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ORIGINAL COMMUNICATIONS.

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EDITORIAL NOTES ON PRACTICAL SUBJECTS.

EXTERNAL APPLICATIONS IN INCIPIENT ALVEOLAR ABSCESS.

BY W. GEO. BEERS, MONTREAL.

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It needs a comparatively limited dental practice to discover, that no inconsiderable amount of ignorance prevails among the large proportion of our patients, and to some extent among medical men, regarding the diagnosis and treatment of those cases of toothache which result in incipient alveolar abscess and swelling of the cheek. As a general thing there is no distinction made between exposure and inflammation of the pulp of the tooth, and inflammation of the periosteum; and the orthodox treatment of cloves, creasote, and hot fomentations is used, until after a long period of experimenting, the sufferer finds in the dental surgery, final and possibly fatal relief, where he might have found successful treatment at first.

There is a tendency among all classes of people to undertake their own treatment in the incipient stages of disease, and even in many instances, in cases where disease has made extensive progress; and an immense amount of faith is pinned to the *ipse dixit* of some antedeluvian granny; or to some quackish pill, drop, or lotion, which whether they kill or cure, succeed at all events in the principal object for which they were manufactured, viz.: making fortunes for their inventors. Every druggist can testify, that people who, by their own confessions, and the questions they ask, prove themselves to be almost ignorant of the real nature of their complaint, and blindly ignorant of the proper means to be used for restoration, will assume to over-

turn the prescribed rules of their physician, and swallow advertised specifics, without regard to quantity, quality or cost. Occasionally we meet too, with people who pretend to know a thing or two about the nature and treatment of complaints they may have, and pooh-pooh whatever may be said by men who have made human disease and treatment their special study. Such people generally have the most implicit faith in some one remedy, which they would use internally and externally, as well for an in-growing toe-nail as an attack of rheumatism, as well for a corn as a cancer. The wonder is these people do not apply for a charter for a college, and add another branch to the great family of medical specialists.

In all respects, the case is identical in toothache. It is so common a complaint that there is no old nurse under the sun, but can recommend a specific, and the pain is so often severe, that the sufferer is willing to test any and every proposed means of relief. In the general ignorance of the best means for allaying the pain of toothache, there is, as I said before, no distinction made in very many cases, as to the nature and origin of the disease. The great majority of sufferers do not present themselves to us, upon the the first premonitions of pain. We find they have been using every known means to allay the aching, and extraction is often an absolute necessity, by reason of the aggravated state to which the disease has been brought by the local and constitutional irritants used by the patient. I have seen patients who had actually scarred the gum and adjacent soft tissues with a piece of iron, heated red hot, in some superstitious belief, or upon some recommendation of an old work on domestic medicine. We frequently see mouths and faces severely blistered and scarred by the use of creasote, applied without judgment or care to a cavity of decay. But more serious results ensue from the common custom of using hot fomentations and poultices to the outside of the face in incipient alveolar abscess. Cases are on record of abscess attracted to "point" at the side of the neck, under the chin, behind the ear, and at different other external places, producing fistulous openings that lasted for months, and sometimes years, and ugly cicatrices for life, after the abscess had healed.

No doubt many cases occur which are never known to the dentist, but any practitioner can refer to cases in his own practice, brought by the experimenting of the patients themselves, or the advice of some sympathizer.

One case is well known to the dentists of a western town, where a party, whose experience of twenty years ought to have taught him better, mistook the swelling from several ulcerated roots for a tumour, and who actually opened the cheek, and "operated" without once discussing in his mind whether or not the diseased teeth had anything to do with the trouble. After suffering inexpressible anguish, the pus was discharged under the chin, and upon consulting a dentist, she was assured that the diseased roots were the cause. Relief was had after their extraction.

This morning I had a case of the kind. A beautiful young lady who had been under treatment in a town of New England, for a swelling of the cheek, which had extended so far as to close the eye on that side. A relative, who was in his second year at a medical college, undertook to cure her. He explained the nature of the tumour, as he called it; told her it was "just as easily removed as a button from a coat," and led her to believe that he was thoroughly competent to operate. With the aid of a fellow student, he gave her chloroform, made a transverse slit under the mental foramen, as could be seen; and as the young lady said to me, "he scraped, and rasped, and I awoke very stupid, and he showed me some little bits of bone which he said was the tumour." At all events the swelling did not disappear, and being obliged to remove to Montreal, she was brought to my office by a lady friend. The second inferior bicuspid was badly decayed and had been very tender to the touch for some weeks before the above scientific operation. Extraction was clearly indicated; a large abscess clung to the apex of the fang, and pus was discharged into the mouth from the socket. In the course of a week she was cured, but has her face disfigured for life by the scar. Other cases where the cheek has been lanced externally for such swelling are not very rare. It is common too, to hear patients say that they were advised not have an ulcerated root extracted until the inflammation subsided. A little study into the pathology of the matter will prove all external operations, hot applications &c., to be wrong, and the retention of diseased roots or teeth to be the greatest impediment to cure. Hot applications over the seat of disease *in the mouth* are proper; but where there is any tendency of the pus to point externally, *cold* water, ice, &c., should be used to the outside of the face. I purpose referring more fully at another time, to the subject of alveolar abscess and its treatment.

## THE VARIOUS DISEASES OF THE DENTAL PULP AND THEIR TREATMENT.

BY G. O. Fiset, D. D. S., QUEBEC CITY.

The dental pulp is one of the most delicate structures of the human organism. It is a highly vascular membrane, having a minute capillary net work, composed of the arterial and venous radicles, and of nervous filaments, supplied by arteries, veins, and nerves entering the apical foramina of the teeth ; it is liable to disease like all other tissues, therefore, it is of the utmost importance to us as surgeons, to save the vital principle of that small organ, placed there by God to serve its purpose in the animal economy. It is in almost all cases in our power, and is also our duty to do so.

An abnormal condition of the pulp generally results from exposure to the action of the atmosphere and foreign substances, either caused by decay, mechanical violence or wearing, produced by the necessary friction of mastication ; it occurs though rarely, without being exposed ; its diseases can be diagnosed when the trouble is taken, and are, viz. : inflammation from dental irritation, congestion, acute inflammation, ulceration, polypus, fatty degeneration, and calcification.

Inflammation of the pulp, without being directly exposed, occurs in cases of exposure of the periphery of the dentinal tubes, either by wear, fracture or decay, which contain the dentinal fibrils, and by changes of temperature and contact with acids, sugars, &c., become irritated and in that way transmit inflammation to the pulp by their continual irritation, or it may also be the result of sympathetic irritability from some diseased tooth, or from cold. Symptoms. Pressure upon the exposed dentine with an instrument will cause a sharp decisive pain, which will last for the moment only, a heavy and strong pressure will not be more painful than a slight touch, and if any irritating substance comes in contact with the exposed surface, pain will be produced and will last for a short time ; but when the pain is the result of sympathetic irritability it comes at intervals and is acute, lasting but a few minutes. Treatment. The affected part should be rubbed, each time the pain is felt, with bicarbonate of soda ; but if the pain is produced by sympathetic irritability, the tooth causing the mischief should be treated. If the affection is the result of decay, the cavity should be filled immediately, being careful to

insert a non-conductor between the exposed surface of the dentine and the metal.

When a cavity is found in a tooth, and the process of decay has gone so far that the pulp is unprotected, it becomes irritated by its exposure to the air and substances of a foreign nature entering the cavity, which produce engorgement of the capillaries; we then have a state of congestion. Symptoms. A slight uneasy pain is felt, and if touched with with an instrument the most excruciating pain is produced. Treatment. The pulp should be capped with with oxychloride of zinc; it is of no use to explain the process as it has been often done.

Acute inflammation follows congestion, caused by exudation of the serum of the blood, its symptoms being a throbbing and acute pain, recurring after a certain lapse of time, and is violent in its character. It may terminate in suppuration, causing periostitis, or ulceration may follow, according to the constitutional tendencies of a patient. The capping mode of treatment should be brought into requisition before suppuration takes place.

Ulceration is the result of continual irritation caused by the presence of some portion of disintegrated tooth structure, also by the pressure of particles of food upon the exposed surface of the pulp; it thereby acts by interrupting circulation and nutrition of the part. Symptoms. Intense darting pains from change of temperature and contact with foreign substances of an irritating character, which may be of long or short duration. Treatment. The same as in the two last named diseases.

Polypus is the name given to tumours enclosed in cavities, it is taken from the Greek *polus* many, *pus* a foot, and is supposed to resemble the radiated animal of that name. Polypus as it occurs in the pulp, is a fungus growth, protruding the edges of the chamber, in some cases filling nearly half of the cavity in a tooth, and is the result of ulceration; it gradually becomes elastic and spongy in its texture, and has a strong tendency to hemorrhage and secretes a fluid of a very offensive nature. Symptoms. No pain is felt when punctured or irritated by sucking, or otherwise—a profuse hemorrhage will be the result. Treatment. Apply an escharotic (acid carboic) every twenty-four hours, covered with gutta percha until the tumour has been reduced to the aperture of the pulp chamber where it was originally exposed; the escharotic acts by promoting healthy granula-

tions; the pulp should then be capped with oxy-chloride of zinc, and the cavity filled permanently.

Fatty degeneration is a gradual disorganization of the pulp tissue caused by partial necrosis, as for example: when a pulp has been capped and a non-conductor not placed between the gold and pulp, heat and cold are conducted by the agency of the metal to the living tissue, causing devitalization by the sudden shocks of temperature, as a consequence a separation of the elements takes place, which is fatty degeneration. This explains why a tooth will often decay to the fangs without the least sensation of pain being felt by the patient. Symptoms. Irritation of the tooth by pressure upon the soft parts, but the gums are not inflamed. When such is the case, the pulp chamber should be opened as soon as discovered, it will be found to contain a fluid resembling pus, filled with small fatty globules, which are the products of degeneration and emits a very offensive odor, caused, probably, by the gases that were generated from the disintegration. Treatment. The treatment should be, of course, antiseptic; after removing as far as possible, all the disintegrated pulp substance from the chamber and canal, applications of the saturated solution of iodine in creasote or carbolic acid, (which is quicker in its action than the former), should be made and repeated every twenty-four hours, until there is no more of that putrid odor left.

Calcification occurs either with or without exposure, and by the wearing of the tooth by mastication; in the the two latter cases it is found principally in persons of old age. In calcification, the recuperative power of the \* germinal matter of the peripheral cells becomes lost as age advances, it is thereby converted into formed material, which becomes fused together and hardened by the deposition of calcareous salts. This explains why a pulp gradually becomes smaller and calcified as a person gets older.

Calcification is also produced in young subjects in the same manner. If we find a pulp slightly exposed in young patients, and inflammatory action has not yet set in, or if it should become accidentally exposed while excavating, by capping it with gutta percha or Hill's stopping, temporarily for a year or more, a layer of osteo-dentine as it is called, will be found in a number of cases on removing the filling; not always, as it greatly depends upon the constitution of the individual at that age. Osteo-dentine does not resemble nat-

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\* Germinal matter, as called by Beale, corresponds to the nucleolus and nucleus of Virchow's cell, while his formed material corresponds to the last named author's cell contents and cell wall.

ural dentine, being of a yellow semi-transparent color, and is somewhat of a harder texture.

I have endeavoured to give, as briefly as possible, an explanation of the various diseases to which the pulp is subject, and their treatment, which I hope will find a place in your valuable journal.

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### REPAIRING RUBBER WORK.

BY A. C. COGSWELL, D. D. S.

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It often becomes necessary to repair parts of sets, either upper or under, of vulcanite rubber, which in many cases can be done quite readily without the trouble of taking a new impression.

If an under set, on which only the bicuspid and molars have been placed, and which necessitates the rubber on the lingual surface back of the neck of the incisors and cuspids, has become broken, by carefully securing the two parts by means of gutta percha or wax—so as to assume its original shape—it may then be placed in plaster and flaked as for any case; after hardening and removing the upper part so as to explore the inner portion of the rubber and wax, then take an instrument shaped like a chisel and cut away carefully all that portion of the rubber between the bicuspid on each side of the plate. A little caution may be used in cutting at each angle, say back of where the incisors would come when the plate is in the mouth, not to allow the instrument to slip and cut away the plaster, but carefully separating this centre-piece, remove it entirely, then drill and expose the pins of the first bicuspid, and bevel the edges of the plate so as to allow the new rubber to become securely attached to the old, which may be made even more safe by drilling holes in the edges of the old plate. When properly packed and vulcanized, it has all the advantages of a new plate, as it is tough and elastic, and not as clumsy or even so liable to break as if all the older part had remained and the new placed over it. The same can be done for any part of a set, or even all the rubber may be removed in some cases, by heating, and allowing the teeth to remain, pack and vulcanize as usual. This method often saves a deal of time and labour, and as time is money, 'tis well to economize.



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**PROCEEDINGS OF SOCIETIES.**

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**AMERICAN DENTAL ASSOCIATION.****OPERATIVE DENTISTRY.**

Dr. Corydon Palmer presented enlarged drawings of the superior and inferior dental arches, representing the ridges, cusps, pits, and fissures in the teeth, all of which were scientifically designated. He said each of the teeth followed a certain type, which is invariable; and the object of these drawings was to point out the probable lines of decay, and the necessary reparative treatment. The drawings were followed by plaster models; the first, a cast from an impression of a particular mouth as it was, indicating the points of decay; next, a similar cast, showing the cavities as prepared for filling; and a third cast, with the operations completed. A number of large and beautifully executed plaster models were then exhibited, showing similar operations on a larger scale, and exemplifying his manner of wedging. He prefers locust wedges, because they neither absorb moisture nor slip; of these he uses three, one at the cutting edge or summit of the tooth, to be used first, and the space thus obtained to be secured by a wedge driven at the neck, and also a thin wedge to protect the gum. In driving wedges at the cutting edges of incisors, they should be set perpendicularly instead of horizontally, to guard against fracture of frail teeth. To protect from moisture, it was of great service to introduce a wedge from within the arch in addition to the one from without. Attention being called to the accuracy of the casts, it was stated that the impressions were taken in gutta-percha, which was allowed to harden slightly before removal from the mouth. In answer to a question, whether any of the pulps were exposed, and, if so, how treated, it was replied, that there was one exposed pulp, which was treated with carbolic acid, capped with Hill's stopping, and filled with gold; as far as could be judged, the treatment was successful.

Dr. Jesse Perkins at this point presented a case of loss of the inferior maxilla from phosphor-necrosis, with consequent retraction of the soft parts. Drs. Atkinson and Taft were requested to examine the case. They reported that the whole of the lower jaw was lost, and that an artificial appliance could only be made available by very gradual steps.

Dr. Allport gave some particulars of a surgical operation, where the bone forming the chin being removed, and the cut extremities approximating, he distended the parts gradually to their normal position by mechanical appliances, and then introduced a permanent artificial substitute.

Dr. Atkinson said it was happy for the dental surgeon that the territory with which he had to do was so capable of being interfered with, and the rule to be observed, wherever imperfection exists, is to cut down with chisel and file to a healthy basis, saturate with creasote, and restore the exact contour of the lost or undeveloped parts. In ninety-nine per cent. of children's six-year molars there will be work to do. When a patient is presented, the first requirement is a correct diagnosis and a clear statement of the case, which should be given without regard to the chances of losing the operation. An imperfect diagnosis insures imperfect work. Cleaning the teeth is a matter of the first importance; if they are well developed and sound, see that the ligaments around them are all right, and carefully remove every particle of foreign matter deposited upon the necks and roots.

Question. When would you extract a tooth?

Dr. Atkinson. When I would bury a man,—when he is dead. The tooth is not dead when the pulp is dead, nor when it is extirpated, for the cement continues to receive pabulum through the periosteum until the connection is entirely separated. This indicates the position we should assume. He wondered that people had not anathematized the dental profession for all they had suffered from it; and but for hope of better things, which is always springing up in the human breast, we should all have been given over to nitrous oxide and the forceps. After finding the mischief, the next thing is to overcome it; and to do this use No. 20 foil, and a lead mallet of six to eight ounces; with these the work can be done easily.

Question. Can you save every case where the pulp is dead, or where there is a discharge from the socket of the tooth?

Dr. Atkinson. Yes, within my limits. A man is not dead until he is resolved back into his ultimates. Wherever there is a discharge, be sure there is life, which is trying to get rid of the diseased condition. The discharge of matter from the gums is due chiefly to the mode of brushing them *from* the teeth, which spoils their attachment. In such a case remove all foreign matter from the root, be it more or less, and inject carefully, with a hypodermic syringe, a drop

or two of the solution of the chloride of zinc, of the strength of 480 grains to the ounce of water, sufficient only to bathe all the parts where it is desirable to obtain an attachment ; thus a coagulated substance from the juices of the flesh is obtained, and the attachment will in time be secured. Failure, after such treatment, may be set down as the result of an imperfect performance.

Dr. Wetherbee. Is an extracted tooth dead ?

Dr. Atkinson. The pulp is dead very soon, but the dentine, from its analogy to the vegetable kingdom, requires a longer period, while the enamel is only killed by chemical solution.

Dr. Wetherbee. Should not those who extract teeth, then, be indicted ?

Dr. Atkinson. "Let him who is without sin cast the first stone."

Dr. Wetherbee. We want to cease using the term "fang;" it is used by medical writers, but they are no authority for us. When a tooth has lost its attachments, is it alive ?

Dr. Atkinson. So far as it is attached.

Dr. Wetherbee. Then, when it is nine-tenths detached, is it nine-tenths dead ?

Dr. Atkinson. No.

Dr. Wetherbee proceeded to say that when the soft solids are devitalized, and the attachments lost, the tooth is dead. Total calcification is death. He objected to Dr. Palmer's preparation of cavities in the first superior molars ; he considered the transverse ridge a weak point, which should be cut away ; he also objected to there being two cavities made in the posterior part of the tooth,—durability should be the only consideration. In the bicuspid, where there were two depressions and a fissure, he would cut from the posterior cavity forward to the anterior fissure.

Dr. Palmer explained that the cavities were done in both ways, according to the indications.

Dr. Crouse said that, after treating alveolar abscess, he thinks it best to use a temporary filling instead of inserting gold at once. He objected to quick wedging as unnecessarily painful ; wedges of pine wood, used gradually, were much more desirable ; a member present had his central incisors permanently separated by quick wedging. He was also opposed to the method of filling bicuspid, so that they would come in contact after the removal of the wedges ; this, in his opinion, would ensure fresh decay. He disliked the angles in the cavities as prepared by Dr. Palmer in his models ; he considered them

much more difficult of filling, and insecure when filled, than if the points left projecting into the main fissure had been cut away. He also objected to the use of such heavy foil as No. 14, 15, or 20; he would prefer No. 2, 3, or 4. He thought it not best to attempt to confine any one to one kind of foil any more than to one kind of instrument. He believed in not having foil too adhesive, and in using soft foil over the edges of enamel, with hand-pressure or with the mallet. In retaining points he would use a piece of gold partially annealed.

Dr. Wetherbee said wedges were safe in skilful hands; they might be severe, but not half so severe as the use of rubber; the soreness caused by the rubber was ten times a greater objection to its use than that of the wedge. All the separation necessary, even in the smallest cavities between the front teeth, is such as to allow the passage of the thinnest file; with properly formed instruments he obtained any more room which he needed from the palatal surface. Comparing his practice of twenty years ago with that of to-day, he was sure there was less suffering from the quick wedge than from the rubber.

Dr. Thomas was opposed to quick wedging from personal experience; he had been made to suffer more in that way than he would ever inflict upon one of his patients. Next to the wedge of hard wood driven quickly, came rubber; he was opposed to that also; it is fearfully expansive. He needs more room for operating than would merely allow the passage of a thin file, and to secure this with the least possible pain, he uses cotton, which in a little time secures space. He narrated an instance of heroic wedging, which occurred in a certain dental society, which resulted in splitting off the lateral incisor.

Dr. Woolworth rose to say that he agreed fully with the views of the last speaker.

Mr. McDonnell announced himself as a champion of quick-wedging; he had never split the alveolus nor done any other damage; but admitting such things to have happened, they were no more an argument against wedging than similar occurrences in extracting; all his experience was opposed to slow wedging. He considered contour fillings indispensable, and covered all exposed dentine and parts of enamel that had been cut with gold. He did not like the file for cutting out fissures; never used it except for cutting away enamel that should not be left.

Dr. Morgan assumed that enamel is a living tissue, and as a portion of it is composed of animal matter, it must be subject to wear and re-placement in common with the osseous tissues. That this is so, appears from the fact that enamel deprived of its subjacent dentine ultimately breaks down from lack of nutrition, though this result may be very slow of attainment. It was very necessary to pay proper attention to children's temporary teeth; in the sixth-year molars, in adults, he found about one in forty that needed no operations. Cleansing teeth was another matter that could not be too carefully attended to; he thought he had never thoroughly cleansed a bad set of teeth in his life, and he had never seen it done by any one else. He would add his testimony that the vitality of a tooth is never lost as long as there is any adhesion of the periosteum; when entirely dead, nature throws it off. He could not agree with a former speaker that the transverse ridge should always be cut out; there were cases where this should be done, but it was by no means the rule; on the contrary, the rule should be to cut off as far as the decay reached, but not a hair's breadth farther. It was desirable to retain as much of the solid substance of the tooth as possible; but if a part was burrowed under, or there was doubt of its strength, it should be cut away. It had been assumed that in bicuspid all the fissures should be cut out; this might be necessary in many cases, but he thought it wrong where the cusps are short and the enamel strong; he protested against the idea that gold is better than sound tooth substance. The proposition to cut away the sides of the cusps to correspond with the size of the neck would ruin the teeth in many cases; it is only admissible so far as may be necessary to cover the exposed dentine. He did not think it practicable to cover the edge of enamel at the cervical wall of the tooth, if beveled; there would always be sufficient leakage between the enamel and dentine to destroy the latter.

Dr. Palmer said that a retaining pit was, of all others, the place where adhesive foil should be used; he did not round the corners of the enamel; he wanted them as square as he could get them.

Dr. Wetherbee opposed beveling; he removes the feather edge of the enamel with a watchmaker's file. He objected to preparing cavities by following out all the fissures; it was but once in fifty times that this is necessary. He would rather cut off the angles, throwing the cavity into one; nothing is gained by leaving these ridges; the tooth is stronger without than with them. The operation should al-

ways be done in the best manner, irrespective of other considerations.

Dr. Crouse would agree with Dr. Wetherbee as to the manner of opening cavities, but not on wedging; quick wedging is a heroic kind of practice, and dangerous. He denied cutting away the bicuspid in the matter charged; he would cut sufficiently to preserve a proper space between the teeth to keep them clean. Filling fine retaining points is about the most difficult part of an operation. He maintained his views in regard to soft foil, and predicted a greater use of it than ever.

Dr. Mills pursues quick wedging as a means of saving his patients from more painful operations. He agreed in removing the feather edge from enamel by using a fine file. Cleaning teeth was a subject of the greatest importance, and one to which he had devoted his best efforts; very few, he was persuaded, had any adequate idea of what was meant by the expression; it was not merely to take away the portions of tartar that might be conveniently reached, but to remove every particle of foreign substance on any part of the tooth.

Dr. McQuillen said: My experience as a teacher has convinced me that students can be taught in a few months to fill a tooth in a highly creditable and skilful manner. It is not enough, however, to know *How to do!* but *What to do!* and *When to do!* This implies a thorough knowledge of the cause of trouble; and it demands a devotion of years to acquire that thorough knowledge of the principles and practice of the profession, combined with the constant and daily application of these, which can enable a practitioner to diagnose promptly and correctly the varied and complicated cases occurring in practice, or upon which the medical man may desire an opinion in consultation. Even with the most careful training, few manifest this faculty in a high degree, apparently only those who have been endowed by nature with peculiar gifts, like the divine afflatus of the poet. What is it in the justly eminent physician, surgeon, or dentist which secures the confidence and respect alike of the community and the profession? Is it the fertility and inexhaustible resources manifested by the physician in his prescriptions, or the facility with which the surgeon amputates a limb or extirpates a tumor, or the dexterity and skill displayed by the dentist in the performance of his operations? These qualities are frequently manifested by men who make but a slight impression on the world; but when they are combined with the possession of diagnostic powers of a high order, a master-mind is recognized and respected as such. While few can

occupy such an elevated field of usefulness, all should endeavor to develop to the fullest extent the perceptive and reasoning faculties which have been granted to them, for it is through the constant exercise of these that the ability to diagnose correctly depends. In applying these principles to the practice of dentistry, reference was made to the necessity of employing the finest probe (possessing flexibility and toughness) in the examination of the teeth, so as to discover those minute openings in the enamel which frequently lead into cavities of the largest size. The prevalence of symmetrical disease in the teeth, and the more than probable supposition that when a tooth was found decayed on one side the corresponding one on the opposite side would prove to be in the same condition, was dwelt upon as a matter of decided moment to bear in remembrance.

Dr. Butler spoke of the care necessary in examining cases ; it can only be properly done with fine probes, and silk thread, and wedges. It is proper and necessary that a fee should be charged for such examinations, as is the custom among physicians. As remarked by a previous speaker, it is impossible that the result of a defective diagnosis can be otherwise than unsatisfactory.

#### DENTAL HISTOLOGY

Dr. McQuillen said that, as Chairman of the Committee on Dental Histology, he had no written report to offer but in place of one would make a verbal statement of some of the work which had recently engaged his attention—the injection of the pulps of calves' teeth, a number of preparations of which he had brought with him, and would exhibit to the members under the microscope. The subject was one which he had been compelled to work out for himself, as he could not find any account, in the works which he had access to, of the method to be pursued, except such as applied to other organs—the liver, kidneys, etc. Having made an injection of a kidney, and mounted microscopical sections of it, which had been well thought of by several professional friends, he concluded to try a new field, in which, after a number of unsuccessful efforts, he had obtained the results which would be shown, as follows : procuring a calf's head at the market-house, the external carotid artery (which gives off a branch, the internal maxillary, supplying the teeth with blood-vessels) was sought for and found, after some trouble, owing to the contraction and retraction of the muscular coat of the artery, burying it in the surrounding soft parts ; the detached nozzle of the injecting pipe was then introduced into the mouth of the artery and securely tied

around it, and the calf's head placed in a pan of warm water, not so full as to cover the nozzle of the syringe, and just hot enough to bear the hand of the operator without discomfort. In the mean time a bottle containing Dr. Carter's carmine injecting fluid had been placed in water of the same temperature, and the syringe treated in the same manner. After the head had been in the water about ten minutes the syringe was filled with the coloring fluid, and the latter slowly and gradually injected into the vessels, great care being exercised not to allow any air to be in the nozzle of the syringe, as this would be forced into the vessels, and prevent the injection. On completing the injection, the head was removed from the water and set away in a cool place for an hour or so, when the incisors and some of the molars were extracted with ordinary forceps, and the teeth split open so as to expose the pulps. The latter were only found adherent to the walls of the pulp cavity at the extremity of the roots, where the process of growth was progressing most rapidly. At this point the adhesion was so firm as to require considerable force to sever the connection. The pulps were then placed in a preservative fluid, composed of Bower's glycerin, one ounce, strong acetic acid, five drops, and allowed to remain in it for a few days, when they were mounted in glycerin jelly on glass slides, the thin glass cover being secured by a ring of white cement around the edges. The results obtained would be seen under the microscope to present a rich plexus of minute vessels branching off from a number of larger ones, and these again being derived from the main artery of the pulp. In addition to this, projecting from the sides of the pulp, would be observed the dentinal fibrils of Tomes.

In bringing this subject before the Association, the speaker said it was merely introductory to a series of investigations which he proposed to enter upon in relation to the histology of the dental pulp in the three stages of dentition—follicular, saccular, and eruptive. The observations of Goodsir were of incalculable value in this direction, but it should be remembered that his work was accomplished without the aid of the microscope, and the employment of that instrument would no doubt reveal some new facts in this interesting field; and although something had been done by European microscopists, there yet remained ample room and verge enough for others.

Attention was directed to the obligations resting upon dental practitioners to do their part in contributing to science, and thus relieve the profession in America from the well-founded charge of being



dependent upon European investigators for their knowledge of dental histology. The advantages and opportunities enjoyed by European investigators were contrasted with the difficulties surrounding such efforts in America; yet it was contended that there was no reason why rich results should not be obtained here, by those who would devote themselves untiringly to scientific investigations. The only way to gain knowledge, in new and unexplored fields, is to keep trying; even though blundering ever and anon. Persistence in such efforts frequently yields results gratifying to the investigator, surprising to the world, and constituting a valuable addition to the annals of science.

In addition to the specimens of pulps, he exhibited some sections of an injected sheep's kidney, showing the Malpighian corpuscles; also a number of preparations made within the last six months illustrative of that terrible disease, trichiniasis, which is either more generally recognized or fearfully on the increase in America. The former supposition was the most probable, and many cases of death, with the cause shrouded in obscurity, have been doubtless due to the presence of these horrible parasites. The specimens were: No. 1. A woman who died in the Philadelphia Hospital last winter; showing the trichina inclosed in cysts. No. 2. A young girl who died in Clay City, Illinois, with the trichina very numerous, unencysted, and in migratory condition. No. 3. A woman who died in Elgin, Ill., with the trichina very numerous and coiled up, apparently preparatory to becoming encysted. Judging from the presence of large quantities of oil globules, the muscular tissue had apparently undergone fatty degeneration. No. 4. A portion of pork containing trichina eaten by the person from whom the preceding specimen had been taken. The trichina, although not very abundant in the pork, were well marked. As a series of specimens, these preparations were very valuable, particularly for educational purposes, in showing the parasite in various conditions, and in the fact that the last two specimens bore the relation of cause and effect, in the development of the disease of which the person died.

Dr. Atkinson said the European scientists were so near to one another that they had to confine themselves to a single tissue in order to avoid collisions; and they spent a whole lifetime in following up one train of investigation. It is the prevailing habit of Americans to spread their investigations over so large a field as to be necessarily superficial; and therefore foreign opinion could not be very compli-

mentary to the Yankees. He was not distressed because they would not receive experiments by us as conclusive. He had been largely occupied of late with experiments in the development of the hen's egg into the chick, by which he had been fully convinced that the only difference between the white and the red corpuscles is in the coloring material, which is formed in the egg before either the corpuscles or the vessels. The young corpuscles are arranged in tracts, without walls; simple germinal matter, which the best powers of the microscope cannot reduce into individual bodies; mere flocculent masses originating on the border of the yelk. The blood corpuscles are seed bodies from which all tissues arise; the origin of any planetary body cannot be presented to the physical sense, but only to the intellect. In our present condition our minds are divided just as the molecules are when they become sick. Irritation is the first disturbance of nutrient action; aberrant nutrient action may be spent or neutralized, or compromised and further sickened. White corpuscles are designed for the formation of white tissues, and are the embryos of the red corpuscles, whose mission is the formation of red tissues and the conveyance of oxygen to the various cell territories. He thanked God for the invention of the microscope; its revelations are the platform on which all operations on the human body should be based. Histogeny is the alphabet of all medical science, and without it there can be only bungling spelling.

Dr. Judd said there was a great deal more of danger from the trichina disease than was generally supposed. He had examined, under the microscope, specimens from six subjects which lay side by side in the dissecting-room last winter, without any reference to the disease by which they had died, and of these six he found trichina in three. He believed many deaths occurred from trichina which were set down to other diseases.

It is a common idea with histologists that there is no difference between one cell and another, that of an elephant, or of an oak, for example, or between the ovum of an elephant and the ovum of man; yet there is a vast difference, which might be denominated *potentiality*, or the power by which one was formed into an elephant and the other man. According to one theory, the difference is developed by circumstances; he believed that the cell of an elephant contained the potentiality of an elephant. In his own observations of cells, they showed regular and persistent currents, as distinct as those of the Gulf Stream; these currents being alike in similar species, but differ-

ent in others, so that he had hope, by simple examination of a cell, to discover its potentiality. Similar observations have been made by distinguished Russian scientists.

Dr. McQuillen. The reproduction of organic beings is effected by one of two methods,—the *asexual* or the *sexual*. Illustrations of the first are presented in the “budding” of plants, and in the lower forms of animal life, as the polypus, for instance. These “buddings” becoming detached constitute new beings. Sexual reproduction, on the other hand, implies male and female parents, the first furnishing the spermatozoa, and the last the ovum, or egg, among animals; while in the vegetable kingdom, the first supply the pollen-grain, or autheroid, and the last the ovule or seed. The direct union of the spermatozoa and the ovum is indispensable to the development of a new being, neither of them alone having the power of assuming the form of the parent. When examined under the microscope, the ovum of one animal resembles so closely the ova of other animals that it is impossible to distinguish any difference between them; yet that there is a specific tendency for each to grow in the resemblance of its parents, no one would pretend to deny; and in applying the term *Atavism* to this property, it conveys the same idea as *potentiality*, for it means the tendency of like to produce like. It should be remembered, however, that in addition to this, there is also a tendency to *variation*, by which the offspring, although resembling their parents in many particulars, yet differ from them in other respects; and that in some instances the difference is so great as to destroy all resemblance. This tendency to *variation* may not produce important modifications of form in all the living beings under the observation of man, in the limited period granted him to make his investigations, but in the lapse of ages, and with changing *conditions of existence*, it may be attended by alterations of the most important and wonderful character in the *progressive development of species*.

It is natural that the majority of those who had been taught to regard the origin of species as taking place by special creations, and who esteem it as an article of faith, should oppose such views, as it is but a repetition of the experience of the past in the progress of science. Men generally cling firmly and fondly to old and cherished opinions; and there is such a tendency to fossilization, on the part of the old and middle-aged, that but for the efforts and support of independent thinkers, and the fact that the plastic minds of the young are ever ready to receive new truths, there would be no advancement

in science, the arts, or in letters. Society, ever and anon, grows too large for its old clothes or ideas. The serpent, the lobster, the crab, indeed all animals, man not even excepted, are constantly throwing off the old integuments, some slowly and gradually, scale by scale, while others cast the skin or shell entire, when no longer serving a useful purpose. Martin Luther and his confreres, theological and scientific, succeeded in bursting through and casting a pretty large, thick, and tough skin in the Reformation; men of science are engaged upon one in the present age, quite as difficult to rend; and as Prof. Huxley remarks, "every good citizen must feel bound to facilitate the progress, and, even if he have nothing but a scalpel to work withal, to ease the cracking integument to the best of his ability;" or, as one might add, increase the gap with the investigations and revelations of the microscope.

It is a source of congratulation, as an evidence of growing liberality, that such subjects can be discussed without that manifestation of bitter opposition and feeling, and an indulgence in personalities, too often evoked. If those who favor the theory of the *progressive development of species* are in error, the best way to convince them of their mistake is by calm, dispassionate argument, and the presentation of incontrovertible evidence, rather than to denounce them for entertaining views which they may have erred in accepting, but yet honestly infer to be at least reasonable suppositions, if not fully proven.—*Dental Cosmos*.

#### HEAVY FOILS.

Report of a Discussion on Heavy Foils, at a Meeting of the Saint Louis Dental Society, Held on the Second Tuesday of November, at the Office of Dr. PORRE, and Reported by him.

Dr. Eames—Said that he was only prepared to report in reference to No. 20 of the heavy foils, as he had not yet used any of the other numbers. Expressed himself highly gratified with results. Had experimented with alternate layers of No. 20 and the lighter Nos., and proved conclusively that it was softer, more adhesive, the weld more perfect, that it made a better finish and was manipulated with greater ease and facility than any of the lighter foils.

Dr. Forbes—Said the important object was to produce perfect fil-

lings, and that in his opinion, if the gold, whatever the No., was driven well to the walls and margins, it was not so materially important to have the centre of the filling so hard. He had not used the heavy foils; could not understand why a ribbon could not be made of any required thickness or weight, by folding a sheet, or laying together a number of sheets of the lighter foils, and cutting off strips to suit, that would answer a better purpose than the heavy Nos. spoken of,—that would be more easily and perfectly adapted to walls of the cavities, and altogether make as solid a filling. He did not doubt but that the heavy foils might be an improvement in building up, but could not agree, though in the absence of experience, that they can be used in filling a deep cavity or under cut cavity, as well as the less Nos.

Dr. Judd—Said that he was using Nos. 20 to 60: that he had really encountered less difficulty than he anticipated; consequently was prepared to give his testimony in behalf of heavy foils. He stated that he had used the different Nos. with a great deal of care and patience, noting every peculiarity that each one presented under manipulation, that his conclusions might be satisfactory. A test of No. 20, under experiment, had proven that a conformity to the walls of the cavity was perfect, also that the weld and solidity of the filling far exceeded any of the less Nos. He observed that he did not use any one No. exclusively in filling a cavity, that in some cases he used several different Nos. Expressed a decided partiality for No. 60 for the margins of cavities, and for finishing. Used No. 60 for contour fillings; thought he could make a better filling than with a less No. If an approximal cavity, he used Morgan's gold for a foundation or anchorage, and then with narrow strips  $\frac{1}{4}$  inch or more in length, proceeded to fill; if a point on either border was broken away, he had no difficulty in building out to required fullness. If a crown was to be restored, he first made a level foundation and then with pieces of foil, size of surface, proceeded to weld layer upon layer; upon finishing, he stated that he had no fear of displacing the filling. Could chisel and file with impunity. His argument was that No. 60 required less force to make a perfect weld, than the same thickness made of folds of any of the less Nos., for reason that, in proportion as the foil was reduced in thickness, it was increased in density, therefore more difficult to weld. He stated, as a fact, that he could use upon No. 60 smaller points, without slipping, than upon any of the less Nos.

Dr. Chase—Had only used No. 20 of the heavy foils; had tried it in a cavity of an incisor of very delicate walls, with satisfactory results; made a good filling; he attested to its superiority in such cavities over the smaller Nos., for reason that it really took less force to weld, and that it could be conveyed to place with less difficulty, and, too, without injury to the foil, which is sometimes the case with the smaller Nos. in whatever form they might be used. He cuts in strips  $\frac{1}{8}$  inch wide and  $\frac{1}{2}$  inch long, making foundation or anchorage with ammoniated foil, then welds one end of strips, and folds over and over, welding each layer as he proceeds; when a broken wall was to be restored to contour, he was convinced heavy foil subserved the purpose best, was more tractable under manipulation, made a more solid and better welded filling.

Dr. J. B. Morrison—Had filled but two cavities with No. 20; used strips  $\frac{1}{8}$  inch wide and  $\frac{1}{4}$  inch long; succeeded in making very fair fillings, but was not satisfied with the heavy foil, with his small experience. Took issue with Dr. Judd upon the statement that it took greater force to weld an equal thickness of the smaller Nos. of foil.

Dr. Prince—Had not used the heavy foils.

Dr. A. W. Morrison—Had not tried the heavy foils, but was ready to adopt them in practice if proved superior to present Nos.

Dr. W. N. Morrison—Had a very limited experience in the manipulation of the heavy foils; was therefore, not prepared to give an opinion; was disposed to believe that they would not supersede the smaller Nos. in filling deep cavities, &c.—*Missouri Dental Journal*.

## SELECTED ARTICLES.

### SENSITIVE DENTINE.

BY J. BROCKWAY, ALBANY, NEW YORK.

DENTINE, a term of recent adoption, supplies a want, and I shall use it to designate that portion of a tooth formerly, though not pertinently, called bone or ivory.

The old physiologists divide a tooth into three parts: the crown, the neck, the root. I shall devote this article to the crown, and for my present purpose will divide that into five parts: enamel, membrane, dentine, pulp, nerves; or, in other words, the vitreous, membranous, osseous, pulpous, and nervous, disregarding the venous.

Both enamel and dentine—like bone, ivory, horn, shell, hair, and

the epidermis of the skin—have much the same analysis, being substantially lime-salts, phosphate, and carbonate. Yet as they materially differ from each other, they more widely differ from their kindred bone, horn, etc. They differ from bone and horn alike, in that neither enamel nor dentine are capable of growth or extension, after their form is once complete. Nor do they differ less in their formation, habits, and diseases,—but I shall devote this article chiefly to that difference in their organism which renders the one sensitive and the other not. Enamel is generally regarded as an unorganized vitreous deposit, and in that respect like shell; but dentine in its normal state is supplied with a delicate and highly sensitive organism. And yet the dentine or osseous portion of the tooth is no more sensitive than hair, horn, or nails; though in speaking of *sensitive* dentine we include the organs of sensation, the nerves and the membrane, whose entire web, warp, and woof is nerve fibrils. But my reasons for speaking of them as distinct and separate parts will be obvious as I proceed. I will then first state what I wish very briefly to demonstrate.

First, enamel as a vitreous, insensitive deposit; second, the membrane which lines and unites the enamel to the dentine is but a web woven of the attenuated nerve fibrils; third, that nerves ramifying or traversing the dentine are lateral branches, which put off from the main nerve that passes in at the point of the root, running through the pulp and dentine, the whole length of the tooth; fourth, that dentine, when those nerves are encised, is insensitive; and fifth, that the cutting off of the principal nerve destroys the sensibility of all the dentine below it. The main nerve has some likeness to the top root of certain vegetables, with their lateral branches and attenuated fibres.

It is questioned whether ultimate fibrils have ever been seen. Probably *not* singly; but the membrane covering dentine, as does the membrane the white of an egg, was, thirty years ago, dissected and made visible to the naked eye by Dr. Hayden, of Baltimore; and this, as I suppose, is nothing else than the most attenuated ultimate nerve fibrils. This membrane too is often denuded in the living tooth, but is better discerned by the touch than by the eye. The dead tooth is the better subject for dissection. This sometimes, needs but to be thoroughly dried, or at most slightly heated, to scale the enamel from the membrane and the membrane from the dentine. But as the main branches of the great

central nerve are scarcely visible under the microscope, we are obliged to feel after their more minute fibrils.

That the entire surface of denuded dentine is covered with the most delicate and sensitive nerves is but too palpable to the dental operator and his patient ; no part of such surface can be touched with the sharpest point without finding evidence of the presence of a living, active nerve, capable of communicating with the brain with electric speed ; and, no doubt, the interruption is attested by a whole company of those dental guards, ever ready to raise the war-cry against violence from acids or instruments.

That the dentine itself is not alike sensitive at every point is equally assured by the testimony of the senses. When by any means the enamel is abraded, the denuded membrane will be sensitive at *every point* ; but we have only to circumcise or cauterize the denuded spot, and the dentine may be touched or excavated without pain. Here, then, we have demonstration that the lateral nerves, passing from the main central nerve, are few and far between, compared with the multitude of fibres that enter and compose the membrane.

But still another evidence : in case of decomposition of dentine, or incipient or deep and extensive decay, it will be found that, unless the pulp is exposed, the walls of the cavity may be explored and thoroughly excavated with little or no pain, except as the instrument comes in contact with the membrane and under surface of the enamel ; or, as is often the case, there will be one or more points in the cavity less decayed than the surrounding parts. These are always the most vital points—vitality resists chemical action and decomposition of dentine. These sensitive spots, then, are made up, to a greater extent than the surrounding substance, of dentinal fibre, or it is at these points that the main branch nerve enters. These spots need only to be incised near the enamel to destroy sensation.

In support of the theory that the central nerve throws off branches laterally terminating with innumerable fibrils in the membrane, I mention one other fact which seems conclusive : cut off the longitudinal nerve, and all below is insensible. Cut or fracture this at the point of the root, and the whole tooth is insensible ; divide or cut it off at the neck of the root, and every nerve fibril in the crown is paralyzed ; perforate the centre of an incisor tooth, and just so far as the drill is carried is the dentine rendered insensible. Ordinarily, an incisor tooth, in a person of



forty, may be drilled from the cutting point nearly an eighth of an inch without reaching the pulp,—then, just so far may the crown be *filed* without feeling. And in the case of dwarf teeth, which are usually without any pulp or visible blood-vessels, the centre being perforated, the entire dentine is insensible to the file. And here, let me observe, nerves are not always accompanied with blood-vessels.

There are four classes of teeth where nerves are found, but no blood-vessels or capillaries.

The first class consists of nearly all dwarf teeth and supernumeraries (generally dwarfed); these, very soon after development, will be found without pulp or blood-vessels.

Although not entirely nerveless, the dens sapientiae are often of this class, as well as malformed and dwarfed lateral incisors.

To the second class belong the teeth of old persons when the pulp, always pregnant with dentine, has perfected deliverance, exhausted itself and is no more.

Of the third class are the teeth whose crowns are worn up, and having excited both the exhaustive energies and the recuperative action of the pulp, have filled the natural pulp-canal with dentine, leaving only a still sensitive nerve.

The fourth, and less common class, comprises the teeth where tartar has insinuated itself quite to the point of the root, exciting the capillaries to hasten their work and retire.

So far as my observation, in a practice of fifty years, has gone, these are the only cases that furnish grounds for the remarks of Professor McQuillen on "Calcification of Dental Pulp," in the October number (1868) of the DENTAL COSMOS. That nature intends the ultimate entire conversion of pulp to dentine is attested, not only by the four classes of cases alluded to, but by her invariable habit of yielding the substance of the pulp to the supply of dentine in our cattle and sheep as they fill up the allotted term of life.

And for the evidence of nature's handiwork in this life, one needs but to examine the teeth of cows past the age of twelve years; what remains of the pulp canal not worn up, will be found filled with dentine. It is not singular that in the work of converting its own substance into dentine, the energies of the pulp should some times be overtaxed, and its action become spasmodic, resulting in the formation of incoherent nodules, and in protracted pain, culminating

in inflammation and ulceration at the point of the tooth, already destitute of any vitalizing organism. The prognosis of this disease is not often difficult; the treatment, either longitudinal or alveolar drilling.

But as I must close this paper, suffice it to say, sensitive dentine depends upon a principal longitudinal nerve, extending near to the biting surface, and either putting off through its entire surface lateral branches, or near its surface dividing itself and spreading into the web which constitutes the investing membrane; and hence, the most sensitive portion of dentine is in the crown of the main and central nerve, or in the membrane which is the terminus and general depot of these telegraphic fibrils.

And now for the practical lesson: cutting off the principal or the lateral nerves destroys sensibility in the dentine, but does not necessarily prevent toothache, as this is often a consequence of inflamed periosteum. But this article is intended chiefly to show the mode of treatment of sensitive cavities. This theory seems to account for the points which, though occult, are obvious to the experienced operator, that cavities in teeth are usually most sensitive and supplied with nerves at the union of the dentine with the enamel, and hence, the best obtunder of pain is a well-tempered, sharp incising instrument; the patient being advised that the cause of sensation is the existence of inconceivably minute nerves, that need only to be cut to be cured. But in many cases the sensibility centres in one or more nodules, which being incised, unnerves the entire surface. Still it is advisable, ordinarily, with a properly-guarded and firm hand, not only to incise the sensitive nodule, but, as nearly as possible, at one stroke to circumcise the entire cavity.

That this is the safest and best way of disposing of the sensitive portion of superficial caries, without the use of chemical or acrid agents, has the testimony of fifty years' experience.—*Dental Cosmos*.

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### CAPPING EXPOSED PULPS.

BY A. O. RAWLS.

[Read before the Indiana State Dental Association.]

The delicacy of this operation must be apparent if we but note the fact that the Dental pulp is one among the most highly organized structures of our body, and responds to morbid influence through the

medium of the most sensitive nerve of the entire nervous system. Besides the difficulties arising out of those conditions, it is enclosed within a wall of solid, unyielding bone, the resistance of which would prove quite an impediment to success, should the operation be performed in a rude, bungling manner, or at a time when inflammation was too great to admit of the probability of its being overcome in the natural way of vital resistance and recuperation. Viewing the subject in the light of other days, when the practice of capping an exposed nerve was in its incipiency, can we be surprised at the limited success met with and the meagre support it received at the hands of our profession then, when to-day, with a theoretical and practical experience of twenty or thirty years in advance, and many valuable improvements to render us assistance, we fail in not a few of such cases intrusted to our care. Indeed, quite a number of the profession have abandoned the operation to considerable extent, resorting to it only when the pulp presents unmistakable signs of freedom from morbid conditions, while upon the other hand a few have turned their attention to therapeutical treatment when necessary, and, judging from the amount of success obtained in a comparatively short time, we would at least consider the practice commendable and well worthy a thorough trial.

When the practice of capping, for the purpose of protecting an exposed pulp first began to attract attention, its enemies were numerous and for several years the reign of arsenic or its kindred preparations continued unabated, but now we may rejoice in the thought that this fell destroyer has seen its palmiest days, and the possibility of saving an exposed pulp, when there exists but little inflammation, is no longer a question at issue, the only question being one as regards the relative value of the materials in use and the most satisfactory mode of manipulating the same to secure the best possible results.

If I mistake not, capping an exposed nerve or pulp dates prior to the operation of destroying it, and the first material used was the charred surface of the pulp itself, the actual cautery being used to produce the char, and this broken down tissue left remaining as a shield or barrier between the living pulp beneath and external filling. As might be inferred from the rudeness of the means resorted to and the nature of the parts involved, its use was not long continued; but the ill-success of this first attempt to fill over an exposed pulp, in all probability gave rise to the employment of means for its entire de-

struction. Shortly after this, metallic capping merged into use, sheet gold taking precedent, though on account of its conducting properties, soon yielded its laurels to lead and other materials of less heat-conducting powers, all of which have gradually fallen into disrepute; lead from its ease of adaptation to the wall of the cavity, and from the supposition entertained at one time that the oxyd deposited beneath the capping proved beneficial in allaying inflammatory action has enjoyed quite an extensive reputation. In the mean time, chemical science has not failed to appreciate the difficulties of our position, or been derelict of her duty, but has advanced nobly to our assistance, and presents a material for our consideration which bids fair to eclipse all of its predecessors, and already opens a new era in the capping of exposed pulps. Its composition is chloride of zinc, in solution and calcined oxyd of zinc; and, I believe, the credit of first using this article as a filling for decayed teeth is due to Drs. Keep, of Boston, and Metcalfe, of New Haven. Since then, not unlike other articles of merit, it has come very gradually into general use, improving in quality as its deficiencies were ascertained and the demand more extensive, until to-day it occupies a position enviable indeed, standing upon its own merits an auxiliary in operative Dentistry worthy of our esteem and recommendation. As a protective shield for an exposed pulp it has not been in general use many years, though for complete fillings and other purposes in which it has rendered valuable services, it has withstood a fair test for a considerable time.

All materials employed, or that have been in general use, and every theory linked with practical application in the Dental catalogue, has been burdened more or less, with imperfections and objections, and, as a matter of course, oxy-chloride of zinc has its complete share, and if we were to judge and be governed by the opinions of a few, it certainly has an overdose.

Prominent among the objections urged against the use of this article as a shield over an exposed pulp is first, that it is entirely too porous, consequently, when in close proximity to the pulp, would have a tendency toward absorbing all poisonous or effete matter existing at the point of contact, thereby rendering it unfit to be placed in such near relation with living tissues, laden as it would be with such impurities; second, that the escharotic properties possessed by the chloride is dangerous to the life of the pulp, and many cases are cited in which its use (rather abuse) has destroyed the life of this

valuable structure. There are other objections, but those which I have noted seem to be the principle ones against its employment in this direction. As to the first mentioned, it is only necessary to state that our endeavor should be in the preparation of such cases to rid, if possible, the pulp and entire decayed cavity of the least indication of disorganized tissue or any like impurities. Should there none form after the operation, the difficulty is overcome. To the second objection we would reply that a judicious use of the os-artificial, when well prepared, would obviate all such results, as the chloride is not taken into the circulation, and it is hardly probable that its use would destroy the pulp, unless employed in such quantities as to produce a great amount of inflammation.

The manner of introducing this material, and its consistency at the time it is introduced, tends as much probably to govern the results of the operation as anything else concerned, and is, no doubt, too often overlooked or entirely disregarded, and failures from such neglect are credited to the material.

Should it be mixed too thick or allowed to dry out too much before introducing, the force required to adapt it closely to the walls of the cavity would give rise to congestion and consequent inflammation, or if placed in gently while thick as before, then there would exist a lack of cohesion in the particles or the filling; also, imperfect adaptation to the exposed surface of the pulp, the result of which would be crumbling of the cap upon introduction of the filling over it, or a space left between the shield and pulp, which condition would surely induce strangulation and death of the part involved, while a reverse of this mixing and introducing it of too thin a consistency would prove equally disastrous. We are all aware that a solution of chloride of zinc enters into the composition of os-artificial, and that it is endowed with powerful escharotic properties, and in case we should incorporate this substance too freely with the calcined oxyd, its effects would not only be very powerful, but would tend toward the production of no small amount of irritation, and probably to such an extent that the vital forces would not suffice to re-establish healthy action. We will grant, however, the possibility of there being sufficient reaction of the recuperative powers to counteract the irritation existing, in which event we have left for our consideration a thoroughly charred surface of the pulp at the point of exposure. The question now arises as to the probability of the char remaining *in situ*. If such were the case we would apprehend no danger what-

ever, though I am inclined to the opposite opinion that such is not the condition of affairs, but that the char is removed by absorption, not taken up by the capping material, but through the medium of the absorbent vessels of the pulp stimulated to increased action as a consequence of great irritation, thus ridding itself of the cause and leaving an intervening space between the filling and pulp, corresponding in size to the extent of broken down tissue, thereby rendering the possibility of success doubtful, as the space could not certainly exist without more or less trouble. However, this neglect should not argue against the usefulness of the material in such operations, but only guard us against its abuse. As regards my manner of introducing the oxy-chloride of zinc over an exposed pulp, I have nothing new to offer in that direction, and in conclusion would say that this material, when properly prepared and manipulated with the care that the delicacy of the operation requires is, in the vast majority of cases, far superior to any other article extant as a protection for exposed pulps or sensitive dentine, and especially is it invaluable as an additional shield between the filling and nerve, when there exists but a thin lamina of dentine over the latter.—*Dental Register*.

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## EDITORIAL.

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### MAINTAINING PROFESSIONAL CHARACTER.

In city practice, it is quite common for our patients to come in frequent contact with other dentists, either in social gatherings, or even in their office, in company with friends, or perhaps to obtain relief of pain during our temporary absence. That some dentists possess sufficient self respect and honor, to converse about their confreres without disparaging them, is happily true; but that others have not, is also an undoubted fact. In the present state of our profession, we may expect to find a certain element whose highest ambition is to make money, and who will resort to the most despicable means of attracting attention; but among confreres who stand on the same social and professional level, it is certainly not to be expected of them, that they will avail themselves of favorable opportunities to draw the patients of others away, by offers to do certain work for the same or a lower price, and by extolling their own capabilities, and depreciating those of every other practitioner.

We have had parties coming to our office with woful stories of

their last dentist, apparently believing that dentists have so little fine feeling of honor and *esprit de corps* for one another, that they appreciate any revilement of co-workers they (the patients) may choose to offer. If a man is a quack and an impostor, we have no hesitation in stating our opinion of such a one; but if he is merely a poor operator, trying honestly to do his best, even if he stands aloof from our Associations, and does not subscribe to the Journal, we have no hesitation in saying all the good of him we know, and none of the evil. That this is a principle common to many, long before we were born, or dental ethics ever heard of, we are well aware; but we happen to know some fine *professing gentlemen*, who do not stickle at other measures.

A lady called professionally, some weeks ago, stating that she was a patient of Dr. ———; one of the best operators in this country. Two years ago she had had nine or ten cavities filled with gold by him, and six of these fillings had fallen out, while the remainder looked very shaky. Dr. ——— came in for her criticism; and we all know that while the ladies are our best friends, professionally, when we gain their confidence and esteem, they make very bad enemies when we lose their favor—with all respect to them. Upon examining the teeth, I saw that she entirely neglected hygienic precautions, and her mouth was offensive in the extreme; the teeth covered with tartar, and the remaining fillings so discoloured and gray that they could hardly be recognized.

Now here was an opportunity to vilify or defend an eminent confrere. By the former we would gain the lady's custom and that of many friends she would influence, but this at the sacrifice of all moral and professional honor. We assured the lady that, not only from the reputation of our confrere, but from the appearance of the fillings remaining, we had no doubt but that the work was well and honestly done; but that the best fillings in the world were not proof against such uncleanness as her mouth exhibited, and that we were rather surprised than otherwise to find any left.

Other cases present themselves to every dentist where he has opportunities to get some of that class of patients who would as soon go to one Dentist as another, but who have made appointments or arrangements with some certain one. It may happen, for instance, that one Dentist has extracted the teeth and prepared the mouth for an artificial substitute, and that the patient, as is foolishly the fashion in Canada, is not expected to make any payment until the set is

inserted, and that, by the persuasion of cheap prices, or some friend of another Dentist, the patient goes to the latter and states the fact that she had arranged with Dr. So and So, but has decided to change her Dentist. Now is it honest or professional to induce such a patient to stay? Many believe not, and practice accordingly; but there are others whose whole professional life seems guided by

“ the simple plan

That he should take who has the power,  
And he should keep who can.”

W. G. B.

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#### A NEW FLASK FOR RUBBER WORK.

We have received from Mr. S. B. Chandler, and have been using for the last few days, a new flask for rubber work which in many respects we consider to be superior to any that we have ever used. Those that we have, are made of brass, which is not acted on by the mercury and sulphur contained in the rubber to any thing like the extent that those made of iron are, and consequently do not dirty the hands as badly. There are no screws about it, to be wearing out not only the threads but our patience, too. They are brought together by a clamp, which, by the way, every one must provide for himself. If we may be allowed to do so, we would suggest the propriety of a clamp being furnished with the flasks. C. S. C.

AN OVERSIGHT.—By an oversight, the name of the writer of the Article taken from the Canada Medical Journal, entitled “Case of dead, misplaced wisdom tooth of lower jaw,” was omitted. It should have been credited to Arch. E. Malloch, M. D. of this city.

There will be a meeting of the Royal College of Dental Surgeons held at the College Rooms, Toronto, on Tuesday the 18th instant, at 10 o'clock, A. M.

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#### MISCELLANEOUS.

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##### WHY DO NOT OUR TEETH LAST OUR LIFETIME

That they are made as perfect, if the right materials are furnished, there cannot be a doubt. But are the necessary elements furnished to children as they are to the young of other animals? And do we not subject our teeth to deleterious influences from which animals that obey their natural instincts are exempt. The forming young of



other animals, while dependent on the mother, get lime, and phosphorous, and potash, and silex, and all the other elements of which the teeth are composed, from the blood or teeth of the mother, and she gets them from the food which Nature provides containing those elements in their natural proportions.

But where can the child in its forming state get these necessary elements, whose mother lives principally on starch and butter, and sugar, neither of which contains a particle of lime, phosphorus, potash or silex? Nature performs no miracles. She makes teeth as glass is made, by combining the elements which compose them according to her own chemical principles. And this illustration is the more forcible because the composition of the enamel of the teeth and of glass is very nearly identical; both, at least, requiring the combination of silex with some alkaline principle.

If, then, the mother of an unborn or nursing infant lives on white bread and butter, pastry, and confectionery, which contain no silex, and very little of the other elements which compose the teeth, nothing short of a miracle can give her a child with good teeth, and especially with teeth enamelled.

But what articles of food will make good teeth? Good milk will make good teeth, for it makes them for calves. Good meat will make good teeth, for it makes them for lions and wolves. Good vegetables and fruits will make good teeth, for they make them for monkeys.

Good corn, oats, barley, wheat, rye, and indeed everything that grows, will make good teeth, if eaten in their natural state, no elements being taken out; for every one of them does make teeth for horses, cows, sheep, or some other animal. But starch, sugar, lard, or butter will not make good teeth. You tried them all with your child's first teeth, and failed; and your neighbours have tried them, and indeed all Christendom has tried them, and the result is that a man or woman at forty with good, sound teeth is a very rare exception.—*Philosophy of Eating.*

AMAURNIS CAUSED BY CROWDING OF TEETH.—Mr. Hancock, (*Lancet*) reports the following peculiar case: a boy, aged eleven, whose sight had been previously unimpaired, found upon waking on morning that his sight was entirely lost. He was admitted to the Charing-Cross Hospital about a month afterwards, when it was found that his teeth were much crowded and wedged together; the jaws, in fact, not being large enough for them. Two permanent and four milk molar teeth were extracted, and the boy could distinguish light from darkness on the same evening; on the following morning he could make out objects. Eleven days after, he was discharged cured, the only treatment beyond the removal of the teeth, being two doses of aperient medicine.—*Nashville Journal of Medicine and Surgery.*