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THE LATE DR. C. S. CHITTENDEN.

DOMINION DENTAL JOURNAL.

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Original Communications.

Dr. C. S. Chittenden—In Memoriam.

The announcement of the death of C. S. Chittenden, D.D.S., M.D.S., at the city of Hamilton on the 8th of May, 1889, was received by the dentists of Ontario, and by not a few residents elsewhere, with profound regret, and an unusual sense of personal bereavement.

It is safe to say that no man in our profession had among its members so many personal friends. For more than twenty years—ever since the first movement for associated effort in the advancement of dentistry in 1867—he has been prominently before them, and in his public, as in his more private relations to his professional brethren, his ability, courtesy, kindness of heart and general good-fellowship, endeared him to all.

Dr. Chittenden was born in Burlington, Vermont, in 1825. He belonged to one of the oldest families in New England, the descendants of one of the earliest Puritan settlers. His early educational advantages were not great, but of them he made the best use, and acquired habits of study and careful reading which were continued during his whole life. He studied dentistry with Dr. Nelson Chittenden, of Nunda, N.Y., afterwards graduating Doctor of Dental Surgery from the New York College of Dentistry in 1876. In 1849 he settled in the city of Hamilton, where during forty years of continuous practice, he gathered a clientage strongly attached to him, not only on account of his skill as a dentist but by a close personal friendship.

Always studious and progressive he held first rank as a dentist, and when the profession was incorporated in 1868 he was named in the Act one of the members of the Provisional Board of Directors and Examiners. His high place in the esteem and confidence of his fellow-practitioners is seen in the fact that, excepting a period of two years voluntary retirement, he has been continuously elected a member of the Board by their unsought suffrages. At the time of his death, and for thirteen years previously, he filled the honourable office of President of the Board. Among other valuable services rendered to the profession, Dr. Chittenden was, for several years, joint editor of the *Canada Journal of Dental Science*, and for a year and a half its publisher—a service rendered as a “labour of love.”

Endowed by nature with a fine musical talent, the Doctor found his principal recreation in the study and practice of music. In his adopted city he did very much to cultivate a taste for good music, and, as stated by a leading local journal, “was looked up to as the Nestor of the musical progress which has given the city of Hamilton an enviable reputation in the Dominion.”

Our departed friend was a “good man,” “fearing God and working righteousness.” In his earlier years he was a devout member of the Anglican Church. In later years his honest soul rebelled against the tendency to ritualism and sacramentarianism. Warmly attached to the Episcopalian form of worship and Church government, he associated himself with the Reformed Episcopal Church, where he rendered valuable service. Besides other important official positions he was leader of the choir, and superintendent of the Sunday-school. In few family circles will the head of the household be so greatly missed. To his children he was both father and companion. His widow and children, two daughters and two sons, have, in their bereavement, the sincere sympathy of an unusually wide circle of friends.

The funeral on the 12th May was attended by a very large concourse of citizens, conspicuous among whom were all the dentists of the city, and a number from Toronto and other points. The ceremonies were under the direction of the Masonic Lodge, of which he was a member. The Rev. Thos. Campbell, of the Reformed Episcopal Church, Toronto, and Rev. Dr. Lyle, of the Central Presbyterian Church, conducted the services at the house and at the church.

The remains were laid away in the beautiful Burlington Cemetery to await the “resurrection of the just.”

Dentistry in Ontario has room for a large number of men of the character and attainments of our friend, the late Dr. C. S. Chittenden.

J. B. W.

Polishing Disks.

By GEO. H. WEAGANT, L.D.S., Cornwall, Ont.

Every dentist recognizes, as a very necessary and important part of his work, the operation of finishing and polishing fillings, both of gold and amalgam; and, in order to quickly and effectually accomplish this work, innumerable devices, most of which are to be used with the dental engine, have been offered by manufacturers.

Perhaps the most popular of these, at the present time, are the little paper disks, cut in different sizes, and carrying polishing powder of different kinds and grades, ranging from the coarse corundum, used in lieu of a file, to the finest flour of emery, pumice stone, and rouge, which impart a brilliant polish to the filling. Their flexibility, which allows them to easily follow the contour of the filling, has no doubt been the means of rendering them a success, while their cheapness gives every one an opportunity to keep on hand an unlimited supply. Although these little flat disks are so very handy in most cases, we are often unable to use them at some particular point where their services would be most acceptable, but where their shape will not permit them to go. We reluctantly lay them aside, and proceed to finish our filling with other instruments—quite as effectual¹ may be as to the result, but requiring far more time, patience and care in their use.

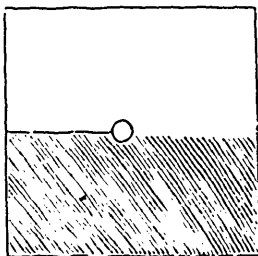
Now, why cannot sand-paper, or paper carrying any other grinding or polishing powder, be formed into suitable shapes to reach those parts where the ordinary disks will not go, and at the same time retain their flexibility? Many attempts have been made to overcome the difficulty of which I speak, but with only partial success. We have "depressed disks," which come to us in the shape of very shallow saucers or plaques. They are useful for some cases, and handy, as far as they go; but they do not go far enough. Then we have various appliances to be used with the disk, which bend or curve it in such a way that one edge is diverted from the proper path of its revolution, and made to reach out after the unattainable. I do not doubt that many dentists have found them to answer the purpose admirably for which they are intended, and that they have been able to overcome the unconscionable tendency of the disk to rumple itself into a hopeless state of tanglement, just at the moment when the desired portion of the operation was about to be achieved—or to refrain from using language shocking to the ear of a sensitive patient, when the rubber-dam is suddenly and violently torn from its fastenings, and sent whirling around a

rapidly revolving hand-piece, like a Dakota cyclone through a pile of shingles, carrying terror and devastation in its wake. Something is wanted to take the place of the little polishing-points of corundum, wood, rubber, celluloid, etc., etc., which are invaluable in their place, but do not possess the flexibility and elasticity of the paper disk. I would suggest little paper cones, of different sizes and angles. Having made some myself, and used them good. No one has put them be bought; but any dentist them for himself and for the benefit of those who might wish to provide themselves with these very useful little accessories, I will try to explain how they may be made. The very strongest paper should be used, but it must also be thin, so that when doubled it will be no thicker than that used for disks. Fine Irish linen writing paper for foreign correspondence I find makes the best cones. It is quite thin and not easily torn. Proceed as follows: Cut




and angles. Having made for years, I know them to be on the market, so they cannot ought to be able to make

half inches square, and punch make a small centre; then cut scissors from one side one-half of one side of with the incision just hold of the dry side bend it under and that the two sides will



in pieces one and one-with a harness-maker's hole exactly in the through the paper with to the centre, and gum the paper on a line made. Then, taking next to the incision, completely around, so be parallel with each

other, and the outside of the dry half be securely glued to the inside of the gummed half, making a perfect little cone with a round hole at the apex. With very little practice one becomes quite expert in making them, and it is surprising how many one can turn out in an hour.

When a sufficient number have been thus prepared, they are ready to receive a coat of shellac upon one side and polishing powder upon the other. When dry they may be cut down to convenient sizes with a pair of scissors. In using them it will be necessary to devise some way of holding them securely in the engine. I have constructed a carrier from an ordinary disk mandrel by and soldering a hollow  by removing the flat end, a brass cone in its place: a brass cone is also soldered to the screw. I dare say that some other arrangement might be made to little wooden shanks glued into a polisher. I think a selection found in the box of wood-



answer as well; for instance, each cone, and used in a port- for this purpose might be polishing points.

The Deciduous Teeth.

By F. A. STEVENSON, D.M.D., L.D.S., Montreal.

The deciduous teeth in man are twenty in number: four incisors, two cuspids, and four molars in each jaw. They do not appear till a few months after birth normally, but occasionally a child is born having one or two teeth above the gum. Marcus Curius is said to have been born with a full set in each jaw.

The time at which the temporary teeth appear is subject to some variation, but the following table will be found to be approximately correct:-- Centrals, sixth month; laterals, ninth month; first molars, twelfth month; cuspids, eighteenth month; second molars, twenty-second month.

The inferior centrals are the first to appear, and are followed a month or six weeks later by the superior centrals and laterals; the inferior laterals appear about a month later (*i.e.*, the ninth month). Then there is a rest of about four months, after which the first molars appear, followed by another rest of six months, and then the cuspids are cut. The cuspids are peculiar, in that they come *between* teeth already in place, and the eruption is slow and very painful. About two months later the second molars appear, so that all the deciduous teeth are usually erupted before the end of the second year.

There has been much discussion as to the kind of force which pushes the teeth through the gum. One theory is, that as the teeth grow up more dentine is added to the root, but this does not seem to be sustained by observation, *e.g.*, teeth with very stunted roots are often erupted, while some fully developed teeth may remain in the jaw for years and then begin to erupt: this is especially true of third molars.

The calcification of the roots of the deciduous teeth is not completed until some months after eruption; the laterals being the first (about the twelfth month after birth), and the second molars the last (about twenty-two months after birth). The roots are completed a little more than one year before absorption begins. The following is the order given by Tomes: Centrals, about the fourth year; fifth year in laterals; ninth year in cuspids; seventh year in first molars, and eighth year in second molars. Absorption goes on till the roots have entirely disappeared and the crown becomes loose and falls off. Absorption of the deciduous teeth is thought to be entirely independent of pressure from the developing permanent teeth. That the absorption of the root depends on the vitality of the pulp is shown by the fact that when the pulp dies absorption is arrested.

The deciduous teeth resemble the permanent in shape, but are smaller and more rounded. The molars have a marked projection or ridge of enamel near the gum, which enables them to be easily distinguished from the permanent teeth. The roots resemble those of the permanent molars, but are smaller and more spread apart, to give room for the crowns of the developing bicuspids.

Deciduous teeth are of softer structure than the permanent, and thus caries is not uncommon, especially in weak and sickly children. Treatment should be both general and local. General treatment consists in attention to hygiene, nourishing food, plenty of fresh air, exercise and sleep, will help to build up the system, and so the teeth will become better able to resist the attack of caries.

Local treatment is, in nearly all cases, to remove the caries and fill. The operations should be performed quickly and with as little pain as possible.

The materials used are oxyphosphate of zinc, gutta percha, amalgam and tin. Gold is not used, as it takes too long to introduce, and too much force is required to condense it. Oxychloride of zinc is not used, on account of its irritating properties, the pulp being very liable to die under it.

Oxyphosphate of zinc is good for all the cavities in deciduous teeth, especially shallow proximal cavities in the front teeth. It also gives a good grinding surface in the molars. It must be watched, however, as it is apt to dissolve away slowly, especially near the cervical border of the tooth.

Gutta percha is, perhaps, the most useful material for preserving deciduous teeth, especially if the harder preparations are used. It is a non-conductor of heat, and is not irritating to the pulp. It makes a fairly desirable grinding surface in molars, and does not dissolve away in proximal cavities. Gutta percha will cohere to the walls better if the cavity is first coated with copal-ether varnish.

Amalgam is very good for cavities in the crowns of molars, as it can be introduced quickly and gives a good grinding surface. In deep cavities, however, where the pulp is living, oxyphosphate should first be used, amalgam being a good conductor of heat and cold, while oxyphosphate is not. Gutta percha would be preferable to oxyphosphate, as it is less irritating, were it not that it shrinks and expands, so that in time the amalgam covering becomes loose.

Tin is used by some as a filling in the crowns of deciduous molars. It does not conduct heat and cold so readily as amalgam, and it is claimed that owing to its plasticity it will make a tight filling even if moisture is present, but this is doubtful. The force and length of time required to condense it more than offset any of the advantages claimed for tin.

Exposed pulp. When the history goes to show that the exposure is recent, and on examination the pulp seems to be in a healthy condition, it may often be successfully capped in deciduous teeth. In any case it is well to give it the benefit of the doubt, in order that, if successful, the absorption of the root may not be interfered with. In order to cap the pulp, excavate round the walls of the cavity and remove all loose debris near the pulp, leaving as much as possible covered by decalcified dentine. Mix some oxide of zinc with oil of clove and cover the exposure well; then flow in some creamy oxyphosphate, using the greatest care to avoid anything like pressure. After this has hardened, cover with cement of usual consistence. If the operation has been successful the tooth will not give pain: if it aches, remove the filling and insert a pledget of cotton, moistened with oil of clove and creasote, equal parts, cover this with a piece of cotton soaked in sandarac varnish, and let the tooth rest for a few days and then try again.

If the pulp is suppurating, or nearly dead, it may be destroyed by applying carbolic acid (90%). Arsenious acid should not be used, as the apical foramina are apt to be enlarged, undergoing either calcification or absorption, and the escharotic effect of the arsenic may not be confined to the pulp. When dead the pulp should be carefully removed, the canals cleansed and disinfected, and filled with gutta percha or oxyphosphate cement.

In cases where the crown has decayed away and only the root remains in the jaw, it may be left, if causing no inflammation, until it is time for the permanent teeth to appear. It must be watched carefully, however, and if there is any indication of the permanent tooth erupting out of line, owing to the presence of the deciduous root: it should be extracted at once.

Extraction of the deciduous teeth is in most cases easy, the roots being smaller than in the permanent teeth. Great care must be taken not to injure the permanent teeth, especially in extracting the molars, the roots of which embrace the crowns of the bicuspids. Extraction should not be resorted to unless the tooth is loose and painful, or is wedging one of the permanent teeth out of proper position, because premature extraction makes the eruption of the permanent teeth more difficult, on account of the cicatricial tissue which is formed, making the gum hard, and tending to contract the space between the remaining teeth.

Irregularities of the deciduous teeth are very rarely met with, and are not serious enough to require special treatment.

Difficult eruption of the deciduous teeth is apt to be accompanied by disorders of the alimentary canal, and, in some cases, by convulsions or death. Early eruption is more frequently attended with constitutional

disturbance than late. Lancing the gums will relieve the tension and pain, but must not be done till the ridge is hard and white, showing that the teeth are near the surface, or a cicatrix will form, which will be harder for the tooth to penetrate than the gum uncut. The writer in the "American System of Dentistry" claims the opposite to be the case, and recommends frequent lancing, on the ground that cicatricial tissue being less highly organized than the gum it ought to be more easily absorbed. The incision for incisors and cuspids is in the line of the arch; the molars should have a crucial incision, running from one cusp to another, and intersecting as near the middle of the crown as possible. An oozing hæmorrhage has sometimes occurred after lancing, and may be due to sucking the gums. This can be prevented by keeping the mouth open for a short time (two minutes) by means of a bit made of linen or something soft. If this is not successful, a styptic such as alum or tannin may be applied. In constitutional disturbance as diarrhoea, constipation, fever, etc., it is better to call in a specialist in children's diseases.

The deciduous teeth are finally shed just before the eruption of the permanent, usually in the following order: Incisors about the seventh year; cuspids between the ten and twelfth year, first molars about the ninth and second molars about the tenth year.

Dental Fees in Canada.

BY "ONTARIO."

There is nothing I would despise more than money—if I could afford it. It is, indeed, "filthy lucre" when applied to Canadian and American bank-bills. Money ought not to be the chief aim of the honest dentist; yet, I would not affect that high-toned hypocrisy which pretends to sneer at the almighty dollar. It is a many-sided question to the dentist as well as to the doctor.

I do not know any character more despicable than the money-grabber whose soul is in his pocket, and who values his victims in proportion to the fees they can pay. But to no man so much as the honest dentist, is the question of remuneration more important. The quack or rascal can trim his fees to suit his dupe. He can plug or plaster with a conscience as mobile as wax; but at every step the honest dentist never thinks of dishonesty. To him the work at his finger ends is superior to the pecuniary result. Circumstances may force him to refuse his attention; but once it is given, the idea of profit becomes secondary. It is a fact to be proud of

that to-day, when the cost of living and of practice have very largely increased, while the fees have not, the quality of a large proportion of dentistry in Canada is greatly superior to what it was when we were better paid. The change is not because of the vices of the quacks, but because of the virtues of the best men. A quack will be a quack whether he shovels coals or fills teeth. But he teaches the public to believe that those who ask high fees are extortionate, and that, after all, there is not much difference between cobbling shoes and plugging teeth; that one dentist is as good as another, and that if there is any difference it lies in his favour. What are we doing to counteract this? Unconsciously the quacks form a fraternal brotherhood. I know very inferior men who demand very superior fees, and it is curious that some otherwise very wise people, accept this demand as sufficient proof of ability! But let me allude to some reasons why our fees, as a rule, in Canada should be increased. And I would premise by saying, that there can be no better check upon the admission of men likely to reduce fees to the quack standard, than a stiff matriculation examination, which will exclude men of inferior mental calibre.

The public demand from us a severe amount of personal attention and concentration. The clergy work their brains and, with all respect to them, have a comfortable time of it. The physician drives about in the open air enough to compensate him for any unhealthy air he has to breathe, and enjoys distinction and remuneration for very little outlay we may envy. The lawyer manages to thrive out of the meanest miseries of mankind. The dentist has a heavy outlay from day to day; he has close confinement in unhealthy and monotonous positions; a strain upon eye-sight; a drain upon his nervous system, which soon leaves its trace. There are no recompenses or rewards for him away from his operating chair. The profession has a circumscribed sphere. Every other has public and corporate honours and appointments of money value open to them. The physician draws his fees from a dozen sources outside of his patients, as examiner in insurance companies, as expert, etc. To the dentist there is absolutely nothing, unless it is in circumstances where he has the privilege of giving his skill and experience gratuitously for some public good. He has only the few hours of daylight to operate; as a rule, half his time is positively wasted in unpaid consultations. He gets no more for a difficult case in extraction than for a simple one; for artificial sets difficult to adapt. We should make distinctions, and charge according to the special difficulty of a case. I have even known men holding the highest positions, to charge rich patients no more for repeated treatment previous to filling, than for a simple case; and either to refund the fee charged for filling a tooth, which had afterwards to be extracted, or to refuse payment for the extraction!

For many years I have made a rule of giving patients the preference of operations by the hour, and I find it an admirable plan, especially in the case of children or nervous people who give extra trouble. I quite understand that in a world made up of all sorts of people, there must be great elasticity in our scale of fees; but for real honest skill and experience there are not the rewards in Canada there should be, and it is no surprise to find some of our best men leaving us or our ranks. I believe Canadian dentistry is equal to any in the world. There is nothing done in any department in any country that cannot be as well done in our Dominion; but the question of remuneration is a mighty casuist, and men are rare who do their best when poorly paid. Materials cost us more in Canada than over the border. We have many difficulties to contend with. But the chief among sinners is the dentist who cheapens his services, not because he knows them to be inferior, but because he finds it a profitable catch-penny. The profession in Ontario now occupies a position second to none, thanks to the action of the University of Toronto. I must conclude by saying that the journal which preceded the *DOMINION DENTAL JOURNAL* did an enduring service to the profession, in the high stand it always took respecting the dignity of the profession in Canada; and we are profiting to-day, every man of us, and our students, by the noble work of those who were the pioneers. That history cannot be revoked; the future is in our hands to-day. Let us not pull it down again by reviving jealousies and discord, which ought to have no place, where men are sincere in their desire to promote dental "science, art and education."

"Head Rests."

BY L. D. S.

Had Shakespere lived in our time, and been obliged to sit for an hour or more in one of our modern dental chairs, he would probably have felt disposed to parody his own line in King Henry IV:

"Uneasy lies the head that wears a crown."

I remember when I was a student the big broad rest, that was not only a head rest for the patient, but an arm rest for the operator. I remember the one used by my preceptor, and which his successor has had the good sense and independence to keep and use ever since. It was a grand-father sort of an arrangement, but it was, and still is, a grand old chair, and like Chevalier's lathe—long since abandoned—was one of the most practical ever in use; with no nonsensical gim-cracks and valueless embellishments,

but a simple, sensible and comfortable chair, with a head rest that accommodated every head and fashion of hair. I have frequently asked manufacturers why they made this part of the chair so small and uncomfortable, and have never yet got a good reason. Every operator knows the continual nuisance on the part of both patient and dentist to get the head into place. Half the time the patient rests his head on one outside edge. At best, in the best and expensive chairs, it is the one specially uncomfortable part of the chair, and if you attempt, as I did, to have a wide and large rest adapted, you will find that the ball and socket is too weak to stand the strain, and your improvement, like so many other things in our time we attempt to improve, needs another improvement, until you can improve the entire chair out of existence. Will some one whose anathema is authoritative, hurl forth a tirade against the small head rest of the fashionable chair?

Another very serious objection, which persistently tires my patients, is the hollow caused between the back of the skull and the shoulders, by the distance of the head rest from the upper part of the back rest. I am repeatedly obliged to use a small roller-cushion to fit into this space. We have an arrangement of the back by which we may accommodate the bustle, but none by which we can make the neck comfortable. A great deal of unnecessary ingenuity has been spent in parts of the chair, not half as important as the head rest. Perfect that, and even the weary dentist after his day's work is over, or when he can indulge in a *siesta* in office hours, would prefer the luxurious repose on his own chair to a bed or a sofa, and never once think of a modern Shakespeare exclaiming: "Uneasy lies the head on dentist's chair."

Certain Peculiarities of the Maxillaries.

By J. A. BAZIN, L.D.S., Montreal.

Dr. F. H. Hooper, of Boston, has recently published a pamphlet on the "Mechanical Effect of Adenoid Vegetations in Children," in which he sets forth the theory that these highly vascular growths in the nasopharyngeal cavities, by blocking up these air passages, prevent their use in breathing, and force those thus afflicted to breathe through the mouth. He goes on to illustrate the general effect of these growths, such as contracted chests, structural changes in the ears, ill-developed bones of the face, and malformation of the upper jaw. Oftentimes, in his

experience, parents have attributed all these disorders to catarrh and cold in the head, with the hope that the child would grow out of it; and sometimes, in the case of robust constitutions, this does occur through atrophy. It would appear that this disease is of recent discovery, and much of the evil has been charged to enlarged tonsils, and their removal is the sure cure. The Doctor gives data that go to prove that this trouble is very extensive in New England, and possibly in Canada. For since June, 1885, he has operated upon no fewer than 240 children, varying in age from eight months to sixteen years.

The paper is very full of information concerning the results of his experience, but is too long for me more than to quote a few selections pertinent to the dentist. Referring to infancy, he asks: "What does it mean for an infant to have its nasal breathing impeded? It means starving for air, and the younger the child the more difficult it is to get air into the lungs through the mouth, as the infant's mouth is completely filled by the tongue and soft parts. . . . But if the upper air tract is in normal condition, the infant breathes, sleeps, and nurses noiselessly and without effort."

Referring to the mechanical effects of these growths, he says: "On the outside of the body they are chiefly noticeable in the shape of the soft parts and bones of the face and the walls of the chest. On the inside of the body we can see narrow nasal chambers, the deformed upper jaw, the high palatine and narrow dental arch, and irregularity of the teeth." The *modus operandi* he explains in this way: "The naso-pharyngeal cavity being blocked up, mouth breathing results, the weight of the hanging lower jaw causes the face to become elongated, lines and furrows are formed at the angles of the nose and mouth and corners of the eyes, cheeks sunken, nose pinched, the frontal, sphenoidal and ethmoidal sinuses and the antrum, being normally in communication with the air, cease to develop when the circulation of the air is interfered with." The Doctor thinks there is a definite relation between these growths and the V-shaped palatine arch. He declares it is always present in typical cases of this complaint, and expresses his belief that teeth have been extracted and ingenious mechanical devices worn to correct deformities, that have failed to secure the result desired because of the atmospheric effects produced by this complaint.

Referring to the speaking and singing voice, the Doctor says: "The voice, instead of being clear, is thick, muffled, stuffy, which is readily explained by the sound waves impinging on the soft, irregular growths, instead of upon the smooth walls of the resonator, and is said to be 'dead,' the nasal consonants m, n, ng becoming b, d and g hard."



Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.

It is a satisfaction to know that "these growths can be removed, and when done will not recur." The evil is that they lead to results which may be very serious.

Leaving Dr. Hooper's paper, I wish to present a case which seems to emphasize in a marked degree just what has been referred to. It is a case of malformation of both the upper and lower jaw, with irregularity and protrusion of the upper front teeth, a model of which I here present. (See cuts No. 6 and 7.) It is of a twin child (brought to me in the spring of 1887), about twelve years of age. She had been for years a sufferer from catarrh, so-called and treated, for deafness, and was at the time spoken of under treatment by a specialist. In a few weeks he was able to remove what proved to be a gold cuff-button from the nose. Needless to say, improvement to health immediately became manifest, and I began the correction of some of the irregularity of the superior teeth, the result of which is highly satisfactory. Upon investigation and inquiry, I found that at about the age of three years, a boot-button was removed from the nose of this child by a surgeon in London, Eng., on the same day it was placed there by the child. But events go to show that the cuff-button was already in the nose when the boot-button was taken away. Up to that time she was a healthy child, but soon after stains appeared on her pillow, and she had to make frequent use of the handkerchief. The discharge ceasing at times for days, pains in the head would occur, followed by relief when the discharges began. The last two years large quantities of dark-colored matter came away night and day, and she was very deaf at times. Her articulation was very imperfect, sleeping with her mouth open, and in fact during her waking hours her mouth was seldom shut.

Now, it would seem that this gold button had produced similar conditions that adenoid growths do, impediment to nasal breathing, open mouth, and an influence which, I think, has escaped Dr. Hooper, viz: the effect of the tongue lying within the lower jaw causing it to widen and expand beyond the upper. If the conclusions arrived at by the writers on this subject are to be accepted—such as atmospheric pressure exalting the superior arch, impeded air passages preventing development of the facial lines—it would be reasonable to expect that the weight and force of the tongue would have a similar effect upon the lower jaw, causing the bicuspid and molar regions to be pressed outwardly. That it has so in this case cannot, I think, be doubted, for it will be seen by the models that the molars and second bicuspid of the lower jaw are outside of the normal articulation. The depression of the superior bicuspid and sixth-year molars is also quite marked, and in this case a very short upper lip

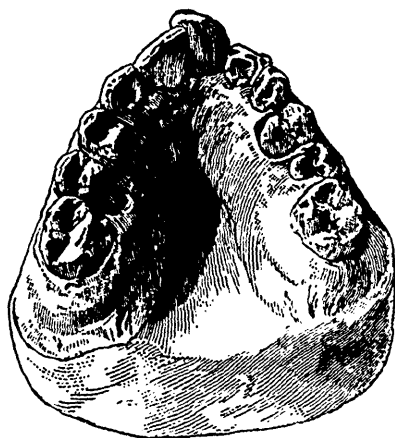


Fig. 5.

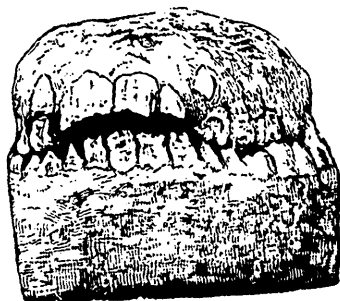


Fig. 6.



Fig. 7.



Fig. 8.

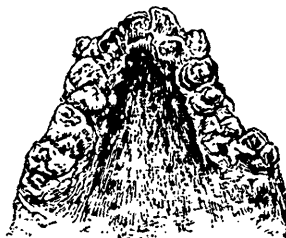


Fig. 9.

has doubtless had an effect upon the incisors, compelling the cuspids to erupt high up and outside the arch. It should be borne in mind that the impediment to nasal breathing did not occur till after the first dentition had taken place, and considerable development of the oral cavity had obtained; therefore, the irregularity, being of the type referred to in Dr. Hooper's paper, is more noteworthy. I may also mention that mouth breathing still continues, and extensive enlargement of the tonsils, but all manifestations of catarrh have ceased. From causes beyond my control I have been unable to accomplish all I desired, but I show models of what has been done up to this time.

I also present another case (see cuts No. 8, 9) which gives another variation of irregularity, but with many of the distinguishing features of the other, viz: the wide lower jaw, the depressed upper bicuspids and molars, and high arch, but with a *massing* of the superior incisors and cuspids. This is another case of mouth breathing and defective articulation. Patient is nearly twenty years of age; and only came under my care a few months ago. Her early history is not obtainable in all the detail that I would wish, but sufficient, I hope, with what I otherwise present, to bring this matter of the influence of obstructive nasal breathing and the injurious effects of mouth breathing, to the earnest consideration of the dental profession, and through our co-operation with the medical, try to prevent the numberless ills resulting therefrom. Cuts No. 1, 2, 2, 4, from Dr. Hooper's pamphlet, showing appearance of children having adenoid growths; cut No. 4 being cast of upper jaw of cut No. 4, aged 10.

Extracting Difficult, Broken Roots.

By J. L. BROSS, L. D. S., Winnipeg Man.

When I find a difficult root of a tooth that is broken deep in the alveolus, I select a fine drill and a small screw-nail a little larger than the drill. I then drill into the root, and insert the screw. Instead of grasping the root alternately by cutting through the alveolus, giving much unnecessary pain, and as in the case of the cuspids causing ugly gashes with the alveoli forceps on account of the thinness of the outer plate, I grasp the screw-nail without touching the gum, or the process. In this way, I can extract any root, no matter how badly it is broken. It is far ahead of the orthodontic screw forceps and the ordinary screw. It does not look very scientific, but it is successful, which, after all, is what you or I would look for if we had just such a root to extract.

Sulphuric Ether and Inhalers.

By C. J. MORTON Stanstead, Que.

The use of anaesthetics in dental surgery will likely continue as long as the extraction of teeth may be necessary ; and it is important to dentists that the best and safest means should be discovered to administer those which are most favored in operations in the mouth, especially if of a prolonged character. Situated as I am, in a country practice, it has not been heretofore convenient to use nitrous-oxide gas, which has very much to commend it, and I have been forced by circumstances to select sulphuric ether for exclusive use.

The sulphuric ether used for inhalation is purified by agitation with water, and is freed from an excess of alcohol by the action of chloride of lime and freshly calcined lime. Though sulphuric acid is used to make ether, there is no sulphuric acid in pure ether, as it is removed by distillation. Yet it may frequently happen that the commercial article, especially if manufactured by firms of no chemical repute, may contain impurities of a dangerous character. To know if ether is impure, dip a piece of litmus paper into it. If there is acid, it will redden the litmus. Other tests are as follows : Place a little on a watch-glass ; if pure, it will leave no residue. Also pour a little in a common test-tube ; if pure it will boil by the heat of the hand. If the purest ether is kept too long in a warm place or with a loose cork it decomposes. It is therefore absolutely necessary for success, both to rapidity of etherization and safety, that the material used should be as absolutely pure as chemistry can make it.

I have been led to make some special research as to the best mode of administration, because of repeated failure to hasten and deepen the anaesthesia in the ordinary way. The common cones used have many objections, among which I may mention the following : The unpleasant coughing and the oppression in breathing, caused by the too instantaneous application of the ether in a confined space ; the frequent scaring of the face, if the ether is spilled on the side of the cone, or if the sponge inside containing the anaesthetic comes in contact with the nose or face ; it wastes the material ; it confines the air too much. In administering ether it is important to hasten the process, that is, to get the patient to sleep as quickly as possible with the least amount of ether. Even if with an ordinary cone, a tube of glass may be passed through the back into the sponge, and before the ether is poured in, which may be done without removing the cone, it is best to allow the patient to breathe through the inhaler

several times to subdue any fear, and gradually flowing the ether through the tube. In connection with this paper I take the liberty to exhibit an inhaler of my own construction, designed to facilitate the administration, to hasten the process, to save time and material. I used this constantly in my late father's practice in Stanstead for eight years, and nearly all the physicians in that locality have used it personally, or had me to assist them in operations, not only in the mouth, but in more serious surgical operations. I have found very much less of the troublesome coughing and suffocation, loss of color, while the average time of anæsthesia varies from four to ten minutes. The breathing can be most accurately watched at the "globe," as every inspiration is there recorded to the eye. It is also unnecessary ever to disturb the patient by removing the inhaler from the face, as the ether can be poured through the valve to the sponge. There are a few important points in administering ether not as necessary to success as purity of material, yet preferable if possible to obtain them. One is, to administer the anæsthetic in a cool room before breakfast after the patient has had a night's repose and the system is freshly prepared for it. Another is to begin and finish the operation with the patient in a reclining position, and not to raise the patient fully erect, at least, until recovery is pretty well advanced. It is better to turn the head to one side to let them eject the blood than to elevate the chair. It is considered unsafe to give ether in cases of apoplexy, epilepsy, idiocy, and also care has to be used in cases of stout people. If the patient snores loudly, withdraw the inhaler and raise the chin, not the whole body, when respiration is quick withdraw it. The usual care is necessary to remove or loosen collars and corsets, and artificial teeth from the mouth. I have avoided using stimulants, as a rule, before administering ether: as an exception it may be proper where the pulse is feeble and the blood impoverished, especially when the patient is not accustomed to stimulants.

Nitrous Oxide in Excavating Dentine.

BY X. Y. Z., TORONTO.

When nitrous oxide gas was first introduced in its condensed form into England, one of the first experiments I performed with it was inhaling it in the office of a dentist in Liverpool, to relieve pain in the excavation of sensitive dentine of my own teeth. I was travelling at the time, and found I had to submit to an operation at a time when my nervous system was

un-strung, and it occurred to me that if nitrous oxide was the safest though the shortest anæsthetic for extraction, it ought to suffice for the operation in question. After its introduction into Canada by Johnston Bros., I regularly used it for the purpose, and I remember assisting at its use in Montreal, when the late Drs. Bernard and Webster both used it at my suggestion in their own offices. I am aware that very many now use it not only here, but in the States and in England.

However, I would advise the admission of air in every case, where repeated inhalations in prolonged operations have to be taken. There is no necessity in any case to carry it to the extent of full anæsthesia, because we must remember that it is not a toy to be trifled with. Although no deaths have occurred, there have been hundreds of evil results such as headache, persistent nervousness for months, and other effects which are not alone due to impurities in manufacture, but to idiosyncrasies of the patient. When the blood ceases to be oxygenated, carbonic acid accumulates, and the condition is nothing more nor less than one of asphyxia. If nitrous oxide was continued as long as ether or chloroform, and did not its effects rapidly subside, we would hear of fatal cases by the score, for my conviction is, that there is no more abused article in our dental materia-medica than this so-called "painless" gas.

Insensibility is produced in perfect consciousness, and while it is questionable if it is not best for severe shock to carry it to the extent of full unconsciousness, it is unnecessary to do so when used for lancing abscesses in the absence of cocaine, or in administering for the excavation of sensitive dentine. Recently, I had several cases of nervous prostration from too frequent use for excavation, and my experience leads me to warn operators not to imagine that they or their patients can play with the gas. To produce perfect anæsthesia and prevent excitement, we know it is necessary to exclude atmospheric air, but I repeat my belief that for such cases as I mention it is better to admit air. I confess I have had more success however, from a mixture of oxygen and nitrous oxide.

Notes from the Proceedings of Societies.

Dental Convention at London, Ont.

The first annual convention of the Ontario Dental Society was held in the Masonic Temple, London, June 27th and 28th. The attendance was quite large, and representatives were present from all parts of the Province,

The report of the committee appointed in Toronto to prepare a code of ethics was received and adopted. Dentists wishing to become members of the society were required to pay a membership fee of one dollar, and sign a declaration promising obedience to the rules of the society. Nearly all complied, and within a few minutes the society was established with a good membership. The code of ethics adopted by the society dealt chiefly with the subject of unprofessional conduct, particularly in the manner of advertising. The following will be considered unprofessional advertising :

1. Handbills distributed on the streets or through the newspapers.
2. Advertisements in the newspapers offering to do work at certain prices.
3. Advertisements stating that the advertiser is the only dentist using a certain process in either operative or prosthetic dentistry.
4. Advertising to extract teeth free on certain dates.
5. Advertising by the use of photographs, lithographs, or cuts.
6. Advertising by the use of show-cases at the front door or window, or by the use of show-cases at fairs.
7. Advertising in such a manner as to claim superiority to all other dentists.
8. Advertising to perform dental work at reduced rates.

It was resolved that this code may be amended, or additions made to it, at any regular meeting of the society, and that members convicted of having violated any of its provisions shall be expelled from the society.

The election of officers for the ensuing year was then proceeded with, and the following were unanimously elected : Geo. C. Davis, London, President ; N. Pearson, Toronto, Vice-President ; C. V. Snellgrove, Toronto, Secretary ; S. Wolverton, London, Treasurer.

Some other matters of a business nature connected with the founding of the society having been disposed of, it was moved by Dr. Willmott, seconded by Dr. Martin, and unanimously resolved :

1. That the members of the Ontario Dental Society have learned with profound sorrow of the death of Curtis Strong Chittenden, D.D.S., L.D.S., of the city of Hamilton, on the 8th day of May, 1889.
2. That we embrace the opportunity of our first meeting since the sad event, to place on record our appreciation of the high character of our deceased friend, of his valuable services to the dental profession extending over a period of forty years, and of his uniform courtesy and kindness to his professional brethren, and to give expression to the profound sense of personal loss and bereavement which we feel owing to his removal from our midst.
3. That we convey to Mrs. Chittenden and her family our sincere condolence in their affliction, and assure them of our warmest sympathy.

4. That these resolutions be entered upon the records of the society, and that the secretary be instructed to have an engrossed copy prepared, signed by the president and secretary, and forwarded to Mrs. Chittenden.

The remainder of the first day was devoted to the reading of papers and discussions upon the same. Dr. Willmott read a most interesting paper upon "Dentistry of Age," in which he reviewed the history of dentistry in Ontario since the passing of the Dental Act twenty-one years ago. This paper was considered so valuable that Dr. Willmott was asked to donate it to the society for publication. Dr. Hipple, of Stratford, read a paper on "Aluminum as a base for Artificial Dentures," setting forth the advantages of this new and wonderful metal. Dr. Martin, of Ottawa, in a paper on "The Past, Present and Future of Dentistry," presented some interesting facts in connection with the early history and progress of dentistry, and some careful speculations in reference to the future.

The next forenoon was devoted to clinics in the offices of city dentists. Dr. Beam constructed a Richmond gold crown, and Dr. Snellgrove a Richmond crown with porcelain front. Dr. Pearson inserted a filling with crystal gold, and Dr. Weagant demonstrated the use of copper amalgam. Dr. Teskey exhibited some microscopical specimens in the rooms of the Entomological Society.

In the afternoon the visitors were entertained by the local dentists. Cozy carriages were provided, and a delightful drive, lasting several hours, was taken through the city and suburbs. Towards evening, the entire party was conveyed to Springbank by the steamer "City of London," which had been chartered for the occasion. The beauties of this place having been seen and admired, the party sat down to an excellent lunch in the pavilion. Toasts were drunk, speeches were made, and songs were sung, and a most enjoyable hour was spent. Dr. Roberts, of Brampton, then read a very instructive paper on "Alveolar Abscess," and, after a short discussion, the "City of London" was boarded for the return trip, the city being reached early in the evening. While the convention, as a whole, was an undoubted success, all agreed that the entertainment provided by the city dentists was *the* feature of the meeting, and more than one was heard to say that that alone more than repaid him for his attendance. The next meeting of the society will be held in Toronto, beginning on the third Tuesday of July, 1890.—(A. H. H.)

Eastern Ontario Dental Association.

By JOHN ROBERTSON, L.D.S., Secretary.

The tenth annual meeting of the Eastern Ontario Dental Association was held in the Young Men's Club Rooms, Cornwall, on the 18th and 19th of June, and proved unusually successful.

President Clint, L.D.S., of Almonte, occupied the chair, and about twenty of the most prominent dentists of Eastern Ontario, also some of the resident physicians, took part in the proceedings.

The election of officers for the ensuing year resulted as follows: J. C. Liddell L.D.S., of Cornwall, President; J. C. Bower, L.D.S., of Ottawa, Vice President; J. Robertson, D.D.S., of Ottawa, Secretary-Treasurer.

Considerable discussion took place on the proposed new Dental Taxation Act, and the feeling of the meeting was strongly opposed to any new innovation which would have a tendency to place licentiates under any such obnoxious law.

After the general routine of business was completed, the President called on C. A. Martin, L.D.S., of Ottawa, who read a paper on "Mechanical Dentistry," giving a very full description of the various modes of retaining artificial teeth by plates. He emphasized particularly the practicability of vulcanite, and also dwelt at some length on the more modern system of bridge work.

The next paper was on "Plastics as a Filling Material," and was very ably handled by C. B. Mansell, L.D.S., of Carleton Place, who approved of cement fillings in a great many cases where gold would prove a failure.

G. E. Hanna, L.D.S., of Kemptville, read a paper on "Dental Ethics, and extolled the men of high professional principles, and with equal if not more vehemence denounced the "itinerants" or "quacks" who always degrade any profession they may happen to enter.

Several peculiar cases of difficult diagnosis were given by Messrs. Hanna, Clement, Flint, and Martin, which elicited a great deal of discussion, and were both interesting and instructive.

The morning of Wednesday, June 19th, was devoted to clinics. G. J. Clint, L.D.S., of Almonte, made a gold crown for an inferior left second bicuspid.

J. C. Bower, L.D.S., of Ottawa, attached an all gold crown on a superior left first bicuspid root.

An approximal cavity in a superior central incisor was filled by S. S. Davidson, L.D.S., of Ottawa, who used Watt's sponge gold.

G. H. Weagant, L.D.S., of Cornwall, explained the peculiar tooth-saving properties of his copper amalgam, and the proper way of manipulating the same.

In the afternoon the visitors were driven to the principal places of interest, including the paper factory, after which they embarked in a pretty little steam yacht, chartered for the occasion, for Stanley Island, where a sumptuous dinner at the Lansdowne House was in readiness for keen appetites, made more so by the bracing air of the St. Lawrence.

The party was pleasantly augmented by some lady friends, who added not a small quota to the enjoyment, particularly to the bachelor members of the convention.

After toasts and short speeches, the party returned to Cornwall, where the convention was adjourned—to meet next year in Ottawa—all having expressed themselves highly pleased by the right royal manner in which they had been entertained by the resident dentists of Cornwall.

DENTAL ASSOCIATION, PROVINCE OF QUEBEC, BOARD OF EXAMINERS.—The annual meeting for the examination of applicants for license to practice in the Province of Quebec, was held in the rooms of Laval University, Montreal, by kind permission of the Faculty. The full Board were present: Dr. C. F. F. Trestler, President; C. Brewster, L. J. B. Leblanc, S. Globensky, Geo. W. Lovejoy, E. Casgrain, W. Geo. Beers.

The amended Act was submitted, and the Committee on By-laws presented a report embodying a draft of a new code, which with the Act, was ordered to be printed and sent to the Licentiates.

The examinations are divided into primary and final: the former consisting of anatomy, physiology, chemistry, and a sessional in mechanical dentistry may be passed after attendance upon the required lectures. Students producing certified tickets of having successfully passed in the examinations in the three first in any Quebec Province Medical College, are exempt from examination on these subjects before the Board. The oral examinations are by and before the full Board. In the written 100 is the minimum, fifty necessary to pass. Seventy-five and over is first-class, sixty-six second class. Failure in any one branch involves rejection.

After two days severe examination the following gentlemen were received and were congratulated by the President, Dr. Trestler. Messrs. F. A. Stevenson, C. H. Moulton, Stanstead, J. B. Vosburgh, J. Fitzpatrick, J. Mongon, C. H. Cotton. Messrs. W. J. Kerr and W. T. Throwsby passed the primary. One candidate for the final was rejected. The next meeting of the Licentiates for the election of a new Board will be held in Montreal in September. Preparations are being made for a whole day's convention. to

discuss papers, clinics, etc., the day previous to the meeting. Due notice will be sent to the members. L. J. B. LEBLANC, *Secretary*.

The following extract from the new By-laws will be of interest :

"Among other things, the following are deemed derogatory to the honor and dignity of the dental profession :

(a) Aiding or abetting, by a licentiate, in the violation of any clause of the law respecting the said profession in this Province.

(b) Allowing, by a practising dentist, any person not being a licentiate to practise said profession under his name or patronage, or under any name or style whatsoever in his office.

(c) Entering, by such practising dentist, into an agreement with a rejected candidate for final examination, so as to enable him to unlawfully practise said profession, or to evade the law respecting the practise of dentistry in this province.

(d) Allowing, by such practising dentist, a licentiate then suspended from the exercise of said profession to practise it under his name or patronage, or in his office, under any name or style whatsoever, or entering with him into any agreement so as to enable him to unlawfully practise said profession, or to evade the law respecting the dental profession in this Province.

Licentiates are not allowed to open branch offices under the charge of students or other unlicensed parties."

FIFTH, SIXTH, SEVENTH, AND EIGHTH DISTRICT DENTAL SOCIETIES OF NEW YORK STATE, OCT. 25TH, ETC., 1889. — *Continued from page 78.* — Dr. G. L. Curtis, referring to root-filling, believes in the immediate method as a rule. Prefers iodoform and peroxide of hydrogen as disinfectants in cases of abscesses where there is no fistula, that is in blind abscess; he goes through the gum to the apex with a lever, and then injects the sac with peroxide.

Dr. F. W. Law quoted figures to prove that ninety-seven per cent. of his cases had been successfully treated by the immediate method. The first essential is to cleanse pulp cavity. Uses peroxide, followed by bichloride of mercury solution as a germicide. If there is a blind abscess, peroxide will penetrate and cleanse it. If it will penetrate the tubuli of the dentine, why not an abscess? It will go where no instrument will penetrate. Drilling through the alveolus in blind abscess is good practice.

Dr. G. L. Curtis. Moisture is the cause of many abscesses. The treatment of root canals requires perfect dryness. Prefers the canal points of Dr. Darby. Then with the hot air syringe drives the hot air in until perfect dryness is secured. Uses chlora-percha for filling canal. Uses rubber

dam and never lets fluids of mouth enter the canal, as they carry up destructive agents. After filling the canal partially with the chloroform solution, drives up gutta-percha points. Dr. C. F. Rich used quill tooth-pick cut down as fine as desired, and barbed if required, instead of metal. —(*Cosmos.*)

Selections.

Embryo of a Parasitic Entozoa from a Tooth.

By JABEZ HOGG, F.R.M.S., M.R.C.S., Etc.

We are indebted to the Hon. Edward Murphy, of Montreal, for the loan of a paper reprinted from the *Journal of Microscopy and Natural Science*, July, 1888, and sent by the author to the Montreal Microscopical Society. The early writers who thought that the pulp of the tooth was a worm, would have been in the seventh heaven of physiological positiveness could they have but met with the parasitic entozoa examined by Mr. Hogg.]

Quite lately a medical friend requested me to examine and report on an interesting microscopical specimen, which it appears had "puzzled" him a good deal, and he was therefore the more anxious to learn something of its natural history. The "worm," as he termed it, was removed from the tooth of a domestic servant, who had suffered sometime from toothache and neuralgic pains of the face. The removal of a molar tooth afforded only temporary relief. At the end of three or four months, and on finding medical remedies of no avail, she met with a gipsy, who recommended her "to smoke the worm out of the tooth with henbane seeds." She obtained the seeds, and having placed them, as directed, on hot cinders, allowed the fumes to pass into her mouth. In a very short time, "six or eight worms dropped out of her teeth into a tumbler of water." This for a time seems to have afforded her relief, but as the pain again returned, and for which remedies proved unavailing, my friend, on one of his visits, induced her to use the henbane fumigation in his presence. In a very short time "a minute worm" wriggled from the mouth, and was caught in a tumbler of water. This he carried away with him, and on his return home put it up in a temporary cell, which was sent to me for examination. I may first say that, so far as I know, no precisely similar case has been well enough authenticated to be placed on record. Accounts have appeared, and to the effect that violent attacks of toothache have been traced to a "worm" lodged in the cavity of a decayed tooth. Furthermore, it has been said that the "worm" has been "smoked out," as in the instance related, by

henbane seeds. Such statements have hitherto been regarded with a good deal of incredulity by the medical profession. I may mention, however, that I have met with two or three well-authenticated cases of "worms" lodged in the nasal cavities, and there producing alarming symptoms, which have subsided after the worms were dislodged by tobacco smoke.

It is no uncommon error, which my friend has fallen into, of describing the specimen sent to me as "one of the worms." It is, however, neither a worm nor a maggot, but a veritable embryo of a parasitic entozoa. It belongs undoubtedly to the Trematoda or fluke family, a class of animals well-known to infest mankind as well as the lower animals. The puzzle in this case is, How did embryos of the fluke find their way into the patient's decayed tooth? Probably in one of two ways. In all likelihood the ova of the fluke will have been conveyed into the mouth and stomach by eating tainted or infected animal food, the liver of a sheep suffering from fluke; or the eggs may have been taken in infected or polluted drinking water; more frequently, however, in diseased meat, fish, or fowl, which during the masticatory process is left behind and safely lodged in a hollow tooth or an exposed portion of the alveolar process, there to be retained until more fully developed into the wriggling embryo, which was finally dislodged by the henbane fumigation. It is quite within the bounds of possibility that the patient may have unwittingly suffered from ascarides. In such a case, the ova or embryos, during their ordinary larval wanderings in search of a final resting place, which shall prove suitable for their adult condition, might find their way back to the stomach, throat, and mouth of the sufferer.

No fluke arrives at sexual maturity before passing through a cercarian stage of existence, while its tailed or larval form is usually acquired by passing through an intermediary host, a molluscan, or water animal. It may be a fish. The little water-snail, *Limnaea truncatula*, is undoubtedly the host, in its transition stage, of the liver fluke of the sheep, and the amount of these snails, seen at certain periods of the year about marsh lands, in river water, in cisterns, and ponds to which cattle and sheep resort to allay their thirst, is enormous.

Altogether, five specimens of the dislodged larval flukes were sent to me: four of them, however, owing to the want of proper precautions for their preservation, were spoilt, being completely covered over by the mycelia of a minute fungus. The cover-glass also of the mounted specimen was broken in the post, so that I heartily wish my medical friend had been a member of the Postal Microscopical Society. With a little difficulty I finally succeeded in remounting the young cercaria in balsam, thus rendering the body nearly transparent for microscopical examination. It

measures nearly a sixth of an inch in length. Its head, which is of a pale, yellowish brown color, is terminated by a buccal opening of a contractile, sucker-like nature. The hyaline integument of the body throughout is broken up by a series of longitudinal and transverse markings, which presents an appearance of irregularly shaped epithelial cells. The ventral opening is situated at the lower third, where a considerable cleft occurs, and here is seen to be the termination of a narrow gut, which runs from just below the buccal opening to this point, and is then lost to view. The lower third of the body constitutes what is nominally described as a tail-like appendage in the larval stage, and which is either broken off or absorbed in the fully matured fluke.

Filaria have now been found in almost every cavity of the body, either in man or in the lower animals, and it is not difficult to conceive how several of these embryos may have become lodged in the cavity of a hollow tooth of one among a class of persons who notoriously disregard the use of the tooth-brush.

Eye Strain Among Dentists.

Among the many ailments to which dentists appear to be exceptionally exposed are those caused to their eyes from overstrain whilst at their work. As has been pointed out over and over again, these ocular troubles have effects which influence prejudicially, the whole individual inducing in some cases the most severe forms of headache, hemicrania, and even disabling from work. The eyes of dentists have imposed upon them greater strain than those of most professional men, prolonged fixation in a constrained posture is detrimental even to the normal or emmetropic eye, but when this strain is imposed upon eyes which are structurally aberrant from the emmetropic type, it is sure sooner or later to give rise to intraocular disease. Sight to be perfect requires a regularly formed globe of the eye, duly developed ocular muscles, so that just and equal movements of the eyes can be effected, and a healthy state of the nervous system innervating these muscles. Added to these we must have a due blood supply of healthy blood to the vessels of the choroid, and a normal condition, as to shape, texture and nutrition of the media and internal parts of the globe. Departures from the due development of the globe, when, for example, it is too short or too long, produce errors of refraction, that is, the individual is unable to see objects distinctly at the normal range of eighteen or twelve inches, he may be short-sighted—myopic, or long-sighted—hypermetropic, but the results are the same—ocular fatigue, dimness of vision after a few hours work, recurrent headache when the eyes are used, especially severe

after doing fine work, or employing artificial light. Such eyes are commonly imperfect in another respect. They are astigmatic. The globe of the eye may be considered to be made up of a great number of circles running from vertical to horizontal, and the points of focus where the rays of light are collected together and become "an object observed" may be taken as the collection of the foci of these circles or meridia. When the globe is flattened, or bulges too much in one or another direction, the meridia are irregular and the foci are thrown out of the whole eye focus, and hence portions of the object seen will be blurred, and so we see things indistinctly—this is astigmatism. Now these defects of refraction, myopia, hypermetropia, presbyopia (old sightedness), astigmatism—are all remediable up to a certain point by kindly Nature herself. We accommodate the eye by its intra-ocular mechanism, and so in part counteract the effects of the abnormality. This effort at accommodation, however, cannot be maintained without imposing a severe and deleterious strain upon the eye. Again and again repeated, the eye becomes congested. Its nerves grow exhausted, and greater and greater efforts at accommodation are required to achieve the desired end, until at length choroiditis, or some other condition equally serious is set up, and the individual loses the use of the eye. The prolonged effect, also, causes severe lancinating headache, a condition which naturally soon tells upon the general health, and unless its true cause be determined and corrected this headache resists all medicinal treatment, and its unhappy victim goes about with the dread of a brain tumour, to add an additional horror to his existence. Fortunately these refractive troubles have only to be fully understood to be remedied, the mischief is we, many of us, fail to appreciate their importance, and persist in imposing the overstrain upon our eyes rather than seek for the advice of an ophthalmic surgeon and adopt glasses. We have yet to consider the other conditions engendered by overstrain, which we propose to do in a subsequent article. *British Journal of Dental Science.*

Professor Flagg on Zinc Phosphates.

We are indebted to our friend Mr. Waite, of Liverpool, for the following communication from Dr. Flagg:—

Zinc phosphates are in just as indefinite a status as ever they were, with the exception that real workers are not now trying to make such fluids and crystals, as have been proved to be capable of making the quickest setting and most durable fillings, because such fluids and fillings do not remain good more than four to eight months. Just in proportion as fluids are less good, so they remain that good for greater length of time, and a pretty

good fluid will last from ten or twelve to fourteen months, sometimes even longer.

Next comes the celebrated "non-deteriorating fluid," which is made by allowing almost any make of clear fluid, having a specific gravity of fifty-two to sixty degrees, to stand until it separates, when, if it does this clear and thin, it is a very poor fluid; but it stays as good as it is for years, three or four at least, and thus it is non-deteriorating, because it has deteriorated about all that it can.

It is from this kind of make, however, that the very best fluid ever produced has resulted, except that when this result is obtained the separation is very distinctive, and the resultant fluid comparatively small in quantity. When this excellent fluid is secured (which according to my work is about once in five or six trials, and no one knows why it is, or how it is that it comes so infrequently, so far as I am informed), then this fluid will not keep first-rate for more than four or five months, and often begins to deteriorate in even less time. Such crystals and such fluids as are known to be excellent, make those fillings of zinc-phosphates which are occasionally seen doing service in wonderful perfection for six or eight years or more. Thus far it has proved impossible to do any better with phosphate menstrua than this: All the various makers (Flagg included) are in one boat so far as regards the fluids, crystals, or syrups, with which they make their powders into mass for filling. Hence the effort now seems to be to get such a fluid as will best subserve the legitimate use of zinc-phosphates, which is never for fillings, strictly as such (unless they are expressly stated to be experimental), and then not to test which material is best, but merely to try as to whether the material one happens to have on hand will subserve a good purpose in that individual case. This seems poor professional work indeed, but I would unhesitatingly state that to be the best which the most proficient worker in zinc plastics can do, and the most ignorant can do just as well. The legitimate uses for zinc-phosphates are lining cavities, strengthening frail walls, largely filling such cavities as are to be partially filled with gold on the score of expense, or with amalgam, on the score of easy removal and possible contingencies; or for durability of filling, combined with non-conductivity, maintenance of colour, etc., and for increased adhesion of fillings in saucer-shaped cavities, which are to be filled with combination fillings of zinc-phosphate and amalgam; by such I mean fillings in which the two materials are introduced at such times as both are plastic, and thus the adhesion of the zinc-phosphate and the resistance of amalgam to attrition are utilized in one filling. These are the proper uses for zinc-phosphates, and it subserves all these purposes so very well that it seems a shame to ask it to do what it is well known it can seldom perform,

and then if it fails, condemn it as unworthy. In my opinion the unworthy is the individual who thus stigmatizes one of the most valued servants of dentistry.

And now I would say that, in the prosecution of this work of obtaining a reliable fluid for long conservation, no other modification seems to have given the results that we have derived from the gelatinising of the solution phosphoric acid. Whatever changes may yet take place in the phosphoric acid constituents of the menstruum (and these changes are protean), gelatin seems to retain its value for so long a time as to warrant the supposition that most at least of the material sold shall be utilised, while yet it is worthy of confidence; and even this fluid is impossible of accurate or positive duplicature. Made by like measurements and weights, dissolved by like heating for given length of time, filtered by similar filtration, no two consecutive results are precisely the same, and some are widely different. This is not so marked, however, in the gelatin fluids, as it is in the other good menstruum, but it is sufficiently so to produce, as the results of time, some half-dozen different varieties. First, those which maintain an almost absolute integrity as amber coloured, syrupy fluids; second, those which partially gelatinize with a sort of colloid jelly at the lower part of the fluid; third, those which separate into a viscid, whitish portion below, and a clearer, thinner portion above; fourth, those which increase markedly in viscosity, without materially changing colour, becoming so thick as not to pour from the phial, but which must be taken by means of a spatula or small probe. These are the most usual changes which occur, but unlike those of the better fluids (those most liable to become promptly worthless), these changes do not appear to cause much depreciation of value in this reasonably good menstruum—at least not for a long time.

By stirring together the separated portions, a fluid is obtained which continues to make good results, and the thickened fluid seems only to make a somewhat slower setting mass, a change which to many is rather acceptable than otherwise. Thus it is, that in our last three or four years of working upon zinc plastics, the gelatinized fluids have markedly taken the front rank, and with this work which has, we think, done something of positive value, and has more than ever placed the zinc-phosphates out of the category of material for filling, we have constantly presented to our profession repetitions of the same old compounds, which are advertised under various names, when they are truly unimproved, and utterly unreliable.

I have no time to enter into the discussion of so-called improvements in zinc-phosphate powders, but I will merely say that as yet the old so-called nitrate of zinc powder, pure and unadulterated, is the best base we have ever had.—*Journal of British Dental Association.*

Cotton as a Root Filling.

BY DR. J. REED, PHILADELPHIA.

Extract of a paper in the Odontological Society of Pennsylvania.

Firstly, it can be easily removed. Secondly, it can be thoroughly permeated with medicaments which will not destroy septic matter, but prevent its entrance.

It has been said that "The medicament evaporating, leaves the cotton unguarded."

Gentlemen, have you ever heard of carbolized cosmoline? and will you kindly inform me what is its daily rate of evaporation?

It is with carbolized cosmoline that cotton dressing should be soaked.

The late Dr. H. A. Randolph boiled a frog's foot in cosmoline to destroy any putrefactive germs which might remain, and then allowed it, covered by paste, to stand for an indefinite time. Week after week the foot stayed unchanged, the experiment proved that cosmoline is aseptic in the highest degree, and that a sterilized body placed in it will remain intact so long as it is covered.

The use of cosmoline in canals is not original with me, but was first suggested by Dr. George Elliot, of London.

Having now given you my defense of cotton dressings, let us proceed to consider how and when they should be inserted.

Any practical method of cleaning and sterilizing the canals may be used, but where the pulp was putressed, I invariably employ the gradual stopping process, which is so clearly explained by my beloved and respected friend, Dr. Flagg. Of course, you are familiar with it; but to keep the links in my chain of evidence perfect, with your permission I will explain his manner of treatment, which has the advantage of cleansing with equal thoroughness, the small and large canals.

The tooth must first be opened and the floor of the pulp chamber so burred, that the mouths of all the canals visible or invisible, shall be exposed.

Then, if considered practicable, they can be enlarged, extreme care being taken not to puncture the cementum.

At the first sitting, all the decomposing material that can be reached, should be removed. And after the passage has been thoroughly washed by streams of warm water squirted into them from the syringe, they should

be dried and protected by the napkin or dam. Finally being filled loosely with a cotton dressing thoroughly soaked in pure carbolic acid, or whatever medicament may be preferred.

Extremely sensitive teeth with open canals, have yielded to this treatment again and again, becoming sound and painless in a few days. Should the tooth resist the first treatment in the morning, allow cotton to rest in the canals very loosely, and tell the patient to return at eleven, when the treatment again being performed, the pain will, in almost every instance, abate.

By this method the hair-like canals are perfectly cleansed; for the organic matter putrefying in them is each day washed out, while each cleansing is followed by an application of carbolic acid, which, if the tooth is dry, will go into places inaccessible to cotton.

With these means I think you will confess that any canal, no matter how minute, can be cleaned and sterilized. This being accomplished and the last dressing allowed to remain, the tooth should be temporarily filled with gutta-percha or cement for a length of time sufficient to test the thoroughness of the work: which having been satisfactorily demonstrated, the tooth may be permanently filled. The details are as follows:

Put on the rubber dam, remove dressing and blow hot air into the tooth till it becomes painful. Then, using a hypodermic syringe filled with warm carbolized cosmoline, pump the canals full.

In dealing with the large canals this will be an easy process. In those of small diameter the passage of the cosmoline to the apex will be aided not only by capillary attraction, but also by the contraction of the cooling air. By finally pressing a pellet of cotton soaked in cosmoline over the small orifices, and then inserting a minute shred of cotton wherever possible, it seems reasonable to suppose that the canal can be filled to the apical foramen, with an antiseptic substance sufficiently viscid to exclude moisture from without. Cotton should then be packed in the large canals to act as a support for the medicament.

The canals should be filled with cotton to the pulp chamber, and a small pellet soaked in cosmoline placed over the orifices of those which are too small to allow the entrance of a thread. The cavity should now be washed with chloroform to remove superfluous grease, and the pulp chamber filled with gutta-percha or cement. Connect the mouths of the canals with protected cotton to expedite venting, should it be necessary. This is merely my personal experience. It is not essential. The filling to be used in conveying the contents of the pulp chamber of course must vary according to the individual peculiarities of the tooth.

How is it possible for a tooth thus treated to need venting?

Because in every case there is a strong probability that the outer portion of the apical foramen may be unprotected, and, moreover, the place where the living and the dead tissues join is always a weak spot. And after all has been said and done, and the greatest care has been used, a gouty lymphatic or plethoric patient may most unexpectedly give us a very serious example of periodontitis.

Dr. Truman: Before filling a canal it must be properly treated, and no tooth is properly prepared where the canal is not free from decomposed tissue. As the dentine is made up of innumerable tubes, and that these contain organic matter, if this material undergoing decomposition is not included in the treatment it becomes a constant source of danger to the tooth. It is necessary to reduce this to an insoluble compound, and this is best done by keeping the canal under the action of oxy-chloride of zinc. This, in my judgment, is at present the best known filling material for canals. I am aware cotton is a good filter for micro-organism, and as long as it is not disintegrated in the canal it may be an effective agent; but when this does occur the results are exceedingly disastrous.

Dr. Kirk: Filling root canals with cotton armed with carbolized cosmoline, is, in my judgment, no argument in favor of cotton, but one in favor of cosmoline. The cotton is merely incidental, in the same way it is often used in connection with oxy-chloride of zinc, viz.: as a vehicle for carrying to place the real filling material, which is the cement. Cosmoline is a heavy hydro-carbon oil, totally unalterable in air or moisture by virtue of its non-affinity to oxygen. It is sufficiently viscid to remain in the canal almost without the help of cotton, which, in its relation to the cosmoline, fulfils the same function as the old root filling of gold saturated with gutta-percha solution.

In its general characteristics, a root filling of cosmoline and cotton would be very similar to that of paraffine, which is exceedingly valuable, and can be pumped in a melted state into the finest canal—with the advantage that when it is chilled and solidified it is denser.—*International*.

Thoughtful Words.

At the banquet of the Harvard Dental School Alumni, Governor Ames, in the course of his speech paid a high compliment to the dental profession. He said:

“Dentistry, has, in fact, become a science; and it is a very useful science. Health depends in no small degree upon the proper mastication of food, and the dentist enables many of us, who but for him would be unable to do so, to eat properly. In two principal ways he aids us—by rebuilding

our teeth when they are worn, and by supplying us with new teeth, when those which nature has given us are no longer serviceable. He is indeed a benefactor, and, as Governor of the Commonwealth, I am very glad to say to you, for her people, without you we should be but badly off. You are an essential part of our society, and as such, we accord you the esteem and respect in which you are held. It has been one of the gratifying events of my administration that since it began you have been given formal recognition by the Commonwealth. The law creating for the dentists of this State a Board of Registration, received my approval, not only official, but personal. I was of the opinion when the measure reached me, as I had been for some time before, that there should be some guarantee that a man who was to exercise the profession as a dentist, was properly qualified. This guarantee the law referred to provides. I know that its provisions meet your approval, and that its operation is beneficial. You may be confident that while I am Governor, any law so wise as this, and so far-reaching in its beneficent action, which may come to me from the Legislature, will receive my approval." (Loud applause.)

Dr. Peabody referred to the present tendency of medical men to become specialists, and said: "Certainly there is no such thing as perfection in any one department without concentrated devotion to it. The specialists owe to themselves and their peculiar departments a very high standard of general culture. (Applause.) No man is fit to be a specialist who does not bring to his peculiar branch of his profession a thoroughly liberal education. (Applause.) I do not mean a formal college education, though that, I think, is always desirable where it can be had. But by a liberal education I mean culture in general literature, in the essential departments of science where possible in classical literature, and certainly in all the departments of science that have a relation, however seemingly remote, to the special department in hand. (Applause.) Your work is not only to keep your profession where it is, but to advance it to a higher and ever higher degree of perfection. In every department progress is made not by the mere narrow specialist. All that he can do is to move in the track in which he starts. A narrow man, however skilful he may become in a certain line of work, if he knows very little beyond that sphere, never advances in his own department. He simply does journey work, and is a mere journeyman all his life long. (Applause.) A man who advances in his own department must necessarily be intimately conversant with all that is nearly associated with that department. In your profession I should say that a knowledge of everything appertaining to the human system, to its anatomy, to its physiology, to the diseases to which it is liable, would be valuable, for there is no portion of the human frame and no experience

through which the human frame can pass with which your profession is not more or less connected. Then, undoubtedly, important improvements are to be made in connection with the chemical and scientific apparatus which you employ, improvements that may be made from an intimate knowledge of chemistry, of physics, and of natural science. Then you want to raise your profession in the public estimation. You want it to stand where you know it ought to stand (applause), and you can make it stand there if you present yourselves as men of high and generous culture, as standing in every respect alongside of the foremost members of the community as cultured and influential citizens. You can advance the position in which you can collectively stand by your individual efforts for your own improvement, advancement and elevation as learned and scientific men, and, above all, as men of high moral and religious principle." (Loud and prolonged applause.)

During the evening the following letter was read from Oliver Wendell Holmes, the reading being frequently interrupted by applause:

"I am sorry to say that I shall not be able to attend the meeting of the Harvard Dental Association or take an active part in its proceedings. I have a real interest in the welfare of a profession to which so many of us ought to feel grateful with every word we speak and every morsel we swallow. Few persons have passed the age of three score years and ten, retaining their own self respect and a proper regard to appearances, whose mouths do not flash with incisors which never knew what it is to grow from a socket or to cut their way through a gum. By the thoughtful and ingenious devices of the dentist, childhood is protected from the destructive processes which threaten and tend to undermine the structures essential to health and beauty, youth is rendered doubly charming, middle age comely and old age respectable. We cannot be too grateful to our dental friends who do so much for us all, and it is pleasant to see them gathered together to use the organs in their own mouths in the important function to which the preceding hour has been devoted, and now to exhibit those same organs in the smiling amenities of social intercourse. I am always pleased to hear of the success of the graduates of the dental school whom I have had the pleasure of counting among the audience at my anatomical lectures. I will not refer to those established in our own city who have filled and are filling so well the places once occupied by Dr. Flagg, Dr. Joshua Tucker, Dr. Harwood, and their more immediate successors. But I was glad to know that the son of my classmate, Dr. Horatio Cook Meriam, who bears his name, was prospering in a neighboring city, famous of old for its witches, and in later years for its bewitching daughters, whose most precious attractions are safe, I am sure, in his hands. In my visit to Cambridge, England, two years ago, I met Dr. George Cunningham, one of the most intelligent graduates of the class of '76, thriving and happy in a charming old residence under the shadow—the light rather—of the great university. Wishing you all equal success and happiness, I am, gentlemen, very truly yours, OLIVER WENDELL HOLMES."

Campho-Phenique.

By J. FOSTER FLAGG, D.D.S., PHILADELPHIA, PA.

The rapidly developing importance of this peculiar combination of carbolic acid and camphor impels me to a presentation of its especial claims as, probably, the most remarkable medicament which has ever been offered in connection with dental therapeutics.

When it is known that it is a notable germicide, an efficient antiseptic, a non-irritant, a decided local anesthetic, non-poisonous, insoluble in water or glycerine, does not discolor or stain, is possessed of an agreeable odor and not disagreeable taste, and maintains an unchanged integrity, it will at once be recognized as wonderfully adapted to a large proportion of all dentopathological conditions, from sensitivity of dentine, through the varying conditions of pulp-irritation, pulp-devitalization, pericemental irritation, alveolar abscess, and caries or necrosis of contiguous osseous structure, and that thus it must rank as one of the most, if not *the most valuable* polycrest which dentistry possesses.

During the past session of the college with which I am connected (since September, 1888) I have availed myself of the extended opportunities afforded for a decisive clinical record of this material, and the results have been so gratifying that it is with much satisfaction that I present its claims to recognition, and urge a prompt acceptance of the many benefits it has to bestow.

Where cotton is indicated as a wedge, and especially where marked sensitivity of dentine exists in connection with such cavities between teeth, both the discomfort attending separating and the pain attendant upon subsequent preparation of cavities are largely, and frequently completely, abrogated.

In cases of pulp-irritation, even of severe grade, its application, upon cotton, will almost invariably demonstrate its high rank as a "pain-obtundent."

In devitalization of pulps its use as the menstruum for the arsenic and acetate of morphia in our "devitalizing paste" seems to have already given evidence of its value as a local anæsthetic in that connection. As a disinfectant of tissue surrounding pulp-cavities and canals which have contained putrescent pulps it has made an excellent record, and has proven itself, by its variety of peculiarly acceptable tributes, to be one of the very best applications we have ever had for the purpose.

As a medicament, or ingredient of medicaments, for canal-dressings, either temporary or *permanent*, upon cotton, its combined characteristics of *antiseptis* and *insolubility* must command favorable recognition.

As an antiphlogistic in the earlier stages of sthenic pericementitis, applied upon the gum with small pads of muslin and renewed with *only desirable infrequency*, it has oftentimes been able to produce the attempted resolution; and, in cases where this was found impossible, to largely mitigate the suffering attending the induction of suppuration.

As an antipyrogenic, used by injection into fistulæ, either in full strength or diluted by fluid or viscid cosmoline or lanolin, it has produced eminently satisfactory results in some markedly discouraging cases.

It will thus be seen that, from the dental stand-point, campho-phénique is a medicine which it behooves us to test thoroughly; that if it shall be found to perform even a portion of the good offices which it so largely promises, suffering humanity shall promptly rejoice over this additional assuager of some of its many ills.

Although intimation of other uses than those pertaining strictly to dentistry might be here regarded as irrelevant, yet so many phases of trouble, such as wounds (cut or contused), burns, sprains, intolerable itchings, etc., are so decidedly relieved by applications of campho-phénique (either pure or diluted) that I feel sure that those unfortunates who may chance, through such mention, to find relief from these inflictions cannot but feel grateful for this information.

Campho-phénique is stated by its manufacturers, The Phénique Chemical Company of St. Louis, to be a definite chemical compound, having a formula $C_6H_{11}O$, and thus, "for obvious reasons," it has had given to it the name under which it is presented to the healing professions. *Cosmos*.

Our Canadian College.

University of Toronto—Department of Dentistry.

In May of last year the Senate of Toronto University passed a statute affiliating the Royal College of Dental Surgeons of Ontario, and formulated a Curriculum in Dental Surgery leading up to the Degree of Doctor of Dental Surgery. The first examination for the degree was held in March last, when a considerable number of candidates presented themselves. The papers written were of such excellence as to secure general commendation from the examiners, five of whom were M.D.'s and two D.D.S.'s.

A special convocation for conferring Degrees in Medicine and Dentistry was held on April 22nd. Dr. Willmott, President of the Dental Faculty,

presented the embryo D.D.S.'s to Sir Daniel Wilson, President of the University, who, in the absence of the Chancellor and Vice-Chancellor, conferred the degree. The occasion was of considerable interest as being the first on which a Doctor's Degree in Dental Surgery was conferred by any British University.

The following are the names in alphabetical order of those who received the degree: F. S. Brown, J. H. Carrique, A. M. Clark, D. Clark, N. W. Cleary, E. Cunningham, E. H. Eidt, C. C. Ferguson, T. Henderson, A. H. Hipple, J. T. Ireland, J. J. Kerr, F. Killmer, W. A. Leggo, H. P. Martin, R. G. McLaughlin, C. S. McLean, J. W. Oakley, A. Rose, A. J. Smith, J. Stirton, J. H. Swann, W. E. Willmott, H. Wood, C. H. Ziegler.

The following are the Honor lists. Candidates in Honors are arranged alphabetically in two classes; those who fail to obtain Honors are placed in Class III. in alphabetical order, together with Pass candidates:

Operative Dentistry—Class I.—F. J. Brown, A. M. Clark, E. Cunningham, T. Henderson, A. H. Hipple, F. Killmer, W. A. Leggo, R. G. McLaughlin, J. W. Oakley, A. J. Smith, W. E. Willmott, C. H. Ziegler. Class II.—N. W. Cleary, C. C. Ferguson, J. J. Ireland, J. J. Kerr, H. P. Martin, C. S. McLean, A. Rose, J. Stirton, H. Wood. Class III.—J. H. Carrique, D. Clark, E. H. Eidt, J. H. Swann.

Dental Prosthetics—Class II.—Brown, Hipple, Leggo, McLean, Oakley, Ziegler. Class III.—Carrique, A. M. Clark, D. Clark, Cleary, Cunningham, Eidt, Ferguson, Henderson, Ireland, Kerr, Killmer, Martin, McLaughlin, Rose, Smith, Stirton, Swann, Willmott, Wood.

Dental Pathology—Class II.—Brown, Hipple, Killmer. Class III.—Carrique, A. M. Clark, D. Clark, Cleary, Cunningham, Eidt, Ferguson, Henderson, Ireland, Kerr, Leggo, Martin, McLaughlin, McLean, Oakley, Rose, Smith, Stirton, Swann, Willmott, Wood, Ziegler.

Dental Histology—Class I.—Cunningham, Hipple, Ziegler. Class II.—A. M. Clark. Class III.—Brown, Carrique, D. Clark, Cleary, Eidt, Ferguson, Henderson, Ireland, Kerr, Killmer, Leggo, Martin, McLaughlin, McLean, Oakley, Rose, Smith, Stirton, Swann, Willmott, Wood.

Medicine and Surgery applied to Dentistry—Class I.—D. Clark, Cunningham, Henderson, Hipple, Oakley, Smith, Swann. Class II.—A. M. Clark, Cleary, Kerr, Killmer, Leggo, McLaughlin, Willmott, Wood, Ziegler. Class III.—Brown, Carrique, Eidt, Ferguson, Ireland, Martin, McLean, Rose, Stirton.

Dental Materia Medica and Therapeutics—Class I.—Hipple, Killmer. Class II.—McLean, Willmott. Class III.—Brown, Carrique, A. M. Clark, Cleary, Cunningham, Eidt, Ferguson, Henderson, Ireland, Kerr, Leggo, Martin, McLaughlin, Oakley, Rose, Smith, Stirton, Swann, Wood, Ziegler.

Anatomy--Class I.--Brown, D. Clark, Hipple, Killmer. Class II. --Leggo, Wood. Class III.--Carrique, A. M. Clark, Cleary, Cunningham, Eidt, Ferguson, Henderson, Ireland, Kerr, Martin, McLaughlin, McLean, Oakley, Rose, Smith, Stirton, Swann, Willmott, Ziegler.

Physiology Class I.--D. Clark, Hipple, Killmer, McLean, Oakley, Smith, Ziegler. Class II. --A. M. Clark, Henderson, Stirton, Willmott, Wood. Class III.--Brown, Carrique, Cleary, Cunningham, Eidt, Ferguson, Ireland, Kerr, Leggo, Martin, McLaughlin, Rose, Swann.

Chemistry--Class I.--Hipple, Leggo, McLaughlin, Oakley, Smith. Class II.--A. M. Clark, D. Clark, Cleary, Eidt, Henderson, Kerr, Killmer, Rose, Swann, Willmott. Class III.--Brown, Carrique, Cunningham, Ferguson, Ireland, Martin, McLean, Stirton, Wood, Ziegler.

MATERIA MEDICA AND THERAPEUTICS.

PASS AND HONORS.

NOTE.--Candidates for Honors will take the whole paper, and Pass Candidates only those questions marked with an asterisk.

Examiner--R. M. Fisher, M.B., L.D.S.

- *1--What do you understand by the physiological and therapeutical action of a drug? Mention the different ways by which medicines may be administered other than by the mouth.
- *2--Opium, the order of plants to which it belongs. Give its physical and therapeutical action. Ordinary dose. What conditions of the system would modify its action?
- *3--Give the therapeutical action of the drugs as a class, in the following. Antipyretics, Expectorants, Antiseptics, Anæsthetics, Silogogues, Astringents. Name two or more drugs in each class.
- 4--Write a prescription for a three ounce mixture, having Astringent, Soporific and Antiseptic properties, and write the following directions in Latin. two teaspoons full three times a day before meals.
- 5--What is the therapeutical action of a warm moist cataplasm, when applied to an inflamed part? How do you explain the fact that the application of either heat or cold is capable of relieving the pain occurring in acute inflammation?
- *6--What is the ordinary dose for an adult of Morphia, Strychnia, Magnesia, sulph, Pot. Bromide, Tr. Aconitia, Liq. Arsenicalis?
- 7--How do Tonics prove curative? When are they indicated, when contraindicated? Give examples of each having vegetable, animal, and mineral origin.

PATHOLOGY.

PASS AND HONORS.

Examiner--R. M. Fisher, M.B., L.D.S.

- *1--Describe minutely the pathological changes which the tissues undergo in Acute Avolar Abscess, beginning with an exposed pulp, and terminating in spontaneous evacuation.
- *2--Give pathology of caries of bone. In what respect does it differ from dental caries?
- *3--Differentiate between caries, and necrosis.
- 4--Describe minutely the reparative process in bone.
- 5--Name the different varieties of cancer. Describe, and show by diagram the microscopic appearance of Epithelioma.

OPERATIVE DENTISTRY.

PASS AND HONORS.

Examiner—J. G. Roberts, D.D.S.

- *1—What is sensitive dentine ?
What remedies would you use to obtund the sensitivity? Explain their supposed action
- *2—Name the causes of alveolar abscess.
Give method of treatment (a) with fistulous opening, (b) without fistulous opening.
- *3—(a) Explain your method of root preparation prior to attaching a Richmond pivot.
(b) The teeth applicable for pivoting.
(c) Method of making Richmond pivot, material used, and quality of same
- *4—Explain your method of operating in a tooth with recently exposed pulp. Fill tooth permanently with gold
- 5—Name the different causes of Periodontitis. Give your line of treatment of Periodontitis (1) locally (2) constitutionally.
(a) In tooth with open canals.
(b) In tooth with canals filled with Zinc Chloride.
- 6—(a) Explain the action of As_2O_3 on the dental pulp.
(b) Give arguments for and against the absorption theory
(c) Would you use As_2O_3 as an obtunder of sensitive dentine, and why?
(d) Before applying As_2O_3 why should the pulp be nearly or wholly exposed

DENTAL PROSTHETICS.

PASS AND HONORS.

Examiner—G. Adams Swann.

- *1 Describe in detail the preparation of the mouth for the insertion of a full or partial denture, stating when, and what teeth and roots you would extract.
- *2—Describe the process of constructing a denture on gold and vulcanite combined.
- *3—What materials are used for taking impressions of the mouth? Which do you consider the best for any given case? Describe the manner of taking an impression of the mouth for full or partial denture
- *4—Explain the principle on which the use of a vacuum chamber in artificial dentures is based. Defend its use, and define its proper size, shape, and location
- *5—Describe the construction of a mechanical appliance for regulating a contracted arch with the cuspid crowded out of place. Explain the principles on which it works.
- 6—Name the four basal temperaments, and describe (a) the general physical appearance of a person of each, (b) the particular characteristics of the teeth of a person of each
- 7—Describe the construction of a piece of "bridgework," replacing the first and second bicuspid.
- 8—What is an obturator? For what class of defects is it best applicable, and what muscles must be specially trained to render them most useful?

PRINCIPLES AND PRACTICE OF MEDICINE AND SURGERY AS APPLIED TO DENTISTRY.

PASS AND HONORS.

Examiner—L. Tesky, M.D., C.M., M.R.C.S. Eng.

- *1—Mention the principles upon which you treat both generally and locally Acute inflammations
- *2—How would you diagnose and treat a fracture of the Condyl of the lower jaw.
- *3—Describe an Epithelioma of the lip, and give the probable Clinical history of an untreated case up to death.
- *4—Give the causes and treatment of an Abscess of the Antrum.
- *5—Describe the various Syphilitic lesions which may appear in the mouth.
- 6—Mention the causes of Necrosis of bone, and describe the process of the separation of the sequestrum.

- 7--In a case of cleft palate how would you choose between treatment by Surgical operation, and a Mechanical appliance?

DENTAL HISTOLOGY.

PASS AND HONORS.

Examiner—L. Teskey, M.D., C.M., M.R.C.S. Eng

- *1—Describe the structure of the Enamel Organ.
 *2—Describe a dental tubule.
 *3—What is Nasmyth's Membrane, and from what is it developed?
 *4—State the Anatomical relation of the pulp to the Peridontal Membrane, and describe the structure of each.
 *5—What provisions are made for the maintenance of the nourishment of both Enamel and Dentine?
 *6—Describe the development of the common Enamel Organ, and the manner in which the special Enamel Organs are provided for all of the permanent teeth.

ANATOMY.

PASS AND HONORS

Examiner—Geo. M. Peters, M.B.

- *1—Describe the antrum of Highmore (maxillary Sinus).
 *2—Describe fully, and give the nervous supply of the muscles which elevate the lower jaw.
 *3—Describe the temporo-maxillary articulation.
 *4—Trace the course of the blood through a complete circulatory revolution, explaining briefly the mechanism of the valves of the heart. What are the peculiarities of the portal circulation?
 *5—Give the distribution of the superior maxillary, or second division of the fifth cranial nerve.

PHYSIOLOGY.

PASS AND HONORS.

Examiner—W. H. B. Aikins, M.D., L.R.C.P. Lond

- *1—Give the order of Eruption of the Temporary, and Permanent Teeth
 *2—Give the composition and uses of Saliva, Gastric-juice, and Bile.
 *3—Describe the changes which the Air and Blood undergo in Respiration
 *4—Describe the mechanism of Deglutition and Defaecation
 *5—Give the structure, and connections of the Valves of the Heart. What are their functions?
 *6—Give the immediate and remote effects of Division of the Trifacial nerve.

CHEMISTRY

PASS AND HONORS

Examiner—W. Theophilus Stuart, M.B.

- *1—What is meant by "polarization of the plate" in a galvanic cell, and what means are employed to prevent it?
 *2—Define the following terms: conduction and convection of heat, latent heat, refraction of light, magnetic poles.
 *3—Describe the preparation, properties, and uses of hydrogen dioxide.
 *4—Give another name for "laughing gas" Describe its preparation and properties
 *5—Give the structure of flame, and explain the difference between an oxidizing and a reducing flame.
 *6—Give the preparation and properties of chloroform. How may its purity be determined?
 *7—Give the formula of cellulose. From what is it obtained? How does the celluloid differ from it, and for what purpose is the latter used in dentistry?
 *8—Give qualitative tests for the normal constituents of saliva.

Editorial.

Death of Dr. C. S. Chittenden.

The profession of Canada, and of Ontario especially, has lost one of its most useful and representative men, one of its most earnest and honest workers. This journal has lost one of the very few men who had the courage to welcome and assist the first attempt to establish a Dental Journal in Canada, and who remained true as steel to the day of his death. Any one who knew Dr. Chittenden must feel his death as a personal loss. He brought the sunshine of a genial nature, with sound practical sense, into every gathering of the profession, and while holding strong convictions of the evil of quackery, he was the first man to help a quack to become honest.

Many a licentiate owes his determination to do his best, to the kind advice of Dr. Chittenden. Hamilton has thousands of living monuments to his operative skill. We have a melancholy pleasure in enshrining his portrait in our pages.

The Ladies: God Bless Them!

At last the Canadian profession have embraced the ladies in their ranks, and several fair aspirants are spoiling their dresses and soiling their fingers in the elementary work in the laboratory. For over ten years Mrs. Casgrain, the clever young wife of a member of the Quebec Board, has been a practical sharer in the office and laboratory work of her husband, and has attained considerable skill. Recently Miss Annie Grant Hill has been indentured to Dr. C. H. Wells, of Huntingdon, and we learn that several others seriously contemplate entering our ranks. Nobody but a crusty bachelor or a hen-pecked husband could object to having the arms of a fair female dentist around his neck. It ought to be as effectively soothing as nitrous oxide. It may become the fashionable anæsthetic. However, every manly dentist can only toast them in the traditional way: "The Ladies! God bless them!" As mothers, they were our guardian angels; as wives, they are by far the best part of us; as daughters and sisters, they surround our lives with happiness; as sweethearts, who can forget or forgive some of them? as mothers-in-law, — Heaven save us! As dentists, — why not?

Life Insurance for Dentists.

Within the last ten years several deaths in our profession have come home to us in a special manner, showing the importance of making early provision for one's family by means of life insurance. No less than seven widows would have been left almost penniless but for this blessing, and to day there are scores of men in our ranks who would despair of the future of their families, were it not for the consciousness that their lives are insured in a good company. In no possible way can a man better protect his family against reverses in his life, as well as want after his death. Life policies are protected by law from seizure, if made for the benefit of wife and children. Everybody is supposed in this enlightened age to know and appreciate the value of life insurance, but not everybody realizes its value as an immediate investment. As one instance in our own case. A life policy of \$10,000 in one of the best companies in the world—the Canada Life—in addition to the security, realized as profits the sum of \$500 in five years. A cheque for this amount was handed to us.

Young men beginning life should insure it, as a personal investment, if they do not intend to marry. For instance, for an assurance of \$1,000 at the age of twenty-four, with profits, on the endowment plan, payment is made to the assurer in fifteen years after, for an annual premium of \$62.70. For life assurance, with profits, for \$1,000, \$18.30 a year for life, or ten annual payments of \$35.20. At the age of forty, for \$1,000 for life, \$30.50 for life, or \$57.30 in ten payments. Endowment plan, payable in ten years or at death, with profits, \$104.50.

Dentists of the Past.

The younger dentists of to-day, who have received a thorough education in the principles of dental science at college, and have supplemented that theoretical education by a couple of years' practice in the well-furnished office of some regular practitioner, can hardly realize the difficulties which beset the path of the student in pursuit of dental knowledge, forty or fifty years ago. Now and then, when reading of the death of some aged practitioner, or listening to the reminiscences of a living one, our thoughts are carried back to the early days of the profession, and we see those men, many of them without any college education and with scarcely any books, trying to acquire a practical knowledge of dentistry, with the assistance of a preceptor who had "learned his trade" or "picked it up" no one knew how. When we consider how little was generally known of even the

fundamental principles of dental science in those days, and how few of the instruments which we look upon as indispensable were in use at that time, we cannot help admiring their perseverance, and wondering at the degree of proficiency to which many of them attained. Many were the innovations to which they were obliged to submit, and many were the new methods which they were compelled to adopt. The use of cohesive gold and plastic filling materials, together with the introduction of the dental engine and rubber dam, made wonderful changes in the art of filling teeth, while the introduction of vulcanite practically revolutionized the mechanical department of dentistry. It is true all these, saving, perhaps, the last, were steps in advance, and as such were welcomed by the profession, but they were innovations nevertheless, and so made constant demands upon the patience and skill of those who made use of them. In view of these facts do we give the generation of dentists who have preceded us, and the older practitioners that are still living, all the credit that is due them for their work? We fear not. Taking into consideration the circumstances by which they were surrounded, they certainly deserve much credit for the excellent services they rendered to the people and to the profession, and we should not be slow in acknowledging our appreciation of them. A. H. H.

Examinations.

As a rule, young men about to be examined are nervous and unconfident. An examination is never trivial even to the best prepared, and the best men are often the most nervous. We have seen aspirants march up to the cannon's mouth of an examination as confident as old soldiers, in spite of the warning that their ignorance was amazing. Young men usually discover near the end of the lectures how little they knew when they started, but it is not the same in clinical work. When a beginner finds he can fairly fill a difficult cavity with gold, he is apt to imagine that his education in that direction is complete. It is only when active practice brings him exceptional pathological cases, that he finds he has not finished his studentship. But any examiner is well aware that the boys who appear in fear and trembling, with loss of appetite and flesh, and what might be called "the student's diarrhoea," deserve kindly sympathy; and as a rule they get it, for every examiner ought to remember he was a boy and a student once. But occasionally an over-confident youth is found, who wishes it to appear that study to him is no weariness of the flesh; that the examination papers are not a matter of thought, but merely of penmanship; that large amplification of his personal opinions based upon a fertile imagination, must weigh with the examiners quite as much as the result of

serious reflection and practice. He affects to pity the hard-workers, and if he has worked hard he generally denies it. If he should pass, his after remarks are not those of delighted gratitude, but of assumed contempt, and because he may have found questions easy to answer, he imagines that no harder could be asked.

The Ontario Board has an advantage over those of Quebec, Manitoba, and British Columbia. It has the numerical strength to possess a valuable teaching body to fall back upon, and it can treat students entirely upon the merit of their study and work at the school. The others are only examining and not teaching bodies, and unless their system was more elastic everybody could be plucked. We are doing very well all around as we are, but we should look forward to the removal of Provincial disabilities, and some day have a recognized Dominion degree - the D.D.S. of the University of Toronto, for instance, - which would be a professional passport to practice anywhere in the great Dominion.

Being on the Board.

It is an amusing superstition which still haunts the minds of many in the profession, that the members of the Board of Examiners, as well as the college professors, have each a big "bonanza" in their appointments. There are sensible men who know better, and who do not envy the seven workers who for a paltry fee per day, which any city operator could earn in an hour, endure the monotony of examining students; and who not only possibly receive the self-complacent contempt of some of the men they pass, but the positive and eternal ill-will of those they pluck. An experience of twenty-years' constant laboring in this direction, as well as in the organization of the politics of the profession, qualifies us to say, that the meetings of the Board cannot cost each member less than from one to three hundred dollars a year, for which they receive the munificent fee of five dollars a day for two or three days. The legal annual meetings are by no means the only drain upon a member's time. Since 1867, the services rendered to the profession by the Ontario Board have been incalculably valuable. Of course this does not exclude scores of worthy men who had no desire to be on the Board. Every man who interested himself in the objects of the Association was directly a helper. But the official members of the Boards, collectively and individually, have done and are doing important work for the profession, much against their own selfish interests, if they have any.

Even in Quebec, owing to peculiar difficulties, there were in addition to the regular meetings, about twenty important unofficial others, not one of

which cost any licentiate but the members a dollar. Repeatedly, members of the Board had to leave their private practice in Montreal, and battle against the intrigues of laymen and legislators determined to destroy important provisions of the Act, protective to the very grumblers. From January to December a constant watch had to be kept on the official Gazette for applications for private bills. Imagine such a case as actually succeeded at the last session of the model Quebec legislature. A citizen applied for a private bill to enable one of his sons to enter the profession without matriculating, and condescended to give no other excuse than "for weighty reasons,"—consisting in the avowed ignorance of the said son in the branches required, and the threatened political opposition to the Premier of his extensive family! Yet we have heard some of the juvenile wisecracks of the profession declare, that had they been on the Board the Government would have shaken in its moccasins.

Being on the Board is not all that inexperienced fancy paints it. To many it would no doubt afford a splendid opportunity to realize the magnitude of their own conceit, and the fallibility of their most positive and most personal convictions. It not only means responsibility every day in the year, but a lot of real hard work and the loss of a lot of time and patience. Anyone not prepared to face the music, and to give this time and thought, has no business to accept the position. The profession have a right to expect diligence and a sense of duty, and sometimes imagine they have a right to expect perfection.

Subscriptions.

Professional men, as a rule, need the money they earn, and have a good grievance when their patients delay payment. Every professional man must know that a dental journal in Canada cannot for a long time to come be made a paying investment, unless it becomes the advertising organ of one dealer, to the exclusion, by exorbitant rates, of rivals. This journal, like its predecessor, is perfectly independent in its management of any advertiser, or any corporation. If it is the organ of any special interest, it is that of the Canadian profession as a body.

But it is hardly fair to ask the publisher to pay the printer out of his own pocket, and then pay the publisher at the end of the year. The present issue is a specimen of what the publisher is willing to risk, in the way of illustrations, etc., if the profession act fairly in the matter of support. So far, there has been a splendid success; but a very large number have not yet practised the golden rule of doing to a publisher as they would like

their patients to do to them. The amount is such a trifle that it is all the more likely to be overlooked, but we beg our subscribers to attend to it at once, and to send their dollar to DOMINION DENTAL JOURNAL, P. O. Box 298, Toronto, Ont.

Notices.

OUR old friend, Dr. W. R. Patton, formerly of Quebec city, now of Cologne, Germany, will act as Corresponding Foreign Editor.

WE are obliged, for want of space, to defer until the next number reviews of Dr. Geo. Cunningham's interesting pamphlet on "The treatment of pulpless teeth," as well as Mr. Henry Sewil's brochure on "Dental caries."

TRANSACTIONS OF THE NEW YORK ODONTOLOGICAL SOCIETY, 1888.—It would require a volume bigger than this one of 174 pages, to tell the story of our personal and professional obligations for over fifteen years to the founders and members of the Odontological Society. The early inspiration of meeting the men who were animated with a desire to get at truth, no matter what friend is hurt or what foe is helped, does not die out in a man's life. We venture to believe that this Society has been a prominent factor in the general education of the profession, through the fulness of its reports in the *Cosmos*, and the publication of its transactions.

Miscellaneous.

"THE teeth," says Homer, "are small barriers, placed in the mouth by nature, to prevent the tongue from going astray, or the abuse of words."

"WHOEVER considers the study of anatomy, I believe will never be an atheist. The frame of man's body, and coherence of his parts, being so strange and paradoxical, that I hold it to be the greatest miracle of nature."
—Lord Herbert.

A STUDENT in Paris, after passing three years in the Latin quarter, wrote to his father as follows :- "I have made up my mind to set to work, dear father; therefore, I should like to know whether it was law or medicine that I came to Paris to study?"

IN certain parts of India the teeth were once so esteemed that they were offered as sacrifices to the gods, and the ancients, seeing that the teeth remained perfect after the body had been long entombed, supposed they assisted in the final resurrection.

ALBUCASSIS was the first who asserted that the teeth could be transplanted. Galen said the teeth were real bones. Bartholme mentions a case in which a single tooth occupied the whole circle of the jaw. Genga relates a case of the growth of an *iron* tooth.

PROFESSIONAL JEALOUSY. — Two street-sweepers were heard pronouncing on the merits of a deceased brother of the broom. One of them said he was a good workman. The other pronounced him "capital at the thick, but nothing at all at the thin." The latter, being, it seems, the department which exerts the greatest agility of hand.

JOUBERT reported a case in which a lady lost all of her teeth, and at the age of 70 twenty new teeth grew in her jaws. Sauvart, Eustachie, and Duffay relate similar cases. Gehler saw a case in which an eye-tooth had been renewed three times. Hunter relates a case of the appearance of teeth at the age of 70. Mr. E. Parmly, of New York, recorded the case of an adult who never had any teeth, yet the alveolar processes were developed so as to fill up the vacancy in the mouth, which would have manifested itself had the teeth been lost by disease or extracted.

DR. W. D. DWINELLE, of New York, in 1855, in the *American Journal of Dental Science*, published the system of cap crown and so-called bridge work, which he claims was his invention.—*Archives* (St. Louis, Mo.)

Upon referring to the article in question, page 278, April 1855, the doctor's claim seems fairly established. It is an elaborate treatise. Referring to cases where there is nothing but the root of the tooth to build upon, the application of an artificial cusp, with gold plate attachment, and other methods, are suggested.—ED. D. D. J.

HOME-MADE capsicum plaster may be prepared as follows :

R Bacca capsici, ʒj.

Pulv. cantharides, ʒij.

Sp. vini rectis., ʒx.

Macerate for 48 hours, then percolate, adding sufficient rectified spirits to make the product measure ʒx.

Soak wash-leather in this tincture until well saturated, then take it out and dry in the open air. Cut in pieces for use.—*Dental Record* (London)

A GEM OF THOUGHT

"Not myself, but the truth in life I have spoken ;

Not myself, but the seed in life I have sown,

Shall pass on to ages, all about me forgotten,

Save the truth I have spoken, the things I have done."