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# Dominion Dental Journal

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## Original Communications

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### ORTHODONTIA AND DEVELOPMENT OF ESTHETIC FACIAL CONTOURS.\*

BY DR. CALVIN S. CASE, CHICAGO.

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Recognizing that the Department of Orthodontia is usually the most interesting to students, I asked the society to allow the students to meet with them, and I would desire that the students be let into everything that I have to do or say before the societies here in Toronto. (Applause.) I think the best way for me will be to tell you how we carry on the course in the technic department in the two colleges in which I have the honor to hold the Chair of Orthodontia. Immediately after the holidays in the junior year commences the technic portion of the work in orthodontia. My auxiliary commences lecturing to the junior class on the technic department, connecting it with the higher branches of the work. In Chicago we have at the same time three afternoons in the laboratory in technic orthodontia work, presided over by two demonstrators, one of whom has been with me three years in my office. The first thing he does is to give a description of the work of the afternoon; then the class is divided into about eight divisions, because we have first the stock material to construct, as shown on this card. It is quite necessary for anyone who would successfully practise the regulation of teeth to not only be able to have that variety of stock material, but also to be able to make that stock

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\* Address at Royal College Dental Surgeons before Toronto Dental Society and Students of School of Dentistry, Tuesday, February 14th, 1899.

material. It is impossible to purchase the proper sizes and quality of the wire or the tubing. You need German silver wire, which is the hardest that is made, but still is not nearly as hard as is necessary for this work. The only way to get that, then, is to draw it down; so we buy only one size, No. 9, Browne & Sharpe's gauge, a little over one-tenth of an inch in diameter, and draw it down to all the sizes of wire without annealing. If you should buy a certain size of German silver wire for the purpose of cutting a thread for a screw, you would get from one to two-thousandths of an inch in diameter from what you had ordered, because those gauges differ that much in the use of them, even though they are all alike when new. Then you must also consider the boy who measures the wire. Suppose you ask for No. 18, Browne & Sharpe's gauge, he finds a wire that slips into No. 18 easily; the next wire he comes to he cannot quite get it in; then he has to choose between those two. How much difference do you suppose there would be between these?—at least two-thousandths of an inch in diameter. Well, what does that mean? It means that the thread that you would cut on the ordinary small wire that you would use would not be very much more than a thousandth of an inch in height; and supposing the wire that you had ordered to be the proper size for that thread, this wire would not be quite large enough to cut the thread. It is necessary to know exactly what you need. For instance, you know that four-thousandths of an inch would cut a perfect thread in a No. 4 hole of the Martin screw-plate; you measure the wire and get the proper size with a micrometer gauge, but otherwise you could not do it.

Now we come to the tap and drill used for cutting the hole and the thread for making those very delicate nuts. I have heard skillful dentists say that it is impossible for anybody to arrive at that degree of perfection in skill to make a perfect tap and drill. It is certainly one of the hardest things we have to contend with, but there is no reason why it should be very difficult. Why is it we cannot buy them from some jewellery house or other place where they make a business of manufacturing these things? The reason is that there is a slight variation in all of the Martin screw-plates. Every man who is doing this work must have a screw-plate upon which to cut the wires upon the thread which he uses. You want to take your screw-plate and cut the thread on that wire in a few minutes. The Martin screw-plate comes nearer to being similar in size than any other, yet even with the Martin in a number of plates the same hole will vary considerably; therefore the tap that is used to cut the thread on the inside of a nut should be made in the same screw-plate that you used to cut the thread upon the wire upon which the nut is to be screwed. It is impossible to send away and get a tap made that will do the work; so we commence with the raw material

and we hang up this card in the class-room so that the students can see what they are to make. This card contains a piece of No. 9 German silver wire, a five cent nickel, two strips of German silver plate—one has been hammered so that the edges are curved, preparatory to passing it through the draw plate in the construction of tubing. The larger tubing is made from No. 28 gauge, German silver-plate. The smaller, below No. 7 (Martin's screw-plate gauge) is made from 28-gauge German silver wire. Then we divide the different lots of the stock material into classes. The first class makes what is known as four power bars, eight nuts and two tubes. The power bars are marked No. 13, Browne & Sharpe's gauge; it is also marked in the micrometer gauge seventy-thousandths of an inch. That size will cut a perfect thread ordinarily in a No. 0 hole of a Martin screw-plate. There it is marked all alike, giving size in Browne & Sharpe's gauge, then in the micrometer gauge, and also the hole in which the thread can be cut in the Martin screw-plate, which latter is the standard I use in numbering the power bars. These larger wires are used only for making the bars for forcing forward the roots of the four anterior teeth—the incisor teeth. We not only now regulate teeth, but we regulate faces as well; that is, we find that the larger area of the face is dependent on the framework that surrounds and supports the teeth. We oftentimes find that the inner maxillary process of the bone in which the incisor teeth are placed is quite depressed or not prominent, and by moving these four teeth in an upright position we not only move the crown of the roots of the teeth, but we also move the bone in which the roots are placed, carrying out all that portion of the face that is dependent on that bone for its contour. For that purpose we have these larger bars.

Then we come to the third class. The students make four jack screw bars, eight nuts and two tubes. The next class makes four traction bars and eight nuts. These are used for the ordinary jack screws that are placed in the tubes and used for forcing the teeth to or apart from each other, and the traction bars are No. 7, cutting the thread in the No. 7. hole. Then we come to the three traction wires, Nos. 10, 11 and 12, used most commonly of any, especially in the college. The next two hinges are rotating wires. One size cuts No. 12 hole to the right from the thread in the Martin screw-plate; every size would be in the No. 13 hole. Even down to the very lowest of these wires they are drawn from that No. 9, Browne & Sharpe's gauge wire without annealing. The ends of these wires are tapered a little so as to start it in the draw plates, then gradually drawn down. You cannot do it by hand commencing with the larger wire. We have a drawing machine that is made now for drawing down that heavier wire, and it is very necessary not to anneal that wire in starting out. Buy it hard; draw it

from the first to the last without annealing; and you can imagine by the time it reaches that small wire how very hard it is. It takes the place of steel piano wire, which I never think of using, because even if plated with gold after being plated with copper, in a little while it will flake off and become black. If you make this German silver wire properly you will find in it all the elasticity you desire. (Samples of rotating wire distributed.)

Now, we come to the tubing. The tubing is cut into strips. One end of the tube is tapered, and then with a long pair of plyers those ends are curved so that they lock into each other. After cutting the tube say eight or ten inches long they should be thoroughly annealed. The draw plates should be oiled in this process as well as in drawing down the wire, and they should be started in larger holes first. The first thing is to curve the piece so that it will more readily pass into the draw plate, and that can be done by having a little groove cut into some hard wood or piece of iron and laying this strip down over the groove, and laying on that a piece of iron wire and strike it with a hammer until it is driven down into that groove; that gives it the curve and will enable you more readily to start it into the draw plate. There is a draw plate made now that was made under my direction for the first time four or five years ago, with three holes in it at one end, known as the Case draw plate—S. S. White, of Chicago, handles it. If you did not use this you would have two draw plates, one for the starting of the tubing and possibly the larger wire, and then for carrying down the smaller. Starting at the smaller ones you readily run down to the size that is necessary for the usual draw plates, and then from that on down. The width is not so material in the cutting, because if you cut the tube a little too wide at first and it comes together early in the work, when you intend to make quite small tubing you should continue to pull that right down just the same as cutting, and I sometimes think you get a great deal better quality of tubing in that way, although it is not so necessary to have the tubing as hard as the wire.

Now in regard to making nuts, cutting the thread, etc. The first thing is to have a proper screw plate, and the best one I know is the Martin that has a slit upon one side—not the ordinary old-fashioned Martin. That enables the screw plate to cut the thread rather than pinching it down in, and often times breaking, the wire. For taps we order wire that is the exact size of the engine bur wire, and we have it turned similar to these different sizes for the different taps that are necessary. This is turned down for a thread that can be threaded, upon which the nut can be screwed till it is finally finished. The nut, then being screwed upon that after making it—finished by filing down to the diameter of the tap—

is then made for that purpose. The first thing to be done with the tap is to draw the temper of the steel. Ordinarily, the dentist would not have to know anything of that kind; he would take an old excavator—any old excavator would do—pass into the hole in the screw plate that you desire to make a tap for, and break off that portion that extends through the screw plate; then draw the temper, pass it into the screw plate again, having it oiled sufficiently, the excavator being grasped with something that you can give a little more force to it than you could by merely the handle alone: and it is not a good plan to have that in a large screw vise, or set up in a screw vise, as you have seen them make large screws in places, and then turn the screw complete around this way upon them, because if you do that with these delicate tubes you would be very liable to break them off. It is better to grasp them with a pin vise, and in that way you have a small piece, not a large piece, in your hand. If you have a large piece passing into the hole in the screw plate you would very likely break it off. Neither is it wise to put this piece in the vise. When you are going to work about dentistry you want delicate tools, and should have a delicate handle and delicate handling as well. It is so in the making of a tap. It would be well enough to have it in a pin vise. The temper is drawn and then it is carried into the hole a little way and then back off a way, and then a little further and then back again, and a little further, etc. The first portion of this is smooth, and then it begins to cut a thread, and passes up so that you cut a thread, possibly one-eighth of an inch, which is long for an ordinary tap; then the tap is cut on three different sides, so that it presents a triangle—looked at from the end—tapering down to a point. The first part of that is cut down so that it acts as a reamer if the hole is not quite large enough for it.

The drills we buy, though you can make them readily. The other articles shown on this card we make. You can buy these little spear drills for about two cents a piece from a jewellery house. Buy them nearly the size you want, a little too large preferably for the holes that you wish. On the oil-stone these edges are cut down until they pass cleanly through the hole in the screw plate, impinging on either side, so that you can feel them touch the other side. Then they are sharpened properly and in a moment or two they are ready for work. That gives a hole which is equal to inside diameter of a nut.

Now, as to tempering, which is supposed to be difficult. If you will grasp those small pincers in something that they can be moved readily, not in a pair of big tongs or in a screw vise; but if it is an excavator, grasp it at the ends and then pass it over a large Bunsen burner, instead of attempting to hold it, and blow upon it with a blow pipe. In one hand you hold it ready for passing

through the blaze of the Bunsen burner. Some will tell you to temper always in oil. The material does not matter so much as the metal does. You cannot make soap or oil or anything else do the tempering. There is a great deal more in the man than in the material. Do not hold it over the Bunsen burner till it becomes red, perhaps more so in one place than another, with the possibility of raising that steel above the proper heat; but bring it up to a uniform red heat, and with a little practice you will be able to distribute the red color evenly over the smallest instrument, no matter how difficult, by passing it back and forward at different places. Bring it up to a cherry red or a little beyond, and as soon as it is right you can immediately put into the water, which should be right at hand so that you can plunge it in and thus bring it up to an intensely hard fibre. Another way of doing this is to carry it into molten lead first and then plunge it into water. Now we have steel of the hardest temper, and we need to draw it, else it would break with the drills. You must polish the surface so that you can see the color of the steel as it comes up. Grasp the cutting end of the drill in a pair of heavy pliers, and then with a very delicate blaze commence heating this, at first, along the heavier portion of the shank. Gradually it turns into a straw color, from that into a dark blue, then into a light blue. Carry that light blue up to the point where you have grasped the plate, and then it is properly tempered. With a tap you can polish all back plates where the thread is cut.

In my practice we make the nuts out of five-cent nickel pieces. A good way is to make them out of wire that is drawn square with a hole in the centre, cutting a thread in the hole and sawing off from the squared wire the nuts; but that does not make as perfect a nut as I would want. We have tried it for years and know all about it, and we find that that plan does not give a perfectly solid surface, and even if it be rimmed out every once and a while you have a very imperfect nut, but many prefer that way. I prefer to have something that is perfectly solid, and I can get that in no other way than by making it out of one solid piece. I find that the quality of the metal in a five cent nickel is all ready for that kind of work, and it is about the right thickness. It is quite inexpensive compared to the real worth of the nuts, because if you are skilful you can make at least fifty nuts out of a five cent nickel. I have a son who made seventy-two nuts out of a five cent nickel piece (applause); still if you can get forty or fifty perfect nuts out of a nickel you are doing very well indeed. The way we do is to take the nickel and saw one edge of it—making a segment of the nickel in that way—and then divide it into lines that are about the right size for the nuts, laying the nickel down and using a little straight-edge and a scratcher, and then the other way one single line; punch

the places where the dots are shown; then grasp it in the hand vise or lay it on a piece of wood, which prevents it being turned around, and drill all the holes along that line. Then tap these holes with the tap you have made, cutting the thread very carefully, sawing down these surfaces and sawing off the first row. This row, then, is ready to be screwed on the opposite end of the tap and finished. The tap is then grasped with a hand vise, and the way to get the size of this is to run down the diameter of the holder and temper quite hard—not too hard so that these little points will break off—and as soon as the file comes down to the rounded surface of the holder it is then the right size. In the *Cosmos*, two years ago, I published a method and advised squaring the ends; but it is just as well to have it round instead of square.

Now, we come to the band material. This is done by annealing the wire of the proper size, using the larger wires, first annealing the wires and then rolling them down a few times, annealing again and so on five or six times. After they have been brought to the proper thickness then they are thoroughly annealed. That is the only way that is possible to get those perfect bands that are most desirable for the work. It is quite difficult for me to get the students to do all the work that is necessary on a band. If it is not annealed properly, to start with, in a little while the edges of the bands become ruffled, and have little saw teeth upon them—the only way I can detect sometimes that they have not annealed it as much as I have told them to—and it should be annealed four or five times in rolling it through the rollers while that is going on. When I say thoroughly annealed I mean that it should be put over some heating apparatus, such as a large burner placed on a sieve wire as I do in the office and at the colleges, and these raised at a red heat and held there for four or five hours, in my office never less than three hours. In that way you get an exceedingly soft material. Now, in the working of German silver there are certain things that are very desirable. One is that it shall be intensely hard for the threads on the wire, and the other is that it shall be intensely soft. You will notice that this band is like a piece of cloth, and is three and a half or four-thousandths of an inch in thickness.

Now, we have here instruments that can be made from stock material (going over list of different shaped hooks and other tools as shown on card). The most scientific principle in the regulation of teeth is to make one force aid the other; that is the force that is used in one malposed tooth should act on the other malposed tooth. You will be surprised to see the number of ways in which that principle is applied. The separating tape is not at present made by any dental people, although it ought to be; and there is only one place in Chicago that we can get it exactly as we want it. You

can buy tape in skeins, roll it into pieces like these, rolling it on a match or hard instrument, and dip it down into boiling hot wax, then you will have a tape which will be better than anything else. It is better than rubber because rubber continues to separate the teeth all along, whereas this makes a certain width and then stops. For teeth that are close together you should use the very narrowest kind, that is just about one-sixteenth of an inch in width; and then for wider spaces you double this with your fingers and pass it between the teeth that are very close together, even though it is doubled. The way to put this tape in—say between the molars—is to take one edge lapped a little beyond the other; and you find that it can be passed up between the teeth, even though it is doubled. Usually the separation of teeth is a very simple matter. Ordinarily, for young children you do not require any separation at all unless you are going to make a stationary anchorage appliance with rather thick bands. Two of these bands pass between the joining teeth, as they are only six-thousandths of an inch apart—just a little thicker than ledger paper would be if passed between the teeth. As soon as the bands are removed, even if it is a year or more, these spaces will close, so that it does no harm. The wrench is turned at both ends at an angle of forty-five degrees, as that is the most convenient shape.

The class is then put on drawings. The object is that a person regulating teeth should think out for themselves the kind of apparatus he is going to make. Education is needed as to systematic arrangement of all the various kinds of irregularities, and a perfect knowledge of the application of forces. The regulating apparatus is nothing more than a machine after all. You are applying force in the same way as you would apply force in any other machine, and the tooth is situated in a movable process—just similar to a post drilled in movable clay. We take hold of the top of the post and move it back and forth. We place our forces in a different place on that post and see the effect of that. If that clay is uniform the moving of that post will merely demonstrate the amount of force that is exerted at different points along the bedded portion. Here is a tooth, and we have attached to that a broad, rigid band. Teeth are no more nor less than levers in the grasp of a machine when they are in the grasp of a regulating apparatus. They are levers that combine the qualities of the first and second kind of levers, and you should learn to apply force scientifically—learn to move a single tooth in any direction. I would rather have a man know how to move a single tooth in any direction, to rotate it, to push its crown back or forth, or its root back or forth, with a good general idea of esthetics, how to study faces and so forth, than to have him know all the histories by heart of the cases of regulating that have ever been published (applause), because he would

then show that he was able to think for himself; and if you apply force in a scientific manner you do it almost in a painless way. I never turn a tooth so that it gives pain, I merely turn it so that the patient will feel that there is a slight tension upon it, and that is all that is necessary. In the drawings the illustrations are made from each other's mouths by the students, and this chart shows how the models are made (chart of technic regulating apparatus). These are working drawings for the class. They are supposed to make drawings after they have made the apparatus. If a case comes to me, I make my drawings and my side drawings of this case. These models cover every variety of irregularity; and while no one of these appliances, as they now stand, would probably apply to any case that you would have—because I never saw two cases that were alike—still it would come within a certain class, and you would find inside that class variations working everywhere, that would tell you by that apparatus just what you should do.

We have a man in Chicago who takes skiagraphs for \$3.00 each for dentists or surgeons. Here is a skiagraph taken of a young lady's mouth. She came to me with two lateral incisors upon one side—three lateral incisors upon the upper jaw. The anterior one of the two upon one side was quite imperfect. The teeth were somewhat irregular. The anterior incisor had a deep cut in the labial surface. From the looks of the mouth there were no indications whatever of a cuspid upon that side of the mouth. So I sent the patient over, and you will see how the skiagraph exposed the tooth in its place. Here is another model of a similar kind from a lady over 45 years of age, due to failure of the eruption of the cuspid, from keeping a deciduous tooth in place. By going up there with an instrument I could feel the smooth surface of the cuspid, and by proper application we brought down the cuspid. (At this point Dr. Case called for a student to volunteer to have a plaster cast taken of his face, and this was done.)

Dr. Case remarked that casts were a necessity of the case, oftentimes for the purpose of regulation. Dentists should study the physiognomy of their patients in order to regulate their teeth in keeping with the lines of the face. Dentists get into the habit of looking at the teeth alone. The taking of these casts inflicts no pain on the patient. Do not tell a patient how you are going to regulate his teeth. No man knows the first time he looks at a case how he is going to do it. I have oftentimes studied for a week, and after deciding what kind of apparatus I am going to make and just how I am going to make it to get my force I will think the case over again and think out a better way, and perhaps next day make another plan that is a great deal better. I cannot tell another dentist how to regulate the teeth of a certain patient unless I have seen the patient or seen a plaster model, or a photo-

graph of the patient ; because it is very rarely that any irregularity does not require a look at the patient's face so as to tell how it shall be regulated. After deciding on an apparatus, the next thing is to separate the teeth—if they need separation—with these tapes, and the taking of the measurement for the bands. Then the banding material is brought around the teeth and pinned with a sharp joint, and then grasped with both noses of the plyers, so that these are brought close together. That gives us friction around the teeth if the bands have been made sufficiently soft. Dr. Lang has invented a nice little instrument for soldering these bands by bending the ends of the solder pleyer. Have a little saturated solution of borax, a small knife-blade instrument run along that joint when you have heated it up. Don't let the heat get on the band. Commence heating the bands at this point. Dip your knife blade in the liquid and then solder it hot as it comes together. A small piece of silver solder, not much bigger than a fly's eye put on that joint, and draw down on that surface. There is always danger of a large piece running off. Dr. Webster has brought his very admirable little arrangement to me with the idea of wrapping a piece of band on that. I could do it very nicely, but you could not see it. I want to say of Dr. Webster's idea that I showed it in Cincinnati for the first time, and I must say, for the purpose for which it is invented, it is one of the nicest, most perfect things, I have ever seen. (Loud applause.)

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## THE TECHNIQUE OF CAVITY PREPARATION.\*

BY A. E. WEBSTER, D.D.S., M.D., TORONTO.

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A paper to be worth reading must contain something new or be at least new to those to whom it is read. If it contains nothing new it must be presented in a very attractive form, or run the risk of not receiving any attention. In this paper the author claims nothing new, except, perhaps, the manner of presenting it.

Teachers agree that the only way to learn the size or shape of an object is by the sense of sight or feeling. A mental picture of the size or form of an object may be obtained from a description of it, provided both describer and listener have a common system of measurement. But no artist could spend the time to systematize all his mental measurements, nor can the writer see that it would be wise for the dentist to do so, although a few of the most

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\* Read before the Ontario Dental Society, Feb 15th, 1899.

common measurements should be learned ; thus, for instance, in describing the depth of a certain groove or pit in the preparation of a cavity, if we say it is 1 mm. deep, it conveys a definite idea to the listener. By this means teaching is facilitated, but to make measurements that would apply to all the varying conditions in the preparation of cavities would be very difficult, and would at the same time complicate matters. To carry out the foregoing ideas the writer has prepared these plaster models of teeth fifteen times the natural size and prepared typical cavities in them. These cavities may be seen from any part of the room, and only such measurements as are readily understood will be used in describing them.

In view of the fact that we no longer believe in using a die plate for stamping cusps in crown and bridge-work, much less those objectionable stamp crowns, it might be of interest to the society to know how these large teeth are made and thereby get a hint as to how an exercise may be had in cusp and tooth formation.

A typical tooth is selected and accurately measured, length over all, length of root, length of crown from morsal surface to cingulum on mesial-distal, labial and lingual surfaces, width of crown at cutting edge and at cingulum, both mesio-distally and labiolingually. These measurements are multiplied by fifteen. The tooth is now modelled in composite clay from these measurements. Model surface is vaselined and sectional impressions made. These are removed, vaselined, reassembled and bound by twine. Sufficient plaster at one mixing to fill the cavity from the root end is poured in. When the plaster is hard the sections are removed and the tooth trimmed.

The models before you are prepared in series. No. 1 represents cavities as they come to the dentist. No. 2, cavities prepared, and in the case of proximate cavities, space obtained. No. 3, fillings in place and polished. On this wire holder, which will be passed among you, you will see all these cavities represented in hand-carved ivory teeth, the natural size, and also natural teeth decayed.

The instruments used to demonstrate the technique are made fifteen times the size of the ordinary operating instruments so as to correspond to the size of the models.

The technique of cavity preparation seems to be so inseparable from the principles that it is necessary to give some attention to that part of the subject. And to do this would take more time than is allotted to this subject ; so, to get out of the difficulty, a number of rules are given that are perhaps applicable to the majority of cases. It must be remembered that these rules are made for typical cases, and yet they are broad enough to have a

very wide range of application. By this plan a wide field is opened up for discussion while but little time is spent in presenting it. Again, a classification of cavities is given that may also serve as fruit for discussion. So that the society may be in a better position to discuss the principles upon which the technique to follow is based, copies of the classification of cavities and the rules for their preparation are distributed among you.

#### CLASSIFICATION OF CAVITIES.

- I. All cavities on surfaces other than proximate—
  - (a) Cavities arising from structural defects in pits and fissures.
  - (b) Cavities on labial, buccal or lingual surfaces caused by pathological secretions or products of fermentation.
- II. All cavities on proximate surfaces of incisors and cuspids—
  - (a) Cavities which do not involve the incisal angle.
  - (b) Cavities which involve the incisal angle.
- III. All cavities on the proximate surfaces of bicuspid and molars—
  - (a) Cavities that do not involve the grinding surface.
  - (b) Cavities that do involve the grinding surface.

If the different parts of any often-repeated operation are always performed in the same order, the movements of the operator become automatic and, as a consequence, may be more rapid. In no other department of operative dentistry is this more true than in the preparation of cavities. The time required to prepare any cavity may be lessened very much: first, by always following some systematic order of procedure; second, by completing each step in the operation as far as possible before beginning another; third, when an instrument is once taken in hand, to do all possible with it before it is laid down. Having the above points in view, and to further systematize the preparation of cavities, the following order of procedure is given, and may be followed with but little variation in the preparation of any cavity:

#### GENERAL RULES.

1. Break down all enamel not supported by dentine except where it may be left for esthetic reasons.
2. Remove the decay. (a) All softened or decayed dentine should be removed. (b) In certain rare cases a portion of hard, discolored dentine may be left in a cavity when its removal would expose a living pulp. In such cases a powerful non-irritating disinfectant should be used—for sufficient length of time to insure disinfection—before the filling is inserted.
3. Obtain the outline of the cavity. (a) Extend the cavity margins in every direction until sound enamel is reached, and, if

necessary, further extension should be made until full length rods are reached. (*b*) Cut away the enamel until the surface of the filling can be so formed that the enamel margin will be self-cleansing, or be protected by the gum margin. (*c*) Do not form an enamel margin in such a position as to leave a small portion of enamel between it and one of the developmental grooves. (*d*) A fissure, sulcate or angular developmental groove should be cut in its entire length and included in the cavity. (*e*) The line of enamel margin should be in definite curves or straight lines, avoiding all angles. (*f*) The labial, buccal and lingual margins should be parallel and at right angles to the seat of the cavity.

4. Obtain retention for the filling. (*a*) All retention should be cut in the dentine and in the direction of the greatest amount of tooth tissue, avoiding the pulp. (*b*) Retentive form should be as near as possible to the point of stress. (*c*) Grooves or undercuts, when used, should be in opposite walls or angles. (*d*) The seat and step must be flat and at right angles to the long axis of the tooth and the direction of the stress. (*e*) The surface of the seat and step together must be at least equal in area to the surface of the filling exposed to the stress.

NOTE.—(1) The gingival wall of a cavity forms the seat. (2) The step is the cavity cut into the morsal surface to further resist the stress of mastication.

5. Bevel and polish the enamel margins. (*a*) The peripheral enamel margin should be bevelled from 5 to 30 degrees, while the dentinal enamel margin should be rounded. (*b*) All short or loose rods should be removed. (*c*) Polish the enamel margin where possible.

#### TECHNIQUE OF CAVITY PREPARATION.

Class I. (*a*):—

1. All overhanging enamel may be broken down with sharp chisels. The chisel may be held between the thumb and the first two fingers, using the third finger as a support on an adjoining tooth to keep the instrument from slipping. In cutting the enamel on the lingual surfaces of the incisors, the thumb may be used as a support grasping the instrument in the fingers. Where the enamel is heavy or a proper support for the fingers cannot be had, the chisel blade is placed against the enamel and given a quick, decisive blow with a slue mallet. A chisel in automatic is sometimes used. In no case should the instrument be struck with the hammer unless the operator is quite certain that the enamel will cleave, otherwise a severe shock may be given the patient. To cleave enamel best the force should be in the direction of the rods.

2. Softened decay may be best removed by using sharp spoon excavators, working the blade down close to the wall of the cavity,

and peeling up, as it were, large layers at a time. Where the decay is harder, sharp axes or round burs may be used.

3. Rules 1, 3, 4 and 5.—Fissures may be cut out with a fissure bur or an inverted cone, ground chisel edged, insinuating the point at the junction of the fissured plates of enamel with the dentine. If the hand-piece is given a rocking motion the instrument will cut much better. This first cut through a fissure need not be very wide, as the edges may be very readily cut down with a chisel.

4. Rules 1, 3 and 4.—The pulpal wall may be made flat by using an inverted cone bur held at right angles to long axis of tooth, the lower molars and some uppers—the bur in the right angle hand-piece will give the best access. Extended fissures or angular grooves should be about  $1\frac{1}{2}$  millimeters wide, and at extremity a slight undercut is made with bur. If the same bur be carried around the walls a sufficient retention will be made.

5. Rules 1, 2 and 3.—A rapidly revolving round bur is recommended. In some cases a fissure bur or a disk may be used. Bevel about five degrees.

#### Class I. (*b*):—

1. There is rarely any overhanging enamel, but where there is any it may be readily broken down with the hand-chisel.

2. If a sharp axe excavator be formed under the decay at its edge, the whole mass may be lifted away at once. If the cavity be deep use spoons.

3. Rules 1, 2 and 5.—Inverted cone, held at right angles to pulpal wall, will make flat base, and may be used to extend cavity in any direction.

4. Sufficient retention is made by carrying the bur well into the mesial and distal walls.

5. The inverted cone bur, while extending the cavity and cutting retention, may be used to bevel the margin by directing the bur more obliquely to the centre of the cavity. A sharp chisel or a round bur will serve the same purpose better in some cases.

#### Class II. (*a*):—

1. Enamel is best broken down with hand-chisel, as before described.

2. Small, sharp spoons in deep cavities and sharp axes in shallow ones. Very rarely is it necessary to use burs to remove any of the hard decay.

3. Rules 1, 2 and 5.—The cavity may be extended incisally, labially and lingually with chisels. The gingival extension may be made with a chisel after the seat is formed by carrying an inverted cone bur from labial to lingual with hand-piece parallel with long axis of the tooth.

4. Rules 1, 2, 3 and 5.—While the inverted cone is forming the seat it is carried well into the linguo-gingival angle, and toward the morsal surface along the lingual wall not more than quarter the length of this wall. On the labial wall the bur may be carried to join the incisal retention, but not so deep at the labio-gingival angle as at the linguo-gingival angle. These angles may be cut very nicely with a small, sharp, obtuse-angle axe excavator. The incisal retention may be cut with an inverted cone bur held at right angles to the pulpal wall, or with a small right angle axe excavator.

5. Where possible, use a disk to bevel margins; but perhaps a chisel will serve the best purpose in this class of cavities. There may be cases where a sandpaper strip will smooth up the margins, provided it be held perfectly straight, not allowing it to lap round the margins to round them.

#### Class II. (*b*):—

1, 2 and 3.—Same as sub-class (*a*).

4. The technique of forming the seat, labial and lingual walls is the same as in sub-class (*a*). To form the seat an inverted cone bur is placed parallel with the long axis of the tooth, and carried laterally the desired distance, and at this point sinking it pulpwards to form a pit. Dentine must be left to support the labial plate. Lingual enamel is now cut away with the chisel.

5. Bevel and polish the enamel margins with a disk, holding the hand-piece firmly, not allowing it to tip or rock, lest the edges become rounded. The enamel at the termination of the step may be bevelled with a round bur.

#### Class III.

1. Use chisels as before described. In cases where the marginal ridge is still firm, a bur, the form before described for cutting out fissures, may be used to cut a furrow through from crown to proximate surface. Once this is done the enamel may be readily broken in with straight chisels in mesial cavities, while in distal cavities an instrument with a very wide blade, forty microns and about four millimeters long; angle, twenty-five centigrades, will serve a good purpose. With this instrument there is no danger of its dropping into the cavity or upon sensitive gum tissue.

2. Before described.

3. Rules 1, 2, 3, 4, 5, 6.—Proper extension of the proximate surface may be made with inverted cone burs held parallel with long axis of tooth, being carried laterally and up the buccal and lingual walls. On the morsal surface fissures should be cut out as before described, while the edges are broken in with the chisel. In distal cavities extension buccal and lingual may be made with right and left contra angle chisels.

4. Rules 1, 2, 3, 4, 5.—While the proper extension of the proximate surface is being made with a good sized inverted cone bur, the seat is also being formed, care being taken not to go too close to the pulp. S. S. White makes a new inverted cone bur, without the very sharp corner, which is very useful for this purpose. The seat formed, a smaller inverted cone bur is carried well into the cervico-linguo-axial corner and cervico-bucco-axial corner and then raised occlusally almost to the step in most cases. Small chisels and obtuse angle axe-excavators may serve same purpose. The step should be formed with an inverted cone bur held parallel with long axis of the tooth. The width and depth of the step being governed by the shape of the tooth. The sides of the bur will give form to the walls. The widest part of the step bucco-lingually must be the farthest from the proximate cavity to give it a dovetail form. In distal cavities and lower teeth, the right angle will have to be used very largely.

5. Bevel buccal and lingual walls with a disk, about 20 to 30 degrees. The margin of the step most remote from the proximate cavity should be bevelled with a bur. The gingival margin should be very slightly bevelled. Black's or Darby & Perry's contra angle chisels will reach this margin better than anything else. The dental enamel margin may be rounded with a bur.

In the preparation of this paper and the models I wish to acknowledge the very valuable assistance of Dr. Willmott and Mr. Morrow.

Authors consulted, Drs. Willmott, Black, Johnson, Harper, Ottolengui, Weeks and Hunt.

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## THE HIGHER MISSION OF DENTISTRY.\*

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BY DR. MARK G. McELHINNEY, OTTAWA.

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This is a practical age—an age that is greatly given to asking the question, How much is there in it? The commercial standard is the supreme test of value. Ideal considerations are at a discount, if not wholly lost sight of. Professional success is measured by shekels, mental development and skill in dollars. It is my intention to make an effort to call your notice to something higher, something nobler, something more befitting the highest animal, man, whose greatest ornament is mind. Not for a moment should the true value of wealth be depreciated; not for a moment should its great necessity and usefulness be belittled; but there is some-

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\* Read at meeting of Ontario Dental Society, Toronto, February 15th, 1899.

thing that surpasses it—something that is in its essence not mean and ephemeral, but, as to man, eternal. Almost every intelligent human being passes through a phase of idealism. Each one of us has felt at some time a desire to benefit his fellows, and the not unmanly ambition to be remembered therefor. With the majority the phase soon passes. Realization of the struggle of life, its labors, its disappointments, and its scant rewards ruthlessly quenches the divine flame, leaving cold, hard-headed individuals, whose characters become sordid and self-seeking. With a few the phase survives, and we are indebted to them for the development of the race.

The profession of dentistry was of humble beginning. Its cradle was the blacksmith's shop; its father, the stalwart wielder of the sledge. Slowly at first, then more quickly as its gathering forces concentrated, it has advanced until to-day it stands ready to be ranked with the learned professions, covering with its mantle men of the highest attainments and noblest aims. It was not developed thus by its laggards, by the sordid grasping of self-seeking exploiters, but through the increasing efforts of those who resolutely set their faces toward the goal of a high ideal, and earnestly labored for its accomplishment. Think you that these men counted their successes by golden mile-posts? No; to them the victory over seemingly insurmountable obstacles by almost superhuman exertions, was in itself their justification and their reward. In the future there are opportunities no less wide; in the future there are attainments no less glorious; in the future there are victories that we know not of. It is with this spirit that I would imbue you—it is this spirit that I would enjoin you to cultivate, and the example of those men that I would have you emulate. With my poor powers I can see but dimly that future which is great with magnificent possibilities; but, taught by the experience of the past, we know that there must be, there is a range of development beyond our dreams.

When a boy, I read and re-read that old book, "Pilgrim's Progress," and was much impressed by the story of the man with the muck-rake. In the picture accompanying the story was a man with bowed head, diligently raking in the mud and mire for valueless trifles, while above him hovered an angel holding over his head a golden crown, which he persistently refused to see. Many of us are like the man with the muck-rake, ever bent upon scratching up the dross, and ever blind to the golden crown of glorious opportunity that the future holds above our downcast eyes. Even through the mists with which a love of pleasure and the lusts of the flesh have enshrouded a not too exemplary life, has this story been a healthful inspiration towards a wider and a higher thought. Its potency has been recognized even when the light seemed dimmest and the goal of onward progress most remote. What then

are some of the objects to which we should bend our efforts? Briefly here shall a few thoughts in this direction be considered.

The future of our profession lies in the hands of its members, and of those who are chosen to fill its ranks. We should so order our system of professional education that it shall call for and receive those men and women who are best fitted to carry on its standard. Wealth and social position are valuable possessions, but character is the true test of fitness. Greatly desirable is it that all should possess the former, but it is absolutely necessary that they possess the latter. Our educational system is too much of a machine, taking in the raw material at one end and grinding graduates out at the other without due respect to individual needs and fitness. Little wonder is it that the output shows too indelibly the stamp of hopeless mediocrity. Every undesirable member is a load upon the shoulders of the others—a veritable old man of the sea, who clings and clings like a perpetual handicap on progress. Every unprogressive, sordid individual is a tax upon the efforts of ambition. Of prime moment is the discriminate choice of students. Too many are taken for their services alone, whereby the dentist saves the paltry wages of a boy or a girl in the laboratory. Eventually these students are graduated and established across the street to the very detriment of their preceptors. Indiscriminate choice of students increases competition. Undue competition drives the weaker members into unprofessional practices. Unprofessional practices are the demoralization of the profession. It were better to have half as many practitioners and each one a real dentist. Students should be chosen carefully, and with due attention to their fitness. They should show special qualifications for a profession that *par excellence* demands—powers of specialization. The best and brightest are none too good for a profession, the details of which no one man can master in a lifetime. Students should be inspired with the importance and dignity of our profession, for which no man need apologize. There is as wide a range for the exercise of mechanical ability, surgical skill and judgment in the treatment of dental disease as in any of the other specialties of medicine.

Here I would enforce the claim that dentistry is a specialty of medicine which, at the present stage of human development, is not inferior in importance to any other department. The teeth and mouth are the organs upon which the conditions of civilization are exerting their most powerful influence. It is to the treatment of their tendencies and diseases that we must look to supplement the great strides of preventive medicine and sanitary science, as well as to their importance as predisposing and exciting conditions to be reckoned with in the general treatment of disease. A knowledge of as wide a range as possible of general pathological conditions is

indispensable to the intelligent and rational treatment of the mouth and teeth. I look forward to the day when the dentist shall first possess his medical degree, and thereafter fit himself for his specialty as in the other specialties of medicine. Those who enter a profession for the sole purpose of money-getting, are not likely to become really useful members. They will refuse to give time to study and investigation, and will rather adopt methods that result in the largest income for the least trouble. Each patient will be regarded exclusively in this light without regard to the ethical aspect of the case. Such men are not professional men. They are merely purveyors of certain conveniences, which work they could have done fully as well without the trouble and expense of a degree.

Numberless young men seem to have no definite bent toward any particular subject, and are distributed here and there in the various vocations of life by accident. They are creatures of circumstances without appeal, and furnish the retrogressive elements of their respective vocations. It is the presence of such men that we must discourage. Men who do not care what they toil at should be relegated to their proper sphere—menial occupations. What dentistry needs is to draw its students from those whose bent is in the direction most in harmony with its requirements. In this great work there is not a single member of the profession who cannot become a factor. Each one should make himself a worthy member, for by so doing he uplifts both his profession and himself. Hundreds of adventurers come to grief every year, but rarely do we see misfortune fall upon one who is true to his duty. Many laugh at the idea of enthusiasm in daily labor, but the man who can arouse his interest and cultivate his enthusiasm in the direction of his own profession, must eventually stand head and shoulders above those whose blindness discerns nothing beyond hard work and dollars.

Modern progress is so speedy and people are becoming educated to their own needs with such rapidity that he who throws not his heart into his work must be left behind. All cannot rival Drs. Black, Curtis, Case, Johnson, Jack, and the others whose names are household words to us; but there is not one amongst us who could not follow some line of investigation, and, following it, reap a benefit.

Another great necessity, and certainly a part of dentistry's higher mission, is education. The public is not fully alive to the great importance of the teeth. They have been too long under the influence of vulcanite and the forceps. The people must be told that the vast majority of teeth can be saved, and that pain from the teeth is self-inflicted by negligence. There are few, if any, public lectures on this subject, and very little popular literature. We need a general movement in this direction, and the opportunities

await the profession. Here the labors of Dr. Adams, of Toronto, in connection with the teeth of school children must not be overlooked, and it is lamentable that as the pioneer he has received such scant support from his fellow-practitioners.

The last thought upon which the writer can but briefly touch is the legal status of dentistry in Canada. One country under one flag should be under one law. Why should the provinces of Canada be under different regulations governing the practice of our profession? Does it require different knowledge to save a tooth in British Columbia from that necessary to perform the same operation in Cape Breton? Let us endeavor to do away with the narrow sectionalism that prompts interprovincial legislation. There is no scientific reason, no professional reason, no common-sense reason, and there should be no legal reason why a dentist in one province should not be fully entitled to practise in any other province. Is it not ridiculous that a properly qualified dentist in Ottawa immediately becomes a criminal if he performs the slightest operation in Hull, and *vice versa*? All the great talk about binding this great Dominion into one vast, glorious whole, is nonsense and waste of wind, while the various provinces, like medieval states, raise barriers against each other.

The province of Quebec is the worst offender in this regard. Poor Quebec! hindered as she is with the laws and theology of a century ago. The writer was called recently to give expert evidence in a Quebec court in a suit to recover fees for dental services. On entering the box someone, suspecting the witness of heterodoxy, challenged him on certain matters of belief to which Quebec civil law gives prominence.

The test to which one must subscribe, before being considered a truthful witness, was a little too dogmatic for the writer, so he refused assent and stepped down and out. After him came several illiterate French-Canadian men and women, and even a boy of about ten years of age. Following the lead, the other counsel put the test to these also. To them there was no difficulty—heaven, hell and the future were easy problems, particularly to the ten-year-old boy. The dentist lost his case. Imagine the condition of intelligence where such a legal disability can exist.

This is one difficulty we have to face in the unification of Canadian dental legislation. The other great difficulty is the fear of intruding competition, which is perhaps not very well founded, since all provinces fear alike. A realization of this bugbear would mean an exchange and not an increase of practitioners. Never can dentistry attain its highest position in Canada until the whole Dominion is under a standard of professional qualification.

These few thoughts are given for your consideration: First, Discrimination in the choice of students; second, professional train-

ing to bear more directly upon individual ability and fitness; third, the education of the public to the importance of dentistry; and fourth, one professional standard for Canada, and no interprovincial barriers.

Thanking you, Mr. President and gentlemen, for your kind attention, I leave these matters for your discussion.

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## Proceedings of Dental Societies

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### ONTARIO DENTAL SOCIETY.

The eleventh annual convention of the Ontario Dental Society was held at the Toronto Dental College on Wednesday, February 15th. The morning session opened at 9.30, with the president, Dr. G. S. Martin, in the chair. Minutes of the last annual meeting were read and adopted. Signing the code of ethics, paying fees and receiving badges of admission, occupied some time.

At ten o'clock Dr. Calvin S. Case, of Chicago, was introduced to the society, and commenced his address on "Orthodontia and Development of Esthetic Facial Contours." Dr. Case presented the features of his subject in a clear, definite and concise manner. Forms of irregularity, methods of reducing, and the general principles of applying force, with particular application to special type cases, were described and illustrated by models, drawings and appliances. The latter consisted chiefly of bands, tubes, wires, screws and nuts, with jack and traction screws in several forms. Special importance was given to the general effect of the contour of the face possible of development by changing the movable parts in regulating of the teeth. Dr. Case stated emphatically that he could not, by seeing casts of the teeth, tell what work would be indicated; but that it would be necessary for him to see the face of the patient, or at least a plaster model of the face. A very interesting feature of the lecture was the presentation of models of faces of patients before and after treatment. Dr. Case's address was instructive, and received the heartiest appreciation from the members of the Ontario Dental Society.

### AFTERNOON SESSION.

Dr. A. E. Webster, of Toronto, delivered an address on the "Technique of Cavity Preparation." Printed forms were distributed containing classifications for cavities. Models of teeth in plaster, with typical forms of cavities and fillings, were of great help in illustrating the speaker's idea. Wooden models of burs, excavators and mandrels enlarged thirteen times were also used for the same purpose. Dr. Webster outlined, described and illustrated

conditions of cavities and methods of preparation with clearness and thoroughness, showing careful, studied preparation of his subject.

Discussion was opened by Dr. J. G. Roberts, of Brampton, who congratulated the speaker on the success of his efforts in producing such an address. Dr. Roberts took exception to the speaker on several points. He objected to the advice of using chisels at the cervical margins in proximal cavities of incisors, also to the too general use of inverted cone burs.

Dr. Capon took issue with the speaker on his method of cutting away the palatal wall of enamel at the incisal edge of a central, leaving the labial wall unsupported by any dentine.

Discussion was also taken part in by Drs. Brimacombe, Klotz, Moyer and Adams. Dr. Klotz stated that the sum of area of step and floor of the cavity should equal the area of the surface of the filling.

A paper on "Incidents in Office Practice" was to have been read by Dr. Mark McIlhinney, of Ottawa, but owing to serious illness in the family Dr. McIlhinney was unable to be present. His paper "The Higher Mission of Dentistry," was sent on and received by the society.

Discussion was opened by Dr. R. G. McLaughlin, of Toronto, who described cases of cleft palate and obturators applied. Dr. Caesar followed, and spoke of cases of failure to produce any improvement by using obturators. He also spoke of abscessed antrums.

The election of officers for the ensuing term took place, with the following results: President, Dr. J. M. Brimacombe, Bowmanville; Vice-President, Dr. W. Cecil Trotter, Toronto; Secretary, Dr. J. E. Wilkinsons, Toronto; Treasurer, Dr. C. E. Klotz, St. Catharines; Supervisor of Clinics, Dr. Abbott, London. Representatives of Districts on the Executive Committee: No. 1, Dr. R. E. Sparks, Kingston; No. 2, Dr. D. E. Smith, Stouffville; No. 3, Dr. W. E. Willmott, Toronto; No. 4, Dr. Kilmer, St. Catharines; No. 5, Dr. Sudworth; No. 6, Dr. Brownlee, Mount Forest; No. 7, Dr. Hamilton.

Dr. G. S. Martin made a neat address in retiring from the chair. The newly-elected President, Dr. Brimacombe, thanked the society for the honor and trust of the office he assumed.

The meeting adjourned until 8 p.m.

#### EVENING SESSION.

Dr. Klotz opened the discussion on the address of Dr. Case on "Orthodontia." He spent a short time in referring to a number of points as presented, but did not enlarge on them. Drs. J. B. Willmott, Capon and others took part in the discussion. It was

moved by Dr. G. S. Martin, and seconded by Dr. Klotz. "That Dr. Case be elected an honorary member of the Ontario Dental Society." Carried.

Dr. C. E. Pearson read his paper on "The Restoration of Facial Expressions by Artificial Dentures." A number of casts of cases of natural and artificial dentures, models and samples of artificial dentures, were exhibited and passed about. Considerable strong criticism was indulged in on the injudicious and unnecessary extractions of natural teeth, and the insertion of indifferent artificial substitutes. Color, size, and form of teeth, while important, were not considered as much so as the arrangement. Staining certain teeth was suggested. The essayist was assisted by Dr. W. E. Willmott, who with lantern slides threw photos of typical cases upon the screen.

Dr. S. Moyer, of Galt, opened the discussion of the subject. By a drawing on the board he showed that, properly, the fulness of the upper lip should be in advance of the depression immediately beneath the lower lip.

Dr. F. D. Price, of Toronto, gave an address on "The Application of Electricity in Dentistry." Dr. Price is enthusiastic in this department and presented his subject in a most interesting manner. Following is a list of appliances presented and described: (1) a cataphoric outfit; (2) an instrument for the diagnosis of dead pulp in teeth, with fillings or leaving open cavities; (3) an instrument for heating water (in which the water is to be placed); (4) an instrument for the same purpose (to be placed into a glass of water); (5) a third appliance for the purpose (to be attached to a fountain cuspidor); (6) a root canal drier; (7) a gold annealer; (8) a hot-air syringe; (9) a lamp for heating water; (10) a lamp for producing a strong light in the mouth; (11) a lamp for a mouth reflector; (12) a cautery.

Discussion was taken part in by Drs. Capon, Abbott and others.

Adjournment till 9 a.m. the following day.

#### THURSDAY, FEB. 16TH.—CLINICAL DEMONSTRATIONS.

Dr. H. E. Eaton, Toronto, acted as Supervisor of Clinics.

Out of a list of twenty-three on the programme, eighteen were performed—a remarkably good showing considering the difficulties attendant on procuring suitable subjects and patients. Following is a list of those performed: (1) "Lowrey System of Crown-work," Dr. J. B. Willmott, Toronto; (2) "Hollingsworth System of Crown-work," Dr. H. Clarke, Toronto; (3) subject selected, Dr. C. E. Klotz, St. Catharines; (4) "Carved Cusps, for Gold Crowns," Dr. Abbott, London; (5) "Interdental Bands and Staining Teeth,"

Dr. J. F. Adams, Toronto; (6) "Porcelain Crown, using Mason's Detachable Facing," Dr. A. J. McDonagh, Toronto; (7) "Swadging with Shot," Dr. G. S. Martin, Toronto Junction; (8) "Painless Removal of Dental Pulp," Dr. S. Moyer, Galt; (9) "Decrowning Teeth and Immediate Removal of Dental Pulp," Dr. R. E. Sparks, Kingston; (10) "Solilia Gold Filling," Dr. E. H. Eidt, Stratford; (11) "Porcelain Crown," Dr. J. F. Ross, Toronto; (12) "Porcelain Inlay after Obtunding Sensitive Dentine," Dr. F. J. Capon, Toronto; (13) "Gutta Percha Filling," Dr. Gowan, Claymore; (14) "Soft Gold Filling," Dr. A. E. Webster, Toronto; (15) "Porcelain Crown, Using How Post and a Band," Dr. Husband, Toronto; (16) "Contour Gold Filling, with Base of Tin at Cervical Margin," Dr. J. E. Wilkinson, Toronto; (17) "Fellowship Alloy Filling," Dr. C. E. Pearson, Toronto; (18) "Swadging Aluminum," Dr. Gow, Toronto.

These clinical demonstrations were all successfully performed, and proved to be intensely interesting. All were completed by one p.m., when the proceedings of the eleventh annual convention of the Ontario Dental Society were brought to a close.

This was the most largely attended and most interesting annual gathering in the history of the society.

J. E. WILKINSON,  
*Secretary.*

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## ROYAL COLLEGE OF DENTAL SURGEONS OF ONTARIO.

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The annual examinations of the Royal College of Dental Surgeons resulted in adding the following names to the number of licentiates of dental surgery of Ontario, viz.: Edward C. Abbott, J. W. Armstrong, Frederick Allen Ballachey, L. A. Barrett, Rayanoti Percy Ballachey, Wm. Herbert Bowles, Manly Bowles, Wm. Thos. Bell, Claude Brown, A. C. Caldwell, A. G. Campbell, T. F. Campbell, J. M. Church, W. N. Cuthbert, H. O. Crane, Hezekiah Allan Clark, Chas. Henry Richard Clark, Robert H. Cowen, Thomas A. Currie, James C. Devitt, Ernest Doyle, John Chas. Fitzgerald, Leonard L. Follick, George Frizell, George Gow, Samuel B. Gray, George Wellington Grieve, Wm. T. Hackett, Emerson Henderson, Henry George Hoare, George Ernest Holmes, George Walter Humpidge, W. H. Hunter, A. E. Joselin, C. A. Kennedy, Hugh John Kennedy, Walter John W. Laker, Ralph Lederman, Wm. Whitfield Lemmen, Charles Clifford Lumley, George Thomas Marrs, Albert Millburn, Norman Millar, David McKinley Mitchell, Robert James Morton, Andrew Thomas

Morrow, E. C. Murray, Fred W. Murray, James L. McMillan, John Franklin O'Flynn, Geo. Lemuel Palmer, Thomas Frank Perkin, Wm. J. Schmidt, F. B. Kenward, John C. Shields, Melvin Oscar Sipes, Sylvester Mansfield Snedden, Chas. Alvin Snell, John Seward Somers, A. A. Smith, Robert Alfred Sykes, Chas. Milton Reeves, L. F. Riggs, Albert Roderick Robertson, Daniel Davidson Ross, Roderick R. Ross, G. D. Van Arnan, Lawrence Crary Wadsworth, Frank Robert Watson, Walter Thos. Willard, Pearson Peter Winn, Albert Wm. Winnett, Joseph Cleary Wray, Edwin Ira Zinkan.

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### PRACTITIONERS' COURSE.

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At the recent meeting of the directors of the Royal College of Dental Surgeons, arrangements were made for a practitioners' course in the Dental College, Toronto, from July 5th to 21st. This course will be entirely free to every licentiate of Dental Surgery resident in Ontario, who has paid up his annual fee, or who may do so before July 4th. The course will include expert instruction in crown and bridge-work, orthodontia, and porcelain work. It is also intended to arrange for special lectures in operative dentistry, materia medica, bacteriology, electro-therapeutics, etc. The directors hope that a very large number of the licentiates will avail themselves of the great advantages to be gained by attendance on such a course.

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### THE NATIONAL DENTAL ASSOCIATION.—COMMITTEE ON HISTORY.

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At the first meeting of the association a committee was appointed to report a measure looking to the preparation of a full history of the dental profession. This committee will make a report at the meeting next August, and the character of the report will depend somewhat on the interest taken in this important subject by the members of this association and the profession generally.

All must admit the necessity for a full, carefully prepared and authoritative history of dentistry. The time (as the century closes) is most propitious and the longer it is delayed the more difficult it will be to secure a reliable result.

The committee will be greatly helped in making its report by any interest you may take in this matter and would be glad to

have your replies to the following queries, together with any advice, suggestions or objections you may be pleased to give:

1. Will you please name any books, pamphlets, manuscript reports, in fact, any matters of interest you may possess, which, at the proper time, might be available for the history?
2. Will you give the names and addresses of any dentists in your vicinity who have written on the subject or are interested in dental history?
3. Should the proposed work, in your opinion, be confined to a history of the profession in America or should it be of dentistry from the earliest times all over the world?

CHARLES MCMANUS, *Chairman.*

So Pratt Street,  
HARTFORD, CONNECTICUT.

## Medical Department

### DECAYED TEETH AND TUBERCULOUS CERVICAL GLANDS.

Medicine is constantly getting more and more indebted to the dentists for researches that are of distinct value in pathology and often have a direct bearing upon the prevention, if not the cure, of serious disease. The latest instance that has come to our notice is an investigation of the connection between decayed teeth and the occurrence of tuberculous infection of the lymphatic glands of the neck, by Dr. George W. Cook, of Chicago (*Dental Review*, February). Dr. Cook says that the idea that the pulp canals of decaying teeth might be the channels for tuberculous infection of the cervical glands was advanced some years ago by Dr. Stanley P. Black, who was at that time the pathologist of Mercy Hospital. Acting on Dr. Black's suggestion, Dr. Cook has made bacteriological examinations of the mouth with reference to tuberculous infection in two hundred and twenty cases. While he does not say that all tuberculous infection of the lymphatic glands of the neck takes place through decaying teeth, he thinks it very significant that the pulp canals of such teeth often become tuberculous, since, by reason of the close anatomical connection of the lymphatics with the teeth and with the mucous membrane of the mouth, the canals may readily become the portals of infection.

Dr. Cook gives succinct accounts of eleven cases in which tubercle bacilli were found in or about decayed teeth. One of them was that of a girl, seventeen years old, who had been in rather poor health for some time, and whose teeth had been somewhat neglected. The first and second right molars of the lower jaw were badly decayed. Bacteriological examinations were made

on several successive days. On the third day a tuberculous focus was found in the second molar. After several more examinations, at intervals of a few days, the teeth were extracted. Five weeks later the girl returned with a small nodule at the lower border of the inferior maxilla. Dr. Cook told her it was probably tuberculous, and advised her to consult a physician at once. Her physician adopted local treatment and assured her that the trouble would soon pass away. However, other nodules began to form, and she consulted another physician, who advised an operation for the removal of the glands. But this advice was not followed, and when last heard from, having left the country, the girl had pulmonary tuberculous disease.

Dr. Cook points out the desirability of more thorough inquiries into the conditions of the saliva that make it a good medium for the development of the micro-organisms that are found in the mouth, for, he says, it has been shown by a number of investigators that normal saliva is destructive to a great many forms of bacteria. We think it can not be doubted that the author has done an important piece of work in this investigation, one that distinctly emphasizes the importance of taking care of the teeth.—*N. Y. Med. Journal, April 8th, 1899.*

THE TREATMENT OF ALVEOLAR ABSCESS.

Viau is credited in the *Riforma medica* for March 11th with the following formulæ :

℞ Salol,	}	each	.....	4 parts ;
Menthol,				
Chloroform			.....	3 "
Distilled water			.....	100 "

M. Rinse the mouth with the solution several times a day.

Apply the following to the gum of the affected tooth :

℞ Tincture of iodine,	}	each	.....	4 parts ;
Tincture of aconite,				
Chloroform,	}	each	.....	1 part.
Tincture of benzoin,				

—*N. Y. Med. Journal, April 8th, 1899.*

A MOUTH WASH FOR CHILDREN.

The *Dental Review* for March ascribes the following formula to Monti :

℞ Boric acid	.....	3 parts ;
Distilled Water	.....	200 "
Tincture of myrrh	.....	2 "

M. —*N. Y. Med. Journal, April 8th, 1899.*

## Reviews

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*Chemistry and Metallurgy Applied to Dentistry.*—A manual of practical Chemistry and Metallurgy for the Dental Student and for the Dentist. By VERNON J. HALL, Ph.D., Professor of Chemistry and Director of the Chemical Laboratories in the Dental School and in the Woman's Medical School of Northwestern University. The need of a guide to the practical application of important chemical and metallurgical facts to dentistry has long been felt. The publishers present this book with the assurance that it will meet this need, both as a text-book for colleges and for the practicing dentist. Two hundred and seventy pages, thirty-seven wood cuts and half-tone frontispiece. Handsomely bound in cloth with gold embossing. Price, \$2.00. Order from The Technical Press, Publishers, Evanston, Illinois.

A handy and useful book for the dental student, supplying a lot of practical information which cannot be obtained in the general text-books on chemistry. The need of a work of this kind has been much felt by students going up for examination.

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*Methods of Filling Teeth.* An Exposition of Practical Methods Which will Enable the Student and Practitioner of Dentistry Successfully to Prepare and Fill all Cavities in Human Teeth. By RODRIGUES OTTOLENGUI, M.D.S. 2nd edition. 273 illustrations, giving exact representation of all classes of cavities and their management. Philadelphia: The S. S. White Dental Mfg. Co., 1899.

We very frankly say, that we do not like the title of this work, because we do not believe that any book exposition will "enable the student successfully to prepare and fill all cavities." A student might learn a work on operative dentistry by heart, and be no nearer success in operating than when he started. However, this sounds hypercritical. Dr. Ottolengui has devoted painstaking attention to his work, and has elaborated a volume, the result of his own personal experience. In this respect it is unique, and will attract more than ordinary attention. It is a work, which, like Barratt's "Oral Pathology," can be read from beginning to end with interest, even when one's convictions and experience conflict with the creed of the author. The author does not seem to make sufficient allowance for the recurrence of caries around fillings. "In too many cases" it may be, as he maintains, that decay occurs along margins, "because those margins were improperly made, or because the filling was unskilfully inserted or finished." Yet there

are as frequently, almost constant unsanitary and even septic environments which defeat the most skilful work of the operator. Margins may be thoroughly prepared, and fillings most perfectly inserted and finished, yet there are a score of enemies, in health as well as in illness, which invade the finest finish. The author shows the dangers as well as the uses of matrices. "If separators have worked evil, matrices have proved even a more disastrous delusion." It would do most of our young practitioners good to study carefully just such experiences of practical men. They would discover in time that much of the practice which bewiles the young operator is condemned. Ligatures, clamps, and the whole paraphernalia of mechanical contrivances catch the fancy of beginners, who are unconscious of the mischief they commonly cause. The author has apparently put his full conscience as well as experience into his work. The publishers, as usual, have given us a volume, of which the most eminent book-publishing firms would be proud.

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**MARVELLOUS INCREASE IN PRODUCTION OF GOLD.**—The increasing annual production of gold in the world is a matter of such far-reaching economic importance, not only in the financial affairs of nations, but also in their industrial progress and in their civilization, that a vast amount of patient study has been given by eminent statisticians to the subject, and much time expended in compiling, from various historical records and other sources of information, statistical data which can be confidently accepted as approximately correct, showing the annual production of the precious metal from the time of the discovery of America down to the present day. A publication of the United States Treasury Department, issued in 1897, containing information respecting the production of precious metals, etc., gives statistical tables showing the annual production of gold in the world, commencing with the year 1493. The earlier records are taken from a table of averages for certain periods compiled by Dr. Adolph Soetbeer, and the later figures (from 1885 to 1896) are the annual estimates of the Bureau of the Mint. Other tables show the annual production of gold from the mines of the United States alone from 1845 to 1896, and it is from these official sources mainly that the information has been gathered for this article, supplemented, however, by a full and very interesting communication to the author from the Director of the Mint, giving the latest figures, not yet published, and containing the estimates and deductions of the director respecting the production of gold in the world in 1898. This information is so timely and valuable that the author is of the opinion that the courteous letter of the Director of the Mint in response to his inquiries, if appended to this article, may prove to

be—like the postscript of a lady's correspondence—its most important feature.—*From the Marvellous Increase in Gold Production, by A. E. OUTERBRIDGE, jr., in Appleton's Popular Science Monthly for March.*

### Question Drawer

Edited by R. E. SPARKS, M.D., D.D.S., L.D.S., Kingston, Ont.

Q. 47.—A lady having the right upper canine broken for five years, it had become entirely covered by gum tissue. She complained of pus oozing around the margin of the gum. She came to my office to have it extracted. I lanced the gum to admit the alveolar forceps. Upon pressing the forceps up to get a grip upon the root I found no resistance, and the root was pushed up under the wing of the nose, perhaps under the turbinated bone. It was impossible to extract it, except by a long operation, which would come under general surgery. What was the cause of the displacement of the root, and the non-resistance of the alveolus? And am I not right in sending the patient to a surgeon? D.D.S.

A.—After you found that the bone around the margin of the root had absorbed, had you enlarged the opening in the gum, and taken a large strong spoon excavator, passed it up into the cavity and above the root, with a downward pressure, you would probably easily have dislodged it. Then curetting, packing and sterilizing the cavity with iodoform gauze, and continuing this dressing until the wound had filled in by granulation, you would readily have accomplished the work without sending the patient to a general surgeon. If, however, you did not feel equal to this, you did the right thing in referring her to a surgeon. The absorption of the bone was probably due to a cystic tumor resulting from a septic pulp in the root, or from otitis, which resulted in supuration. The treatment in either case is the same.

DR. G. LENOX CURTIS, New York.

### QUESTIONS.

Q. 49.—Please give me the thermometrical (Fahrenheit) heat and time for vulcanizing elastic rubber?

Q. 50.—According to the programme of the recent annual meeting of the Ontario Dental Society, Dr. Moyer was to painlessly remove a pulp. Will the doctor kindly describe the operation in detail in your department of the Journal, for the benefit of those of us who were not fortunate enough to attend the convention and witness the clinic?

# Dominion Dental Journal

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## THE REACTION IN GOLD CROWNS AND BRIDGE-WORK.

It has been a long time coming, but it has come at last. Better late than never; but it would have been better if the fad had not caused so many sensible men to lose their heads and follow the craze of the faddists and the quacks. There has been enough disfigurement and destruction of the human teeth produced by our profession during the last few years to make dentists of taste ashamed of the profession. We have all sinned more or less in this respect, but there are still a number, chiefly the advertising dentists of limited experience and unlimited greed, who cling to the extreme methods of barbarism simply for the profit in it. There can be no other reason, excepting that they admit they do not know any better.

We have often wondered why the eminent and æsthetical practitioners of the large cities in the United States assented, at least by silence, to the opprobrium which the crown and bridge advertisers brought upon the profession. It is a striking illustration of the supineness of our efforts to counteract the boldness of imposture. At a recent meeting of the Odontological Society of New York, Dr. Jarvie fulminated an anathema, and was followed by the members generally, who deplored the repulsive exhibition of gold crowns, and the extreme to which bridge-work had been carried. The anathema is just about ten years too late. Those who have been accused as old-fogy conservatives have reason to congratulate themselves that they kept cool heads. Not only has the business been over-done in actual practice, but it has made members of Board of Examiners responsible for much injustice to

students. We have witnessed otherwise skilful applicants referred back for six months, because they could not insert a bridge, where common sense and common physiology should have condemned the practice. The folly of demanding such excessive nicety of manipulation in these two departments, from students who could not make a good removable gold plate from start to finish, is quite as absurd as cramming Greek into a small school-boy who cannot speak grammatically or write his mother tongue. As an adjunct of prosthetic dentistry it is fair enough to give crown and bridge-work a place, but too much value has been put upon them, and too little warning given as to their evils. They have been a god-send to the inexperienced and the unscrupulous. They have been abused ninety times for every ten times they have been of real and lasting service. They have encouraged more genuine dishonesty in the way of undeserved high fees, than anything else in the history of dental practice. That they have been of good service now and then to the *demi monde* and other people who do not know or care enough to know refinement from vulgar display, has nothing to do with the case. The anathema of the present is against their repulsive exhibition in conspicuous places.

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### THE JOYS OF JOURNALISM.

To anyone who has inherited or acquired the *cacoëthes scribendi*, there is a measure of congeniality in the editorial function which no gross soul can know. It would be folly to pretend that authors do not love their labor; but the editorial position is one of more varied responsibility, in which all is not gold that glitters, and disappointment is felt in every issue. The man who has yielded to the beguilement of putting his thoughts into print, hearkens to no other wooing so full of fascination. He is apt to forget his financial interests, and frequently his dinner; to rob himself of rest or diversion, and the journalistic castles he builds in the air largely compensate him for the modesty of his earthly habitation. There is a species of happy insanity in the fervor of this devotion.

Yet it is by no means a primrose path—this path of pens and ink. If it has its delights it has its drawbacks. If it is sometimes a joyful bed of clover, it is often a distressing one of thistles. Especially is this a fact in a periodical which occupies a circumscribed position, appealing exclusively to the narrow circle of one's own confreres. Publishers generally have a keen eye to business; but when, like our own, they, too, are inoculated with the *cacoëthes scribendi*, and love science and literature for their own sake, it is not "business" which impels them to give a profession more than they pay for. Publishers and editors feel that they are working for the

profession much more than for themselves ; that they have a strong claim upon the active support of every practitioner whose sympathies are not with the class who degrade the craft.

Of course, journals are measured by comparisons, and readers do not think they expect too much of the one they specially patronize. We are not blind to our faults, and it would not be a hard task to increase the scientific and literary character of our Canadian Journal if we had the collateral advantages of such periodicals as the *Cosmos*, the *Review* and others, published by wealthy trade interests. The DOMINION DENTAL JOURNAL is, and has always been, thoroughly independent of any such business intervention. It has to exist entirely upon its own merits, and has no other financial sanctuary. The *International* has over a hundred stockholders, who subscribed and paid nearly three thousand dollars to guarantee the success of the enterprise, "all profits being devoted to the enlargement or improvement of the Journal." It is our readers who are blind to the difficulties the publisher and editors have to meet. We have critics who give us advice, which, if followed, would bankrupt the proprietor. Others have had the chronic sulks for reasons we have never been able to fathom, and have not even manners enough to answer polite letters. We are all in the same boat—publisher, editors and readers, and if it was realized that we cannot decently exist as a profession in Canada without a periodical of our own ; if there was more of that fraternal co-operation which medical and legal journals in Canada enjoy, we would get on uncommonly well. The *cacoëthes scribendi* alone cannot sustain interest in a journal. An active, personal friendship is necessary. The JOURNAL has many good friends, but not enough of them.

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## THE ANNOUNCEMENT OF THE ROYAL COLLEGE OF DENTAL SURGEONS.

It must be generally recognized that the government and interior economy of the profession in Ontario, is worthy of much praise. No doubt there are defects common to every human effort, and there are, too, reformers who know exactly how to remedy those defects, but they are either too indiffident to open their mouths, or too indifferent. At any rate, Ontario licentiates cannot complain of being kept in the dark as to the proceedings of the Board of Directors, the Board of Examiners and the College. Each year they are supplied with a printed report, containing not only all the information required as to the act of incorporation, etc., but a detailed report of the minutes of the annual meetings of the directors. It has been a very general complaint in the province of Quebec, that neither at the triennial meetings for the election of a

new Board, in the reports of the officers, nor at any interval, are the licentiates supplied with proper information as to the business done by the Board. If a similiar state of affairs existed in Ontario for one year, much less for three, there would be a licentiates' rebellion. The dentists of Nova Scotia also enjoy the same annual source of information. It is preposterous that the skimped reports supplied only once in three years should be presented as sufficient to satisfy Quebecers. Every motion and the names of the movers and seconders—in fact, a complete copy of the minutes should be annually furnished in printed form. It is neither advisable nor convenient to read them all over at the meetings, as they should be read in two languages. It is better that the licentiates should know, as they know in Ontario and Nova Scotia months before the meeting, just what business the trusted stewards have transacted. It is essentially important, too, that they should have details as to the expenditure of their money. In all this, Ontario has the fullest information.

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### "ON THE FENCE."

We cannot understand that moral cowardice which is afraid openly to praise or condemn, but which sits timidly on the fence, ready to drop on either side, as the infirmity of purpose or interest may decide. We have vacillating members of our profession who hesitate to-day, as they might have done forty years ago, to express confidence in the saving merits of amalgam, and to disapprove of the unscientific nonsense occasionally written as to its "constitutional effects." Yet now they use it quite openly and frequently, when once upon a time they only used it on the sly. In conventions they, once upon a time, aimed to get credit as exclusively gold operators, or, at best, left the amalgam question *ad referendum*, either on account of constitutional inability to be firm or constitutional hypocrisy. Unless one has experimentally and scientifically proved his opinions they must be based upon ignorant prejudice. That was exactly the situation forty years ago or more. There was plenty of excuse for conviction founded upon pure conjecture half a century ago, both medical and dental. Men then jumped to conclusions, absolutely ignorant of phenomena which are so much clearer to us to-day. Every now and then some lineal descendant of the capricious practitioners of half a century ago, discovers a mare's nest, and persuades some of our contemporaries to print his shilly-shally nonsense. The dental profession does not relish such nonsense, even "now and then." Men who write it, and who fail to add anything new to the arguments offered in 1841, ought to be in league with the cranks who believe that the earth is square, and that the moon is made of green cheese.

### PLAIN TEETH VS. GUM.

There are many more plain than gum teeth used. There are two reasons for this: 1st, They are cheaper. 2nd, They are easier to adapt, saving cheap dentists and unskillful mechanics a lot of trouble. Whatever may be said in their favor in these directions offers no compensation for their weakness, and the ugliness of pink vulcanite as a substitute for pink porcelain. The pivots are asked to do more than they can do. What grip is there in the thin scrap of rubber which surrounds the two pivots of a plain tooth, especially the thin pivots of badly made cheap teeth? The real trouble is that it costs much more to select the proper gum set required, as well as to make the set. In an emergency it is easy to cut a block and give the teeth any irregularity desired. One can divide any gum block with a pair of scissors. Another obstacle in the way of using gum teeth is the fact that it is so hard to get a good selection in any of our local depots in Canada. They have to carry a large stock and distribute it among travellers and city practitioners, and it has become customary to rely upon the local depots. Every dentist ought to have a good stock of his own in his office.

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### EDITORIAL NOTES.

THE "virtuous indignation" of reformed offenders would make one of the most amusing chapters in the literature of dental practice. Jones is seized with the brilliant idea that if he can make the public believe that he has some qualification his rivals do not possess—even if he bought it in Illinois—he will get a good run of business, so he announces himself in the press as having these "superior" qualifications. Brown is bound he will not be behind Jones, so he "goes it one better," and gives out the public impression that he is specially a specialist of especially special skill. Robertson then makes the big sensation of advertising by the yard, boldly claiming to be an expert and an inventor, and a genius, when, in fact, he is a botch and a good bit of a ripe rascal. Then the virtuous Jones and Brown are indignant. They want Robertson prosecuted. If he had only lied in their modest manner it would have been no reproach, but to lie so much more audaciously is intolerable. The fact is, Jones and Brown, as the pioneers of the degradation, are the biggest sinners of the three.

IN making his editorial bow to the readers of *The Dentist*, Dr. J. Leon Williams very aptly remarks: "But a good dental journal cannot be made by an editor alone. He must have the cordial and persistent support of a considerable circle of readers

and contributors. It is, I believe a *fin de siècle* saying that if a man does not look out for himself, the chances are that he will be sadly neglected. The same truth has even greater force when applied to a profession, and we cannot help thinking that the profession of dentistry is not doing all that it could do—in truth, is doing but a small part of what it could or should do in its own interests. A good dental journal is the best means we have at present for securing concentration of effort and harmony of action in working for the best interests of our profession. These interests consist chiefly in improving the status of our profession, and in securing public and legal recognition of that status as attained."

TYPOGRAPHICAL errors are exasperating, both to an author and the printer. The printer deserves pardon when the author's writing, like that of the editor, resembles Egyptian hieroglyphics. We have apparently exposed our ignorance of spelling, grammar, etc., in these pages during the last year. We know better than to blame ourselves, and we know our own writing too well to blame the printer, so we'll just put it to the credit of the devil—the printer's.

OFFICERS of the Chicago Dental Society for 1899-1900, elected at the annual meeting, held in the Stewart Building, Tuesday evening, April 4, 1899: President, Garrett Newkirk; First Vice-President, G. W. Cook; Second Vice-President, B. D. Wikoff; Secretary, Elgin MaWhinney; Corresponding Secretary, C. S. Bigelow; Treasurer, A. B. Clark; Librarian, C. J. Merriman; Member Board of Directors, Edmund Noyes; Board of Censors, A. W. Harlan, Chairman; W. V. B. Ames, C. N. Johnson.

WHAT else but contempt can decent men have for those who act indecently? What claim upon our friendship or charity has the quack advertiser? Were we to make any show of any sort of sympathy for unprofessional actions, would it not be rank hypocrisy? It is all very well to blame those of us who detest and despise the quack-imitator. But, in all honesty, what else would you have us do?

THE next meeting of the Michigan Dental Association will be held in the city of Port Huron, Mich., at the Hotel Harrington., July 11, 12 and 13. A cordial invitation is extended to all members of the profession.

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#### FOR SALE.

Complete outfit and practice in large western Ontario manufacturing town. New Columbia dental chair and S. S. W. engine. Will retire. Excellent chance for young man.