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The World's Dental Congress.

We present some of the papers read, for which we are indebted to the *Cosmos* and the *Dental Review*. The address of the President, Dr. Shepherd, as well as much other matter, we must omit for want of space.

Tin Foil for Filling Teeth.

By DR. H. L. AMBLER, Cleveland, Ohio.

When we take a retrospect and consider what a poor excuse tin foil was twenty or more years ago, we do not wonder that it failed so often to make tight, good-wearing fillings. When it came from the manufacturer it looked fairly bright, but after being exposed to the air it assumed a light brassy color, and lost what integrity it formerly possessed; No. 4 was generally used, but it would cut and crumble in the most provoking manner. At that time fillings were made by using mats, cylinders, and hand pressure, similar to the use of non-cohesive gold, and it was very difficult to insert a respectable approximal filling. Several years ago a radical change came about, for which the manufacturers should have their share of credit; as with the tin we now have, you can begin at the base of any cavity and with mallet or hand force produce a filling which will be one compact mass from beginning to end, so that it can be cut and filed the same as gold, though not with so hard a surface as gold. Tin adheres, coheres, or welds, call it what you please, makes a saving solid, tight filling, and with less malleting than gold requires, for if over-malleted, the receiving surface is injured. It is a good material for filling many cavities in temporary teeth, and children will bear

having it used, because it can be done quickly and does not require much mallet or hand force to condense a single or double layer of No. 10. Up to the age of fourteen, or longer, we find many teeth which are quite chalky, with the oral fluids in such a condition that oxychlorid and oxyphosphate do not last long, and for some reason amalgam and gutta-percha soon fail. In all such cases we recommend tin, even in the incisors, for as the patient advances in years the tooth-structure generally becomes more dense, and if desirable the filling can be removed, and good saving operations made with gold. Approximal cavities in young teeth, filled with cohesive gold by good operators, often fail in one or two years, but refilled with tin the teeth are preserved. In approximal cavities attacked by white decay, the most formidable variety known, we would separate freely from the palatal or lingual side and fill carefully with tin.

It is invaluable when you are limited for time or means, and also for filling the first molars where we so often find poor calcification. Dr. S. B. Palmer says, "Tin not only arrests decay mechanically, but in frail, chalky structure acts as an anti-acid element in arresting the electric current set up between the tooth-structure and the filling-material." We *often* find the dentine beneath fillings which have been removed, considerably discolored, and greatly solidified as compared to its former condition, and we believe this condensation, or calcification, is more frequent under tin than gold. We have seen cases where the pulps had calcified under tin, and it has been known for years that tin would be tolerated in large cavities very near the pulp without causing any trouble. In many mouths tin does not oxidize, but retains a clean gray color. The objectionable color assumed where it does oxidize, is offset by the fact that the oxid fills the ends of the tubuli and often arrests further decay. Where fillings are subject to great attrition, they wear away sooner or later, but they can easily be replaced, and, as the portion against the walls is the last removed, further decay is prevented as long as there is any reasonable amount of tin left, and if the tooth-structure has become sufficiently solidified, you can cut proper anchorage and cover the tin completely with gold. It may be driven into or onto the tubuli, so as to completely close them from outside moisture, and often the tin takes such a hold that it requires a cutting instrument to remove it.

The extra tough foil now manufactured retains a bright surface, and does not lose its good qualities even after considerable exposure to the atmosphere, but we prefer to prepare only what is needed for each case, keeping the rest in the book placed in an envelope. Tin of this kind, well condensed by mallet or hand force, stays up against the walls of a cavity and makes a tight filling, and ought to be called perfect, because it preserves the tooth, probably expanding

and contracting less than gold, and giving a surface which will wear from five to ten years, depending upon the size and location of the cavity. Buccal cavities in the first molars, and palatal cavities in the incisors, filled for children eight years old, are still in good condition after a period of fifteen years, and we have seen fillings twenty-five years of age. Strips of No. 10, from one to three thicknesses, can be welded together, cohering as well as semi-cohesive gold, or better, and can be manipulated much more rapidly; therefore, if desirable, you can produce any contour.

Some operators have advocated using gold and tin folded together in alternate layers, thus exposing both metals to the fluids of the mouth, claiming that fillings can be made quicker and are not as subject to thermal changes, and can be inserted nearer the pulp than when gold is used. These claims are entirely met by using tin alone. Others say that this union of gold and tin will preserve the teeth quite as well as a correct gold filling, but we do not see that it offers any advantage over either tin or gold, except that it wears somewhat longer than tin.

Instruments with square ends and sides, and medium serrations, are best adapted for hand force, and the majority of mediumly serrated hand-mallet instruments will work well on No. 10 tin of one, two, or three layers, using a four-ounce mallet with a fair, steady blow; but the force of blow will be guided by practice, thickness of tin, size of instrument, and depth of serrations. You must have absolute dryness and use care, not thinking because it is *tin* that it will be all right anyway. Fold the tin into strips of different widths, thicknesses, and lengths, according to size and location of cavity; but for a large crown or approximal cavity, the strips may be folded into mats or rolled into cylinders; but as more force is required to condense them, we generally prefer strips for frail teeth. To make the most *pliable* cylinders, cut a strip of any desired width from a sheet of foil and roll it on a broach, cutting it off to make cylinders of different thicknesses. When the cavity is full, go over the tin thoroughly with mallet or hand force, cutting down crown fillings with burs or corundum-wheels, and approximal fillings with sharp instruments, emery strips or discs. After partially finishing, give the filling another condensing with the burnisher, then a final trimming and moderate burnishing. By trimming fillings before they get wet, you can remedy any defects with a sharply-serrated plugger and thin strip of tin as easily as with gold.

Generally cavities are prepared the same as for gold, except that the grooves or pits should be a trifle larger. Many cavities can be filled with less excavating than required for gold, and some approximal cavities in bicuspid and molars can be well filled without removing the masticating surface. Here especially the cavities

should be cut square into the teeth, so as not to leave a feather edge of tin when the filling is finished; but usually we cut the cervical margin down to a smooth strong edge, even if it goes beyond the gum or enamel margin. Now cut a *slight* groove across far enough from the margin so that it will not be broken out, make each end of this groove square or with *slight* pits, then from each pit cut a groove which will extend to the masticating surface. In nearly all approximal cavities in bicuspid and molars you will find some form of matrix of great advantage. By driving the tin firmly against the matrix you secure a well-condensed surface, and the teeth will move apart *slightly*, so that with a bevel or thin plugger you can force the tin between the matrix and the edge of the cavity, and thus be sure of having a tight filling, and plenty of material to finish well; then after removing the matrix condense with thin burnishers, and complete the finish as for gold. Where no matrix is used, or where it is used and removed before completing the filling, it is well to trim the cervical border, for in either case there is more light and room to work when only a portion of the cavity has been filled.

Be sure of all margins as you progress, and if the cavity is deep and a wide matrix shuts out the light, use a narrow one which can be moved toward the masticating surface as the work progresses. In the incisors and cuspids, where the labial or palatal wall is intact, this matrix can be bent at either end as the case requires, so as to make room for operating. We prefer to save the labial wall and line it with five layers of semi-cohesive gold folded into a mat and extended to the outer edge of the cavity; this gives the tooth a lighter shade. Bicuspid can be treated in the same way, a method originally used by Dr. Corydon Palmer. The tendency to crush or slide out during the process of filling is entirely overcome by using a matrix. We find that tin prevents further decay at the cervical margin of deep cavities oftener than any other metal or combination of metals. We fill from one-fourth to one-half of the cavity with tin, completing with gold when the tooth is of good structure, which gives all the advantages of gold for a masticating surface. Have the tin solid and square across the cavity, and the rest of the cavity of a good retaining form, the same as for a gold filling; then begin with a strip of gold slightly annealed and mallet it into the tin, but do not place too great reliance upon the connection of the two metals to keep the filling in place. We have sometimes filled incisors and cuspid approximal cavities along the labial margin with gold when the tooth was of medium structure. The fee should be reasonably large, for you can save many teeth for a longer time than with cohesive gold. Every good dentist, with a little practice, can accomplish all that the writer claims can be done, as there is no special secret connected therewith.

DISCUSSION.

DR. E. T. DARBY.—The author of this paper has certainly paid a very high, and I don't know but a very worthy, tribute to tin. There is nothing new in the paper, as far as I know; the use of tin almost antedates the use of gold as a filling material. The French first used lead, then tin; tin was used as early as 1800 in this country, to the exclusion of almost every other material. In the earlier years of my practice, tin foil was used a good deal, and amalgam very little; there was a prejudice in the minds of many practitioners against the use of amalgam, because it was composed of equal parts of silver and tin combined with mercury. Consequently, the chief metal used was tin. Soon after I began to practice for myself, someone suggested to me a good method for preparing tin. Make an ordinary sand mould, and then melt chemically pure block tin in a spoon and pour it into this mould, making the tin in the form of a corundum-wheel. This is put on a lathe, then with a very sharp chisel the tin is turned off, making shavings as thin or thick as desired. They can be made exceedingly thin, and are exceedingly tough.

During my college days, some members of the Faculty said tin would weld, and others said it would not. I took a tooth to my room, cut the crown off, and invested the roots with plaster of Paris, restoring the whole crown to its natural size with tin foil. I polished it up nicely, then took it to one of the professors who questioned the cohesive properties of tin, and said to him, "This tooth has been built up with ropes of tin on two retaining points." He said, "You have melted that tin." I said, "No, sir, I built that up in my room under the eye of some of my college mates, and it has been done as I said." He expressed surprise. I have kept that tooth, and show it every year as one of the evidences of the cohesive properties of tin.

I have always said that tin was one of the very best filling materials we have. I believe more teeth could be saved with tin than with gold. Whether tin possesses the antiseptic properties in as great a degree as is claimed by many, I sometimes question, but I do know that tin has a saving quality that we do not always find in gold. The method of combining tin and gold is not used. Dr. Jenkins, of Dresden, was the first advocate of filling teeth with tin and gold. I have been in the habit of combining tin and gold in some cavities, but I do not see any especial advantage in it. I cannot see that the filling is any better by incorporating the gold with the tin. There is but one disadvantage that tin possesses, so far as I am aware, that is its color, but in all approximal cavities that are exposed to view, I believe the average dentist will do as well with tin as with gold. I believe if the dental profession would use more tin, they would save more teeth. For children's teeth I

know of nothing better for masticating surfaces. A good tin filling will condense upon the masticating surfaces of children's teeth, and, I think, save them better than anything else. I should use it much oftener than I do if it were not unsightly in the mouth. I endorse heartily and emphatically the tribute which the essayist has paid to tin.

MADAM TIBURTIUS HIRSCHFELD (of Vienna) heartily endorsed the use of tin and gold, after a practice with this material for twenty-four years. Like Dr. Darby, she tested the cohesive properties of tin, by building up some crowns with this material. Her practice has been mainly for children and ladies, and she thinks for filling children's teeth there is no better material than tin and gold. Sometimes these fillings were put in when the child was seven or eight years old, and at the age of seventeen the fillings were still perfect. She makes a filling of tin and gold that looks nearly as yellow as gold. For this filling, two sheets of gold No. 4, and one of tin, *very thin*, are used. It looks just as bright after having been worn two years, as when it was first put in.

DR. R. R. FREEMAN (Nashville, Tenn.)—You don't know how happy I feel to hear the subject of tin foil brought up before this Congress. I learned something of tin in the early school, when I had the honor to be upon the stage with Madam Hirschfeld, when we received our diplomas. I have written upon tin foil; I have talked upon it and advocated its use. I remember Dr. Truman said that tin foil was one of the best fillings, not excepting gold. I know what it is doing, and I know what it has done for twenty-five years.

All through our southern country we have those who are using tin foil for its therapeutic properties; it has that healing property for the dentine of children's teeth that hardens them, and it has been only a few years ago that one of our best practitioners said, "I must acknowledge that tin does retain teeth." A very wealthy family was once summering with me, and while there, their teeth needed some attention. Some of the teeth looked dark, and I found that the teeth were decaying. It was with considerable effort that I tried to save those teeth; and their dentist came to me with the enquiry why I had filled teeth for patients with tin, who were abundantly able to pay for gold. I told him, in order that the teeth might become developed and hardened under the tin, and that it did so was evident by the trouble he had in trying to cut away the tin fillings. I remember reading an article by Dr. Chase, of St. Louis, in 1869, advocating the placing of tin over sensitive dentine, in order to secure a gentle galvanic action—the galvanic action was said to be therapeutic and hardened the teeth. I remember a case in which I tried it. I made a tin disc and adjusted it very nicely over the soft dentine, and proceeded to fill

the tooth with gold. After removing the rubber dam, I found the tin had slipped out to the margin and made a form like a crescent. It was for one of a family whose teeth were exceedingly soft. This was a very bad tooth, and was very sensitive at the time. I called the patient's attention to the fact, and watched that tooth with considerable care, and after three or four years I had to renew the fillings of teeth that had not been so lined, but this tooth was in a perfect condition, and it stands to-day, since 1869, a perfect tooth at the cervical margin.

I am glad to give my testimony in behalf of tin foil.

DR. ALBERT H. BROCKWAY (Brooklyn, N.Y.).—I am especially pleased with this paper, but we must not forget we have a great variety of cavities to fill, in a great variety of situations, in a great variety of teeth of different characters; so that, if you are to do the best thing for the patient, be extremely eclectic in practice. It is for us to determine what to use for a given case under given conditions. I am a strong believer in the use of tin foil in such cases as will admit of it. I use it more or less, and I use it for two reasons especially. The first is from its adaptability and facility with which a saving filling can be made in favorable cases. I am also inclined strongly to believe in its therapeutic properties. I am not so sure of this, but experience seems to bear it out. In soft, chalky teeth, where the conditions are not favorable for tin, we have to resort to other materials. I use it especially in children's teeth, in cases where tin foil has been strongly recommended, and in which recommendation I quite agree; but there are many cases in children's teeth where it seems to me that tin foil could not be used so successfully as other materials, notably gutta-percha.

I wished simply to speak of the limitations of the usefulness of tin foil.

DR. GORDON WHITE (Nashville, Tenn.).—I claim for tin, after having used it for nine years, that it is the best filling material that has yet been given our profession, excepting that it will not stand friction. I think it is the best tooth-preserver that we have. When I first used it I combined it with gold, and I found that the two foils worked very harshly in my hands. After using it a couple of years that way, I commenced to use the foils separately, covering the tin with gold. I find it works very much softer when the foils are not introduced separately.

DR. C. S. STOCKTON (Newark, N.J.).—It is not necessary for me to go over the ground so well covered by Dr. Darby, but there are people who come to me who are unable to pay the large fees that are requisite where you would use gold. I recall two fillings that I saw only a short time since, which were put in twenty-three years ago, I think. I filled those teeth by a plan recommended by Dr. Palmer, using mats of Abbey's soft foil packed up against the

labial surfaces of the enamel, filling the balance of the teeth with tin foil. They are in as good condition to-day as they were twenty-three years ago. It is necessary and right to save the teeth of those who are not able to pay the large expense of gold work, and if we have a material that will save teeth, it seems to me it is our duty to use it. Tin is one of the best materials for saving teeth, and we should use it more than we do.

DR. ST. GEORGE ELLIOTT (London, Eng.).—It is to me a very great pleasure to return to this country and find that tin is at least beginning to have a large number of advocates. In Europe we all look upon Dr. Abbott, in Berlin, as the father of modern dentistry there. He was one of the earliest, though not the first, to use tin foil, and he did so very successfully. He carried it out in his own practice, and his son-in-law, Dr. Miller, took it up, as did also Dr. Jenkins, of Dresden. For ten years I have used it very largely. I have averaged from four to five or six fillings a day. The greatest advantage of tin and gold has not been spoken of. You know if you get a preparation of tin and gold in correct proportions, there is practically a chemical union between the two, and you get not only hardness, but a certain amount of expansion. It is exceedingly valuable in filling crown cavities of molars. Its hardness is not immediately gotten. It takes from one to three years to harden. Its color is its disadvantage; it approaches that of amalgam. If you will use certain proportions you get a better color, but you get it at the expense of hardness.

PROF. JAMES TRUMAN (Philadelphia, Pa.).—It is with a great deal of gratification that I find, even at this late day, after forty years of practice in the use of tin foil, that it is coming up again with honor. I have long been satisfied that the profession has lost much in the abandonment of this material; perhaps the reason has been largely due to the fact that tin foil originally, as my friend Dr. Darby said, was not well made; then again, less attention was paid to having the surfaces clean, and also from the fact that very few who practised with this material used it as I would, that is strictly upon the cohesive principle. In using the tin foil on the soft gold plan, it is necessary as far as my observation goes that the foil be packed in the cavity as solidly as gold. When this is accomplished, you have a filling that will resist mastication upon any surface. I have tested this for years, and I find that masticating surfaces filled with this character of material last from twenty to twenty-five years perfectly. The therapeutic properties of tin foil have been spoken of, and I believe there is a chemical action on the tooth-structure, but what that is I am not prepared to say. You will find tin foil much better adapted for use in the case of soft teeth. It has been asserted that it is better for children's teeth, but I would place it in all teeth except the anterior teeth;

they can be better filled with it where the teeth are of soft character than with any other filling. Instead of using so much amalgam as we do, take tin, and it will be found more useful than gold in many respects. I agree with my friend in regard to its use at the cervical border. I remember in Dresden, in Dr. Jenkin's office he said to me, "I cannot, as some other men do, preserve the cervical border of teeth with gold, and therefore I invariably use tin and gold."

One word in regard to tin and gold. I have used it a good deal, and have seen Dr. Abbot operate with it in Berlin, and I know a good deal about Dr. Miller's use of it, and I am satisfied that it is a most valuable combination. It can be placed in wet, and if it is placed in wet it is better than when dry, owing to the action of the fluids of the mouth producing galvanic action between the two metals, that produces hardness, I remember once I had occasion to remove an anterior approximal filling of Dr. Abbot's, and I found that the tin and gold was as hard as any amalgam filling I ever saw, and I had great difficulty in cutting it out. That was due to galvanic action between the two metals. I feel gratified that this matter has come up this afternoon.

DR. JARVIE, Chairman.—A question is asked if tin is cohesive under water.

DR. TRUMAN.—Not very well, but I have filled cavities under water. If you make a filling from shavings, you get the most cohesive property possible.

DR. A. W. FREEMAN (Chicago, Ill.).—None have yet spoken of finishing tin foil with gold, that I remember. I fill approximal cavities nearly full or three-fourths full oftentimes with tin and gold or tin alone, and then finish with gold, using sometimes first a little soft gold and then finishing with cohesive gold. If you have your masticating surfaces carefully prepared, and if you are careful about some little undercuts, you can very often make a filling that will be just as durable as any gold filling. I have been surprised in looking back over my experience for eight or nine years to see how tin and gold, finished with gold, has preserved the teeth. The first cases I remember to have had my attention drawn to were by Dr. Allport. He said he used cohesive gold on the outside; now we use more tin and less gold, but always wrap the tin on the inside of the gold.

I endorse the use of tin and gold, and especially do I believe in its chemical action.

German engravers harden their tools, says the *British Mechanic*, by heating them to a white heat and then plunging them into sealing-wax, continuing the operation until the tool is cool. By this method the steel becomes almost as hard as a diamond, and, when touched with a little oil, is excellent for engraving or for drilling into other metals.—*British Journal of Dental Science*.

Concerning Various Methods Advocated for Obviating the Necessity of Extracting Devitalized Tooth-pulps.

By DR. W. D. MILLER, Berlin, Germany.

The practice now in vogue among good practitioners, of thoroughly removing the pulp and filling the root-canal to the apex, is usually so easily carried out in the incisors and cuspids, and gives such sure results, that there is no probability that a better method will ever be found. But when we extend this treatment to the bicuspid and molars, the labor and expense entailed are frequently so great as to put it beyond the reach of the great majority of the human race, and the method is not always successful. It will consequently be a great boon if some means or method can be devised which would render unnecessary the removing of the pulp and filling the root-canals of molars.

While every dentist has now and then knowingly left remains of the pulp in narrow and tortuous canals, or in canals obstructed by calcific matter, and while many dentists in Europe have contented themselves with simply devitalizing the pulp, filling over it with amalgam and *leaving the rest to nature*, the first *systematic* attempt to do away entirely with the necessity of extracting the root-portions of the pulp appears to have been made by Witzel, who, in 1874, presented the view that an application of arsenious acid carefully made to the inflamed pulp devitalized only the disease tissue, and that by amputating the coronal portion of the pulp twenty-four hours after the application, the ends of the root-stumps might be treated as healthy, freshly-exposed pulps.

Dr. Miller then presented briefly the methods devised by Witzel, Baume and Herbst, the latter as put forth by its author and as modified by Bodecker, and summarized their advantages and disadvantages. Continuing, he said :

Perhaps the majority of dentists have also made more or less extensive use of the method recommended by Bodecker, when they have left a portion or the whole of the pulp in the buccal roots of upper, or mesial root of lower molars, and filled directly over them, after thoroughly bathing them with carbolic acid or some other antiseptic.

I have for a long time felt that the solution of the problem was to be sought for in the direction pointed out by Witzel, except that our efforts should be directed, not to retaining the vitality of the root stumps, but to preventing their subsequent decomposition by impregnating them with a suitable antiseptic. I am convinced that the success of the impregnation method depends, to a very

great extent, upon the character of the antiseptic employed, and upon its chemical action upon the pulp apart from its antiseptic action.

The qualities desirable appear to me to be :

1. It must be a strong antiseptic.
2. It must be sufficiently soluble and diffusible to guarantee the impregnation of the whole pulp.
3. It must not be so diffusible that it will be completely taken up by the surrounding tissue and finally disappear altogether, as is the case with applications of carbolic acid. It is my impression that there is greater danger in too great solubility than in insolubility.

4. A coagulating action upon the tissue of the pulp appears desirable, though not absolutely essential. A pulp which is coagulated into a hard, insoluble body, is less likely to furnish nourishment for bacteria and offer irritation to the periapical tissue than one in a soft or semi-liquid condition. One cause of the failure of Baume's borax treatment is probably the conversion of the pulp into a liquid, or semi-liquid, soapy mass, with a strong alkaline smell and reaction, which can hardly be indifferent to the tissue about the apical foramen.

5. It is desirable that the substance employed have no irritating action upon the pericementum.

6. It should not discolor the tooth, although, as the treatment concerns chiefly molars, a slight discoloration need not be considered as a very serious matter.

7. Solid substances are better adapted to the purpose than liquids.

It is difficult to find a substance which fulfils all the above-mentioned conditions.

According to the results obtained from over five hundred experiments, I have divided dental antiseptics into three groups :

1. Those possessing in a high degree the power of imparting antiseptic qualities to root-pulps, such as cyanide of mercury, bichlorid of mercury, diaphtherin, sulphate of copper, salicylate of mercury, oil of cinnamon, ortho-kresol, carbolic acid, trichlor-phenol, chlorid of zinc. The last four are, however, decidedly inferior to the others ; they penetrate the pulp very rapidly, chlorid of zinc surprisingly so, but they are lacking in the necessary powerful antiseptic qualities, and are so diffusible that in the course of a few weeks they disappear altogether from the pulp.

2. Those of doubtful value : Thymol, salicylic acid, eugenol, campho-phenique, hydronaphthol, A and B naphthol, aceticotartarate of aluminum and some essential oils, resorcin, thallin, sulpho-carbolate of zinc, oil of birch, iodid of sodium, nitrate of sodium, etc.

sulphate of copper may be used in pure form, but it naturally causes serious discoloration of the tooth at the neck, and is also, I fear, too soluble to give permanent results, in pure form. More recently, I have directed my experiments toward the discovery of some substance which possesses the desired qualities without discoloring the tooth. Thus far I have obtained the best results from diaphtherin (oxychinaseptol), an antiseptic recently introduced by Emmerich. It may be applied in pure form. Among liquid antiseptics, the oil of cinnamon takes the first place, and I have much faith in its power to conserve the dead pulp. Like all the liquids, however, it is difficult to apply, and has, besides, the disagreeable quality of discoloring the tooth yellowish-brown. The combination which I have chiefly employed is that of sublimate and thymol. (I have not had opportunity to sufficiently test the others in practice, though I am now using, by way of experiment, the salicylate, and, to some extent, the cyanide of mercury.) It has been employed at the Dental Institute of the University of Berlin in over two hundred cases. Of these, only one failure has come to my knowledge.

Time is the only test for methods like those under consideration, and we can scarcely expect to arrive at a definite conclusion in less than five to ten years. Nor should we be hasty in the application of methods of this nature. One or two cases every month, at least for the first year or two, is all that a careful dentist ought to risk in private practice. Cases should be chosen which are very difficult to treat, and which are otherwise frequently treated by the forceps, such as distal cavities of second or third molars, buccal cavities of third molars, etc. It is not possible at present to form a reliable estimate as to the value of this method of treating teeth; it may also be that much better materials will be found for the purpose than those suggested above. There are, at least, reasons for believing that by a careful application of this method, many teeth may be saved which otherwise would be sacrificed to the forceps, or, what is much worse, be allowed to crumble away.

[The President exhibited two small bottles containing the preparations which Dr. Miller had recommended, and passed them around for inspection.]

DISCUSSION.

DR. FRANK ABBOTT (New York City).—I take entirely different views of this matter from the author of the paper and the gentlemen who have been quoted. The only one condition where I think of using any material for devitalizing the pulps of teeth, is where it is impossible to stop pain. I have, perhaps, in the last fifteen years used arsenic in teeth as many as three or four times, and no more. To detail to you how I avoid using arsenic and

keep my patients along in a comfortable condition would be comparatively a long story. The line of treatment after devitalization, or of a tooth with a dead pulp, is a question of more importance, apparently, as borne upon by this paper, than any other.

For a number of years I have had a practice that seems from what has been said in reference to it, to be rather unique. I never depend upon the application of an antiseptic in the roots of teeth, but upon a material which I force in and around such, with which is combined an antiseptic strong enough to answer the purpose, and virtually mummify all the material that is left in the canals of the tooth by its action. It surrounds and covers it over, and whatever portion of the pulp is left behind is penetrated by the action of the chlorid of zinc and bichlorid of mercury that is mixed with it. Of course, if the pulps die, they die of their own accord. I have many dead teeth to handle and many to treat in my practice, as everyone has who is in full practice, and I treat them all in one general way. That way is to open the pulp-chamber as carefully as I can, so that I may cleanse it thoroughly of every particle and get thoroughly into all the root-canals. I then, with a very fine gold-pointed syringe, use a 1 in 10,000 solution of bichlorid of mercury—a grain of bichlorid of mercury in twenty ounces of water—and syringe out these canals just as thoroughly as I can; I then, with a broach or small instrument, penetrate into the canals as far as I can go, stir up the contents, and then wash again, repeating this until I am pretty sure that everything is clean, so that the substance coming out of the tooth as it strikes a white napkin will show a white, clean color instead of staining, as when the canal is filled with dead material. When it is washed thoroughly clean, I fill with oxychlorid of zinc, in which I put a drop of a solution of 1 in 2000 of bichlorid of mercury, thus combining the antiseptic properties of the bichlorid of mercury and the penetrating and antiseptic properties of the chlorid of zinc and oxid of zinc.

This is the material that mummifies or holds this substance that is left in the roots of the teeth, leaving it in a condition to give no trouble; and it may astonish some of you to know that instead of opening a tooth and treating it day after day for a week or more, I open a tooth and fill it at the same sitting always, unless I have periosteal irritation—soreness of the tooth as I touch it. The crown of the tooth is filled with gold, or any substance that I choose to use, of course, and I dismiss the patient after painting the gums carefully over with a solution of concentrated tincture of aconite root and tincture of iodine. That I always do before my patient leaves the chair. It is a powerful counter-irritant, and does the work of relieving the pressure around the root of the tooth. This, to me, is the simplest, easiest, and most quiet way of getting along with that kind of teeth.

It is the decomposition of the canal contents, and the gases accumulating from that decomposition all the time forcing themselves into the pulp-canal that cause the pain in such cases; the gases cannot get outside, because the cement upon the surface of the root is living tissue, consequently all openings into the structure are closed to the escape of gas, except that which would be taken up in the circulation. In the other way, the opening is there, so that all the gases pass into this pulp-canal.

In the substances that we use for root-filling, we must bear this in mind, that the results of decomposition are what we have to deal with, not the decomposition itself.

DR. GEORGE CUNNINGHAM (Cambridge, England).—It is now some years ago since I had the opportunity of knowing what Prof. Miller was doing, and of employing some of these tabloids. So far as cases of this kind are concerned, they are limited, as Dr. Abbott has said. I have no doubt there is a certain percentage of failures. I am acquainted with Dr. Herbst's method of treatment, and I do not believe in his system of hermetic sealing. I support Prof. Miller's statement, which I believe is right, that we can get as good hermetic sealing by his process as by tin in the cavity.

I have tried the Herbst system with so-called "cobalt." Dr. Herbst kindly sent some to me, and my colleague, an eminent chemist, after examining it, said: "In that bottle you have enough arsenic to kill the whole British nation." Prof. Miller delivered an introductory course of lectures on operative dentistry, and showed these experiments in retaining the pulps alive by the cupric and sulphate method. I have used that method in wisdom-teeth. Of course, the alternative treatment is the forceps. If we could find for poor people some means which would shorten the treatment, I trust it will be the practice as used by Dr. Abbott, which will give the opportunity to fill at one sitting. I think the paper we have had to-day is of very great importance, because it has pointed out one way that we can bring our operations within the reach of larger numbers of the community.

DR. SCHREIER (of Vienna) addressed the Congress in German and it was translated by Dr. Ottofy, as follows:

It is indifferent what antiseptic is used; each one leads to the same result. It is only necessary to find material which is easily applicable. If anyone says that he can take an antiseptic material and inject it into the fine canals, it is a matter which is impossible to comprehend. It is necessary that the material should be one which is readily introduced into the root-canal, and whose effect is prompt and immediate. Such a material Dr. Miller did not mention in his essay, but I have published a material of this character—potassium-sodium—which, on another occasion, I will present to the members of the Congress.

Treatment of Alveolar Pyorrhœa.

By DR. JAMES CARACATSANIS, of Athens, Greece.

The symptoms and causes of this affection have been carefully studied from the standpoint of Messrs. Magitot and Galippe's views. I shall speak upon the treatment and cure.

From the point of view of the severity, I consider the malady as separable into four degrees, as facilitating the application of the treatment which I recommend.

I regard the disease as of the first degree when the suppuration has only extended to the neck of the tooth, the alveolo-dental periosteum being unaffected. The cure of this stage is extremely easy by the following treatment: In the first place, the tartar or other irritating deposits are to be completely removed; the gums are to be scarified as thoroughly as possible with a steel instrument wrapped in cotton, which should as a preliminary be dipped in a 1 to 1000 solution of sublimate. This is at once followed by an application having the following composition:

Tincture of iodine,
Tincture of aconite, equal quantities.

The patient is directed to cleanse the mouth thrice daily with a brush and the following antiseptic lotion:

Tincture of thyme.....	2 grams.
“ eucalyptus.....	1 gram.
“ benzoin.....	4 grams.
“ mint.....	120 grams.
“ lavender.....	2 grams.
“ rosemary.....	1 gram.
“ cologne.....	2 grams.
“ anise.....	4 grams.

Sig.—One teaspoonful in half a glass of water.

Have the patient return at the end of a month; he will be entirely well if he has followed directions.

Second degree: suppuration having extended to the upper portion of the cement. Treatment the same as for the first degree, only it will be necessary to have the patient return several times for scarification and painting of the gums. The cure will be complete at the end of two or three months.

Third degree: suppuration involves the whole of the cement and the periosteum, but the teeth have not given way entirely.

The visits must be more numerous, and the strength of the sublimate solution is to be increased to 2 to 1000. After scarifying the gums by means of a bistoury, I introduce with a Pravaz syringe the sublimate solution between the tooth and the gum, and at once apply the iodine and aconite preparation.

If there be inflammation and the patient suffers pain, after removing the tartar I order emollients to relieve the pain before scarifying and employing the sublimate. Cure is not yet obtained in this degree of the malady. I continue the treatment until all suppuration has ceased, and the teeth have become almost immovable. It is possible to get these patients to masticate with comfort who have had the severest suffering, and in whom the slightest pressure occasioned almost unbearable pain.

As to the fourth degree, which I define to exist when the teeth are altogether loose, the same treatment is to be employed, although a satisfactory result is rarely obtained. I have had some half-cures for a time, but it is only in persons with abundant patience ; usually the patient becomes wearied before experiencing the slightest improvement.

(To be continued in our December number.)

Selections.

Reputation vs. Character.

Most of us are very sensitive of our reputation, as well we may be, for as Shakespeare says, "He that steals my purse steals trash, but he that steals my good name steals all." There are few things in which we should use more caution than in keeping our own reputation unsullied, and that of our neighbors a little better, if possible, than they may bear, especially if he is an enemy or a competitor. The effort will improve our own reputation as well as his.

If we were more careful of our character, our reputation would take care of itself, or, at least, we should have less trouble with it. We are usually rated for as much as we are worth. It may be, if our neighbors could look into the windows of our heart, it would not at all increase their estimate of us. No wonder we leave the blinds up so often. But even if we are really better than people believe us to be, time will generally bring things right. Therefore, those who have trouble with their reputation will do much better in mending it by putting things to rights at home than by going about seeking its improvement abroad.

Christ compared us to a wheat field. We fear, however, some of us have the field without the wheat. It is no wonder, therefore, the fields grow up to tares. But even if, in spite of our best efforts to raise a crop of wheat, some enemy sows tares among it while we sleep, it will require much caution if we would root them up. We have had a little experience in that. Our wheat field has been sown with tares, though we thought we were very careful in pro-

tecting it; and in our anger we have worked so indiscreetly to tear them up that we did much injury to our wheat. We hope others have been more successful. But while we can, by this occurrence, sympathize with others, we feel like admonishing them against our mistake. Brother, be sure your field is thoroughly prepared and well sown to wheat, and that it is well looked after. This helps much to keep out the tares, and generally chokes them if they are thrown in, especially if the wheat is sown early in the season.

The Secret of Success.

We see around us successful lives, and wonder why we too are not successful. What are the secret springs that make this mighty difference? They do not appear any smarter, naturally, than we are. Yet they pass us on every side, and the public applaud them, while we are unobserved, unrewarded, and unappreciated. We are at last ready to believe that perhaps, after all, mere chance, luck, "good fortune" makes the difference.

But we only see the results. The feverish longing and tireless energy that leads to careful reflection, the thorough studiousness and incessant struggle that brings refinement, the intense willing and consuming enthusiasm that forms habits of industry, the self-sacrifice and painstaking planning that moulds mind and spirit and muscle for some definite purpose, that makes the rough man polished, the blundering man skilful, and the wandering, fixed, steady, definite, powerful at some given point—all this we do not see.

The best written composition, the most acceptable oratory, the greatest works of art or industry, is that which conceals the labor that produced it. So the most successful life stands before us ready made, the rubbish all cleared away, the labor all hidden, and the losses and processes which have brought perfection all covered with springing life and beauty.

Editorial.

"Americans and American Dentistry."

The editor of the *Advertiser* accuses "Canadians and others" of "jeering at America and American dentistry;" and by garbling extracts from an editorial in this journal for September, makes it appear that its editor was airing a personal grievance. Whatever personal insult is extended to the editor of the DOMINION JOURNAL

by name—against the common editorial courtesies of journalists—is equally shared in by all the fathers and founders of the dental reform movement in Canada. Somebody had to begin the reform movement here. Instead of imitating the example which prevailed in the United States, of “graduating” students after ten months’ college study, or in one session where they declared they had five years’ practice, we started out by exacting four full years indentureship, the best we could do under the circumstances. No one dare defend the old system in the United States. The editor of the *Advertiser* is perfectly correct in the statement that such education “hung too low.” But, he should have had the honesty to state that we wrote nothing but approbation of the new system. When he sneers at those of us who founded the early movement, he overlooks the fact that all Canada had only a population of five millions, and that we were, at least, doing our best. Not only did we create the systems we enjoy, but the leaders made many sacrifices for the elevation of the status of the profession, which received the kindly sympathy of our sister journals over the border.

If open and fair criticism of the faults in the past or present of dental education in the United States is “jeering,” then the editor of the *Advertiser* had better reserve his arrogance for his own country. For one Britisher who has adversely criticized American education, we can quote a hundred Americans. Canadian dentists—and this journal especially—have always entertained sincere respect for our hospitable cousins over the border. As we have enjoyed their hospitality we have endeavored to reciprocate it, so far as we were privileged, by the visits to Canada of individual dentists, and of such welcome meetings as that to Montreal some years ago of the Connecticut Valley Dental Society. The editor of the *Advertiser* has, perhaps, received as much of this Canadian hospitality as any member of the profession. When he has fully relieved himself of the bile induced by the fact that the proper man, *in his estimation*—and everybody knows whom he means—was not chosen for the Presidency of the Congress, he may discover his absurdity as well as his arrogance.

In an early number we will show our readers what Americans have said about American dental education, and it will perhaps astonish no one more than the editor of the *Advertiser* to find himself condemned out of his own lips. If it is unfair to criticize what he has so severely and so often criticized, it will be unfair ever to hold an opinion, professional, personal or political, that is not first approved of by the editor of the *Advertiser*. We do not believe the leaders of American dentistry are so thin-skinned as to sympathize with such puerility. The editor of the *Advertiser* will have an opportunity to rise and explain the inconsistency of his position. If it is only Congress Bile, he need not explain. It is quite clear.

Envy Dies Hard.

It will be some time, no doubt, before we will fully appreciate the work done for us by the chief officers of the late Congress. Not only were they at it early and late for many months before the meeting, sacrificing time, money and leisure, but they were nagged at by a number of "Great I Am's," who are overcome to such inconvenience with self-opinion, that they are bewildered as they try to explain how the Congress dared proceed without them. Anyone who reads the journals must observe this insufferable conceit in the case of one or two prominent individuals. After doing their best to bring disrepute upon the proposal, and predicting all sorts of disaster, they sought to regain the respect they forfeited; and now that fails, they shower epithets upon the respected President and other of the active officers. Had any Britisher so insulted the officials there would have been an earthquake in Buffalo, and somebody would have repeated for popularity the congenial amusement of pulling the teeth of the British lion. We are quite certain that were any British dental journal to write such posthumous criticism as appears in the last issue of the *Advertiser*, there would be a lively "playing to the galleries" by the very man who wrote it. "There was dissatisfaction expressed with the President, as not being sufficiently a representative man, or one who had not been widely recognized as a writer or original worker," etc. "Dr. Shepherd has not that suavity of manner which might enable him to perform a disagreeable duty in a graceful style; but he presided with dignity, and there was never any wrangling upon the floor, a spectacle not altogether strange to such meetings." It is pretty hard to satisfy such a critic. Of course, everybody knows who should have been "the representative man," "widely recognized as a writer," etc. What a pity he will not keep for the Congress next century!

September Preliminary Lectures.

Most of the American colleges, both medical and dental, have what is known as a Fall Course. Prof. Garretson, Dean of the Philadelphia Dental School, takes advantage of this term each season to instruct his students in what may be termed the collateral foundations. The subject of his present course is the declensions of Latin nouns and adjectives, as these relate to the writing of prescriptions. Last September he lectured on the human hypostasis. Dental students are not, as a rule, college bred, and it is easily understood that courses of this kind can prove nothing else than invaluable. This announcement may afford a hint to deans

of other schools in their office of looking after the higher education of students. For years Dr. Garretson has given a course of extra lectures on philosophy to a class numbering at the present time a membership of over two thousand. These lectures are without connection with his professional chair, and are free to any and all students who care to attend. Such advantages given the matriculate tend to the correction of deficiencies as to school education. If "to think is to be," lectures like these alluded to must tend to make men. The Tuesday night talks by Dr. Garretson are crowded to the full capacity of the large amphitheatre in which he meets his class, and have come to be a feature in Philadelphia evenings.

Royal College of Dental Surgeons of Ontario.

The Nineteenth Session of the School of Dentistry of the Royal College of Dental Surgeons was opened on the evening of Tuesday, Oct. 3rd. Besides the members of the Faculty there were present Dr. R. J. Husband, Hamilton, President, and Dr. H. T. Wood, Toronto, ex-President of the Board of Directors. Dr. J. B. Willmott, Dean of the Faculty, presided, and after a few words of welcome to the seventy-five students present, introduced the President, ex-President, and the newly-appointed professors, Drs. Capon, Clark, Peters and J. J. McKenzie, B.A., who each made a few remarks which were received by the class with demonstrations of approval. The opening lecture was given by Prof. McKenzie, who chose for his subject "Bacteriology in its Relation to Dentistry." At our request the professor has furnished his lecture for publication, and it will appear in the December number of this journal. During the summer holidays the College building has been entirely refitted and the equipment largely increased. Excellent modern facilities for didactic and laboratory instruction are provided. Since the opening day the students' roll has increased to ninety-three. The directors and faculty are expecting a very successful session.

Personals.

The following from Canada attended the Congress :

F. J. Adams, F. J. Andrews, Toronto ; D. V. Beacock, Brockville ; W. Bruce, Brockville ; Fred. J. Capon, Toronto ; W. F. B. Colter, Sarnia ; G. W. Cornell, Chatham ; Geo. C. Davis, London ; E. H. Eidt, J. H. Frain, F. Frank, Orangeville ; J. G. A. Gendreau, Montreal ; H. M. Howard, St. George ; S. J. Jones, T. J. Jones, Victoria ; F. Killmer, C. P. Lennox, Toronto ; A. N. Maybee, Gananoque ; M. Nicholson, Goderich ; Andrew Rose, Peterboro' ; J. A. Shannon, P. F. Size, R. E. Sparks, Kingston ; A. Stackhouse,

W. H. Steele, James Stirton, Guelph; A. F. Webster, C. Wettlaufer, London; W. E. Willmott, W. Wilson, W. M. Worden, Toronto; H. T. Wood.

Dr. T. J. Jones, of Victoria, B.C., an old Ontario boy, paid us a visit in Montreal, *en route* to the Old Country, some months ago, and returned in time for the Congress. The doctor is a walking advertisement for our magnificent province on the Pacific.

Dr. George Hutchison, of Ottawa, was in Montreal for a Saturday holiday, to witness the lacrosse match between the Capitals and Shamrocks. George has a wooden leg, of which he is a bit proud. When a mere kid, a lot of us heard there was likely to be a row at the time Rev. Father Gavazzi preached in Zion Church, Montreal. Of course we had to go and see it. The 26th Regiment was in the city, and by the stupidity of the mayor, who was in charge as chief magistrate, they fired a volley of ball cartridge at the mob. We remember the whistling of the bullets and the thud of them into a street close to where we stood, only about ten yards from George. We saw Geordie fall. That was our first introduction to him. Amputation of one leg above the knee was necessary. We have had a lot of fun out of the substitute. He goes up and down stairs five or six steps at a hop; he was goal-keeper of the Ottawa Lacrosse Club for many years, and that stump stopped as many balls as his lacrosse stick. As a curler he is a signal success, and the stump enjoys it immensely. As a rifle shot, it steadies him like a rock. We believe, on a pinch, he could use it as a plugger or an elevator. If ever he turns farmer, it will come in "handy" in planting potatoes. If he got mad at Sullivan or Corbett, he would have their heads off with it before they could say Jack Robinson. When he dies, the stump will go to some museum in Ottawa as an object-lesson to young men in overcoming disadvantages. We would fear for our own scalp were it not that his good-nature is proverbial.

Dr. Frank Ibbotson, of Montreal, one of our bright and promising young dentists, has located in Edmonton. Dr. E. B. Ibbotson visited the North-West with his brother, and was charmed with the country and its prospects. We ask for our young confrere a kindly welcome.

Our good friend, Dr. C. N. Johnson, formerly of Toronto, now of Chicago, was one of the most active of the officers at the Congress. Dr. Johnson not only holds one of the most important professional appointments in the Chicago College of Dental Surgery, but he is one of the active editors of the *Dental Review*, so ably conducted by Dr. A. W. Harlan, editor-in-chief. Canadian dentistry is proud of Dr. Johnson, who, while not forgetting his native land, does his duty faithfully as a citizen and a teacher in the land of his adoption.