on which you must depend and which should be husbanded for more important tasks, being wasted on the treadle of a foot engine?

Wouldn't it be well to delegate such fatiguing work to some agency which has neither back nor nerves to wear out. For a few cents a day (generally less than five cents) a Columbia Electrical Engine will do all your drilling without fatigue, fuss or failure, will do far more than you could and will do it better.

The actual value of current consumed monthly by a Columbia Electrical Engine is rarely over twenty-five or thirty cents, though most Electrical companies charge $1.00 per month for an engine; even this is only four cents per working day.

Don't wear out before your time. Whether you have alternating or direct current, or none at all, we can tell you how to make a Columbia Electric Engine do your work faithfully at very small expense.

Write us. We will take up your case personally.

The Ritter Dental Mfg. Co.

ROCHESTER, N. Y.

842

BARGAINS

CHAIRS.

1 Harvard Chair, Bracket and Table 80.00
1 Morrison, good condition 35.00
1 Iron Archer 10.00
1 Gould Chair, newly reupholstered 35.00
1 High-low Chair (Gould) 65.00
1 Portable Chair 7.50

CABINET.

1 Canton Cabinet; new, $75.00 ..... 40.00

ELECTRIC FURNACES.

1 Custer $25.00

ELECTRIC ENGINES.

1 Victor Motor, 110-volt, direct $18.00
1 Motor and Rheostat 10.00
1 Complete Mason Electric Engine for direct current, including No. 7 Hand Piece, used one year 40.00
1 Ritter Lathe and Victor Engine, up to head all for storage and including same 60.00
1 S. S. White Electric Engine 40.00
1 Ritter All-Cord Engine with Doriot Hand Piece and Contra Angle, new $146.00 ..... 109.50

ENGINES.

1 Clark Engine with No. 7 Hand Piece $30.00
1 S. S. White Engine with No. 7 hand piece 18.00
1 S. S. White Engine with new No. 7 hand piece 22.00
New Unique Engines, with new No. 7 hand piece (see ad. pages 4-1) 15.00
1 S. S. W. Foot Engine, small wheel with Slip Jt. Attachment and No. 7 H. P. in good condition 16.00
1 D. P. Hand Piece 4.00

VULCANIZERS.

1 Hayes $8.00
1 Cross-Bar (Mann) 10.00
1 Cross-Bar (Snow) 12.00
1 Switch Board with attachment for 110 volts direct; new, $100 .... 60.00
1 Blow Pipe; new, $2.00 ..... 1.50
1 Switch Board, new .....
1 Clark Gas Apparatus; new, $55.00 ..... 41.25
1 Wall Bracket 3.50

For sale by all Dental Depots after May 1st, 1906

TRAUN'S

NEW

PERFUMIZED

DENTAL DAM

"BELLODORA"

U. S. Patent 802,711, October 24th, 1905. Patented in England
Other U. S. and foreign patents pending

This Dental Dam is **perfumized,** i. e., ingredients giving it a sweet odor are thoroughly incorporated with it. It will never loose its delicate fragrance, which will prove to be very pleasing to persons even with most sensitive nerves

Packed in rolls of 6 inches by 15 feet, at $2.00 per roll
Or " " " 6 " " 7½ " " 1.00 " "

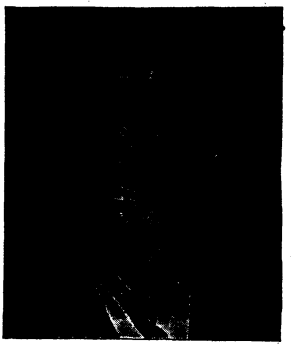
FREE

Vulcanized samples of our dental rubbers and a complete price list of all our products will be sent **free of charge** upon request

Traun Rubber Co.

335 Broadway, New York

C. N. REESE, D. D. S.



GEO. W. WIEDHOFFT, D. D. S.

Doctor

Are You Aware—

That we are the leading dental laboratory firm of America?

That our product is recognized by discriminating dentists as the Standard of excellence?

That we enjoy a larger local patronage than all other Chicago laboratories combined?

There MUST be a Reason

Shall we send you Illustrated Catalogue and Mailing Boxes?

Chicago Dental Laboratory Company

DRS. REESE & WIEDHOFFT

65 Randolph Street **Chicago, Ill.**

CARROLL'S
DENTAL CLAMP and MATRIX COMBINED

Patented July 26, 1904.

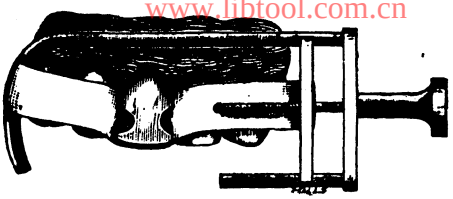


Fig. 1

For use in plastic and gold approximal and contour fillings of the anterior teeth, both upper and lower. It transforms the most difficult cavities into simple ones by flooring the lingual surface of the tooth with a metalic ribbon, the thickness of which is about 4-1000ths of an inch and which may be passed between teeth of rigid contact; after which, by turning the tension screw, the metalic ribbon may be brought to a tension sufficient to support all the pressure that is necessary in condensing a gold filling at the same time perfectly contouring the lingual and approximal surfaces of the gold. Fig. 1 shows front view of the clamp properly adjusted for a filling to be made from the labial surface. Fig. 2 shows a posterior view, when filling is to be inserted from the lingual surface.

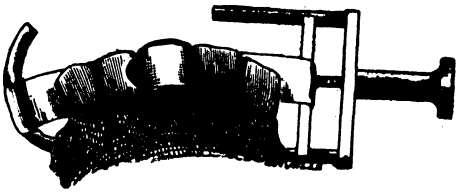


Fig. 2

This device, in the hands of an experienced dentist, saves time and labor, and saves the patient much pain; for when the metalic ribbon is brought to a tension it supports the tooth that is to be filled and unites the strength of three teeth in place of one, to resist the pressure and blows the mallet. In the hands of an unskilled operator, it enables him to make a good gold filling.

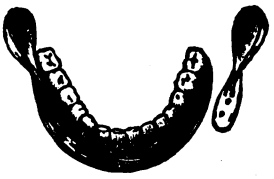
Prices: $2.50 with 6 Ribbons; Extra Ribbons 50c. per dozen

CARROLL'S
RETAINERS
FOR
Artificial Teeth

Fig. 1 shows Retainer attached to the plate.

Fig. 2 shows Retainer before attachment.

Fig. 1 *Fig. 2*



(Patented September 17, 1895; in United States and Foreign Countries)

Retainers do what their name implies; they hold a lower plate firmly and steadily in position.

The muscles of the jaws and cheeks, in their contraction, exert a pressure on the expanded and vertically extending portions of the retainers. This pressure, which is exerted without conscious effort, is the force that holds the lower denture firmly in position on the alveolar ridge.

Retainers are made of Aluminum.

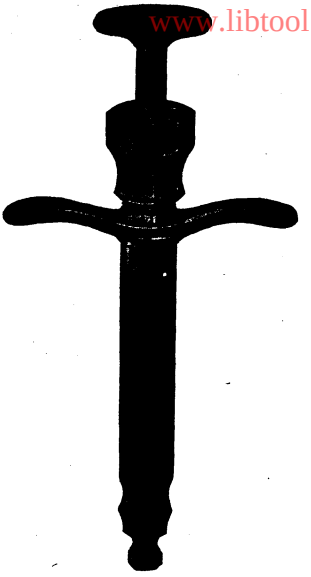
Prices: One Pair 75 Cents; Six Pairs $4.00

SOLD BY ALL FIRST-CLASS DENTAL DEPOTS

JOHN T. NOLDE DENTAL MFG. CO.,

916 Olive Street **ST. LOUIS, U. S. A.**

The Imperial Dental Syringe



The persistent demand for a powerful unbreakable Anaesthesia Syringe, sufficiently large to treat several teeth at one filling, and strong enough to be economical, leads us to offer the

NEW IMPERIAL SYRINGE

shown in cut. Made of extra thick metal; hexagon syringe cap, funnel shaped for filling, with especial durable packing, piston rod extra small to give compound pressure; fitted with extension rod, large button and strong, well shaped (new) finger bars—giving a feeling of comfort to the operator. A wrench supplied with each syringe to tighten packing and eliminate leakage.

No Waste of Anaesthetic. No Waste of Time. No Waste of Money on Repairs.

Price, Imperial No. 830, in paper box, with wrench, $2.00

R&B DENTAL NEEDLES

Do You Want a Dental Needle . . . . . That Will Not Leak? . That Will Not Break? . . That Will Cut Rather Than Tear? . . . . . .

Do You Want a Dental Needle That Will Permit Making an Injection Almost Without the Knowledge of The Patient? . . . . . .

IF SO, INSIST UPON HAVING THE

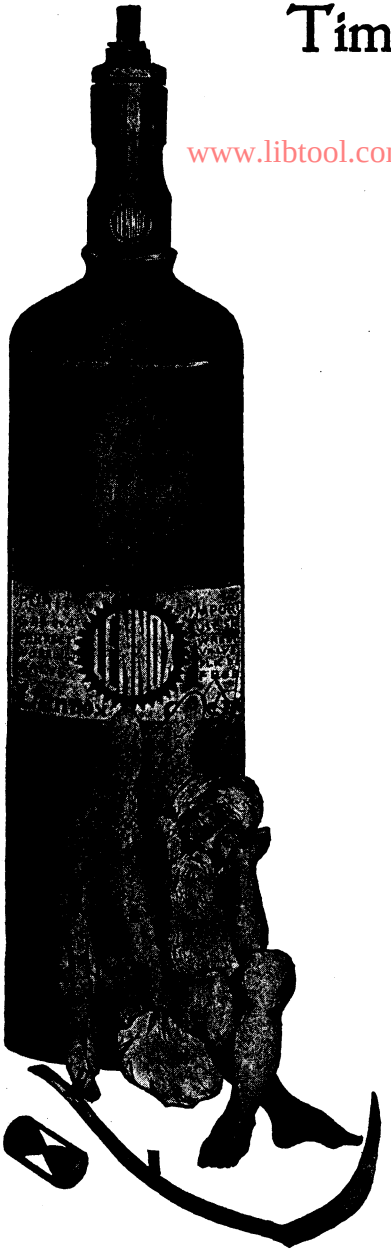
R.&B. RAZOR EDGE, POLISHED POINT DENTAL NEEDLE

Insist upon seeing the trade mark *R.&B.* on the hub before purchasing.

Price Per Dozen, - - - $1.50

THE RANDALL-FAICHNEY COMPANY,

BOSTON, Sole Manufacturers MASS.



Time has no effect on Lennox Nitrous Oxide

Whether you use it immediately or 10 years after you receive it, every gallon will be absolutely pure; will induce the same efficient anaesthesia without irritation or ill effects.

This is due, primarily, to its absolute purity. It is free from all elements of deterioration; no chemical changes go on within it.

It is sheltered from the light and if kept in a cool place is beyond reach by any outside agency. Even if only a little gas remains in the cylinder this is still true. This is quite different from other general anaesthetics since some deteriorate though untouched and others become unsafe if the package has been opened long previous.

If you wish an anaesthetic which will be always ready and reliable use

Lennox Nitrous Oxide

The Lennox Chemical Co.

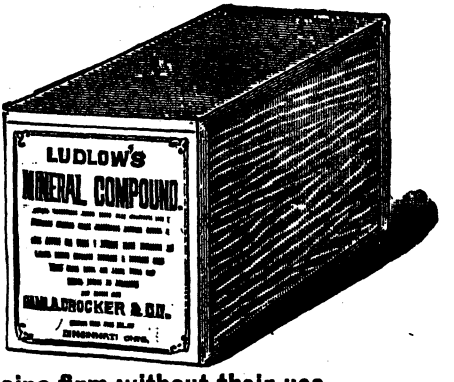
Cleveland, Ohio

C 415

LUDLOW'S MINERAL COMPOUND.

A Fire-Proof Investing Material for Dentists use,
A Non-conductor that will not Shrink in the Fire.

We Guarantee:



1st.—That it will not crack or shrink under any degree of heat.

2nd.—That each tooth will be held firmly in position from the time investment is made, until the work is completed.

3rd.—Bands and wires are unnecessary; when the compound is set, it remains firm without their use.

4th.—It is impossible to crack a tooth while soldering.

Dentists who are using this compound are relieved of all anxiety as to the outcome of their work. It is an insurance that each piece will be perfectly completed. A free sample will be sent to you upon request and receipt of 10 cents to pay for packing and postage.

PUT UP IN 4 lb. Package.

PRICE, ... $1.00

SAM'L A. CROCKER & CO.,

SOLE AGENTS,

35, 37 and 39 W. Fifth Street, CINCINNATI, O.

ASCHERS
ARTIFICIAL ENAMEL

Protected by United States Patents
Nos. 771,183 and 177,184

Patents Protected
by the
Patent Title
and
Guarantee Co.,
New York.

The inventor Guarantees that no injurious ingredients enter into this material.

The genuine is sold only in maroon boxes, with the name "C. H. PINCHES" on Label. Accept no imitation.

A Present from **BORINE**

¶ **The Borine Co.** believes in advertisements equal, in point of quality, to its own product.

¶ With this thought in mind the best Appointment Book for the Dental Profession has been eagerly sought for, found, and is now ready for distribution.

We want you to have it:

THE Book has 365 pages—one for each day—printed on a good quality of writing stock, selected to take either ink or pencil. There is a place for name and "service rendered" opposite half hourly divisions of the day. It is a serviceably bound book with cloth cover, bearing only the inscription in gold "Compliments of Borine." Size 4⅛x6⅜. The book weighs 14 oz.

Sent prepaid on receipt of Twenty-five Cents

THE BORINE MFG. CO.

77 WARREN STREET NEW YORK, U. S. A.

FACTS

Ascher's Artificial Enamel is a transparent filling material consisting of eleven shades, which can be combined or darkened by the use of metal spatula to almost any tint of the natural tooth.

The edge strength is remarkable. A great many dentists have made the most daring contours, while we have had numerous extremely successful reports where the enamel had been used for over a year on plates and bridges where the teeth had broken off. In such cases mix the enamel as for filling, mould onto the pins with the fingers and finish same as filling, keeping absolutely dry for fifteen or twenty minutes. Where repair is made out of the mouth, follow above directions and tie repair tightly in a piece of rubber dam to render it water-tight, and place in water at about 100° so as to meet the conditions as they exist in the mouth.

Ascher's Artificial Enamel is guaranteed not to shrink IN THE MOUTH. You cannot test it for any qualities out of the mouth. It was made expressly to meet the conditions as they exist in the mouth, and we do not care how it acts out of same.

If you use cuttle-fish disks or carborundum stones to finish the filling, carefully remove ALL SCRATCHES or the true color of the filling will not be apparent. This can best be done with engine agate burnishers. We use the ground porcelain colors for our material, and it will not lose or change color. Ascher's Artificial Enamel has retained its shape in 3,300°.

Fourteen years ago Dr. Ascher and Herr Steenbock, the most prominent chemists in Europe, determined to discover the exact ingredients of the natural tooth enamel and to provide an artificial duplicate for filling purposes. After ten years research and experimenting Ascher's Artificial Enamel is the result.

The fact that Ascher's Enamel is more extensively used than any filling material in the world determines the success of their efforts.

The Enamel contains about 54 per cent. of silicate and large quantities of Berrylium and other light and practically unknown metals.

Berrylium is an exceedingly expensive material, being extracted from semi-precious stones of Ceylon and Brazil.

We have several patents in each civilized country in the world, prohibiting any other manufacturer using berrylium in dental cements.

After Ascher's Artificial Enamel had been on the market several years, a number of concerns, excited by the wonderful success of this preparation, endeavored to retain their decreasing trade by foistering upon the profession worthless imitations of our product.

For a time the appearance of these imitations is similar to the genuine article, but as the patents prohibit them from using the ingredients necessary to make a permanent filling, their success is but temporary, notwithstanding that several of these concerns have endeavored to gain admission for their chemists into Dr. Ascher's Laboratories.

Our material has now been used for over four years in Europe and between two and three years in this country.

If the directions are carried out to the fullest extent, you will have a filling far superior in appearance to porcelain inlay or gold; as serviceable as the latter and absolutely insoluble.

We have sold enormous quantities of Ascher's Artificial Enamel to over 14,000 dentists in the United States and Canada, offering to refund the entire purchase price if the Enamel did not live up to the above claims. So far we have been asked to refund $9.00, and have hundreds of letters from the most prominent practitioners giving our material the highest praise.

This is absolutely the original and only material of its kind. The above is proven by different Governments granting us patents. Any statements of contradiction of the above will be vigorously prosecuted.

We have already won several suits and injunctions against infringers and have still more pending.

In ordering the Enamel be sure that it is in a maroon colored box with the words "ASCHER'S ARTIFICIAL ENAMEL" in gold on the top. Insist upon having the genuine. If your dealer offers you a substitute report to us at once.

DIRECTIONS

Prepare cavity with ample undercuts and have square margins whenever possible. Have all of your instruments and material ready for instant use. Dry cavity carefully with alcohol and hot air, removing all foreign substance.

Mix the enamel thoroughly with an ivory or bone spatula, to the consistency of mouldine. Do not knead the material between the fingers. Insert same as amalgam, preferably with an inverted cone agate instrument. Press the material well against the sides of the cavity. Make the filling very full and seal the margins perfectly. The above operation is to be conducted with absolutely clean instruments.

After the filling has slightly hardened, condense same as much as possible. Have your instruments well coated with yellow vaseline. Work any surplus towards the margins employing constant pressure. Contour your filling and polish same while hardening with agate or tortoise shell instruments or celluloid strips well coated with vaseline. This method will give you a smoother surface and higher polish than by using cuttle-fish disks, as the latter inflict scratches on the surface and temporarily destroys the true color. Cleanse the filling with alcohol, dry with cotton, and cover well with melted paraffine. The filling must be kept ABSOLUTELY DRY FOR AT LEAST FIFTEEN TO TWENTY MINUTES AFTER INSERTION OF MATERIAL.

For setting porcelain inlays, mix the material considerably thinner and use same as cement.

Blowing hot air on filling as soon as operation is completed will hasten the setting and create a harder mass.

Gutta-percha smeared over the bottom of the cavity can often be used to very good advantage.

PRICE LIST.

Small Sample Box, one color, half portion	$ 2.50
Sample Box, one color, full portion	4.00
Assorted Box, four colors, half portions	9.00
" " ten colors, half portions	18.00
" " six colors, full portions	20.00
" " ten colors, full portions	35.00
" " six colors, double portions	40.00
Pure Ivory Spatulas, double end	2.00
Bone Spatulas	.25
Agate Burnishers, round, inverted cone, bud and barrel shape, for hand or No. 7 handpiece, each	1.00
Celluloid Strips, per box	.25

Further particulars about burnishers sent upon application.

SHADE GUIDE.

No. 1, Light Yellow; No. 2, Pearl Grey; No. 3, Green Grey; No. 4, Brownish Yellow; No. 5, Reddish Yellow; No. 6, White; No. 7, Gold Yellow; No. 8, Dark Brown; No. 9, Greenish Yellow; No. 10, Light Brown; No. 11, Pink.

A DENTAL SUPPLY HOUSE SAYS:

"We have sold a number of your Electric Sterilizers and they are proving satisfactory in every way. They are simple and practical, and possess features which we have seen in no other instrument of this kind."

THE ST. LOUIS DENTAL MFG. CO.,
St. Louis, Mo., Dec. 23, 1905. 209 W. Twelfth Street

WHAT ST. PAUL DENTISTS SAY:

After several years' use of the Electric Sterilizer, I find it is efficient, convenient and all that could be desired for sterilization of dental instruments.

DR. J. M WALLS.

Dear Sir: It gives me pleasure to recommend your Electric Sterilizer. I have used one constantly for three years and as yet cannot find a fault in the mechanism. F. S. YAEGER, D.D.S.

How "Twentieth Century" Teeth will make a $10 investment net 13% profit.

Ten sets of "Twentieth Century" Teeth, bought a set at a time, cost $10. Nine Dollars and Seventy cents cash at one time will buy 11 sets of "Twentieth Century" Teeth, giving really 1⅓ sets free, or a profit of more than 13%.

When banks pay only 4%, an opportunity to make 13% with perfect safety should not be neglected.

The convenience such an assortment ready-to-hand affords is equal to the cash saving. By selecting intelligently they can be made to meet many needs without the delay of sending to the depot.

You will have on hand 11 sets of the best teeth made for vulcanite work, and can exchange any tooth or set with your dealer for other shades or mould when desired. Try this plan.

THE DENTISTS' SUPPLY COMPANY

109 WEST 42ND STREET, NEW YORK, N. Y., U. S. A.

C 327 New

Eights (8's)

Buying Twentieth Century Teeth, Posteriors.

It is not necessary to buy full sets to secure mated Twentieth Century posterior teeth. They are offered in sets of eights (8's) which supply mated upper and lower bicuspids and molars.

Half a dozen moulds and shades of Twentieth Century Posteriors, judiciously selected, will fill practically all needs. All our moulds and shades are offered in these combinations.

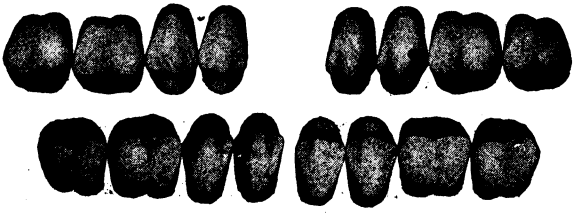
Twentieth Century moulds excel all others. The occlusal surfaces are broad and carved like natural teeth. The cusps are of proper length and size. The buccal surfaces are more lifelike than in any other make of teeth.

Send for catalogue which illustrates many useful moulds of Twentieth Century Teeth.

For a limited time dentists sending $1.00 to us, or their dealer, for a Twentieth Century Shade Guide will receive, in addition to the guide, a complimentary set of Twentieth Century Teeth.

The Dentists' Supply Co.,

109 W. 42d Street, New York, N. Y. C 321



Sixteens (16's)

Twos [2s]

Fours [4s]

Buying Twentieth Century Teeth, Anteriors

Dentists who wish to carry sufficient teeth to meet demands without purchasing large quantities, will appreciate the opportunities offered by the convenient assortments of Twentieth Century Teeth. They come in single teeth; in twos (2's) which bring pairs of centrals; in fours (4's) which bring mated incisors, in sixes (6's) which bring mated incisors and cuspids; and in tens (10's) which include the bicuspids. By means of these combinations, coupled with a judicious selection of posteriors, a small stock of teeth may be made to meet most needs. All our shades and moulds are offered in these combinations. Write us for an illustrated catalogue which contains full-size cuts of the principal moulds. It is a valuable reference book.

Prices: 1x14, $1.00. 28x14, $25.00.
58x14, $50. 116x14, $100.

For a limited time dentists sending $1.00 to us, or their dealer, for a Twentieth Century Shade Guide, will receive, in addition to the guide, a complimentary set of Twentieth Century Teeth.

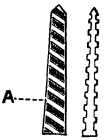
The Dentists' Supply Co.

109 W. 42nd Street, New York, N. Y. C 306

Sixes [6s]

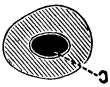
Tens [10s]

Twentieth Century Crown Posts are designed to fit root canals

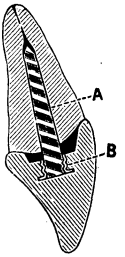


Enlarged view of side and edge of Twentieth Century Crown Posts.

Enlarged view of platinum anchorage which is baked in crown.



End view of crown showing shape of cavity for post.



Crown, anchorage and post.

as treatment or devitalization leaves them. Save in upper centrals and the molars, root canals are oval in form. Twentieth Century Crown Posts are oval in form and the oval is so shaped as to require least grinding of the root. They also exert their greatest strength at the point where it is required. Twentieth Century Crown posts are corrugated to afford the strongest attachment for the cement but the corrugations are not such as to weaken the post.

Twentieth Century crown posts are soldered to large anchorages of pure platinum firmly baked into the crown. The solder is high fusing and the attachment thus formed is very strong. When desired, crowns and posts can be furnished separate.

Prices.

100 crowns, in neat case $35.00.
Smaller quantity 40 cents each.
Terms for 100 crowns $5 down and $5 monthly for 6 months.

The Dentists' Supply Co.

109 W. 42d Street, New York, N.Y.

C 805

How to make $90 earn 4% on $650 with perfect security.

Making money earn money in your particular line, right in sight of your own eyes, where you can see just what it is doing is the true secret of money-success.

If you send it away where you can't see it hustle, to the fellow who didn't sweat for it and who will lose nothing if it is wasted, you take long chances.

You can make better guaranteed returns with small sums right in your own office than in any other way except with a successful lottery ticket.

If you will invest $90 cash in 116 sets of

Twentieth Century Teeth

you will net 29% over the retail price as soon as you use them. If you use them in one year that's 4% on $650.00 and you hold the security. If you use them in six months that is profiting at the rate of 4% on $1300.00.

As a business man that ought to interest you. Such an investment is worth securing to-day. Ask your dealer.

THE DENTISTS' SUPPLY COMPANY
109 WEST 42D STREET, NEW YORK
5 WILLOUGHBY STREET, BROOKLYN

332

Agate Cement Spatulas never discolor cement or porcelain

THESE beautiful Spatulas are made from the finest Austrian agate, so clear as to be nearly transparent. They are 6¾ inches in length. On each end is a blade nearly 2 inches long and having 2 convex surfaces fitted to catch and grind the cement. One blade has a rounded end; the other has a pointed end.

Between the blades the handle is 8-sided and ⅓ of an inch thick. It affords excellent grasp for manipulation. The entire Spatula is light, convenient and strong.

These Spatulas are much superior to all metal spatulas, because no matter how long they are used they will never discolor anything mixed with them. The most delicate matches in porcelain colors and cements may be mixed with the certainty of pleasing results.

These Spatulas are objects of beauty and adorn any office table.

ORDER FROM YOUR DEALER

$2.00 EACH

THE DENTISTS' SUPPLY COMPANY

109 WEST 42ND STREET, NEW YORK, U. S. A.

C 328

Why pay 65c for Porcelain Crowns when you can buy Twentieth Century Crowns for 40?

The Porcelain in Twentieth Century Crowns is the same as in Twentieth Century Teeth, which is the highest fusing and most translucent known to dentistry.

The moulds are just like Nature's.

The pins are soldered to heavy platinum anchorages, are of great strength, fit the root canal, and give strong retention.

The bicuspid crowns may be had with split posts is desired.

All leading dealers.

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THE DENTISTS' SUPPLY CO.

109 W. 42d St., New York, N. Y., U. S. A.

C 831

The Clark Reservoir Cuspidor does not require running water

It permits completely flushing the bowl many times in the most agreeable and efficient manner, and emptying the soiled water at the most convenient seasons.

On top of a hollow enameled pedestal is placed a bowl similar to that used in a Clark Single Bowl Spittoon. Above the level of the bowl and at one side projects the handle of a pump which extends into the lower part of the pedestal.

To operate the cuspidor two or three buckets of water are poured into the base of the hollow pedestal. A tall enameled bucket which just fits the inside of the pedestal is supported above the water in the bottom of the base in such manner that a circular opening in the cover of the bucket comes just opposite the waste opening in the floor of the glass bowl.

When the bowl has been soiled a few strokes of the pump completely flush the bowl washing all material through the opening in the centre of the bowl and through the opening in the cover of the waste bucket. When all the water has been used the glass bowl is lifted off and the waste bucket taken out and emptied. By putting fresh water into the base the spittoon is ready for use.

There are several advantages to this method. First, it makes possible a perfectly clean spittoon for each patient no matter how rapidly patients follow each other. 2d, it requires that the waste water be emptied only at long intervals, once or twice in a busy day. 3rd, should it be necessary to carry the waste water through the reception room, it is enclosed in a neat receptacle of sanitary appearance. 4th, no odors attach to any portion of the appliance. 5th, the Clark Fountain Cuspidor is very ornamental owing to the heavy white enamel and the tasty decorations of the base. 6th, the mere fact of taking such pains and possessing such equipment confers distinction on any dentist. Price $40.00. Write for information concerning it.

A. C. Clark & Co., Chicago, Ill. C 709