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Original Communications.

Translations.

(From Foreign Dental Journals, etc., etc.)

By CARL E. KLOTZ, L.D.S., St. Catharines, Ont.

TO REPRODUCE THE RIDGES OF THE PALATE ON A VULCANITE PLATE.—A piece of tea lead is burnished well to the model, just large enough to fit inside of the teeth after they are set up. When the case is ready for flasking, before putting it into the flask, take the tea lead plate and warm it and press it gently into the wax. Flask as usual. When flask is taken apart, remove tea lead which generally sticks to the upper part of the flask, varnish this part, and carefully burnish a piece of tinfoil on to the varnished surface. After vulcanizing you will have a polished surface underneath the tinfoil, which latter can easily be removed with a polishing brush on the lathe.

ANOTHER METHOD.—After the case is waxed up and placed into the lower part of the flask, cut out the wax close to the teeth. Soap the model and pour in plaster of Paris, but only even with the teeth. When dry, remove the block and replace wax plate, slightly warm this, as also the block of plaster of Paris, and press it into the wax. Place upper part of flask in position and pour. When flask is taken apart the block is in the upper part of the flask. Cover this with tinfoil or varnish well with waterglass. Pack as usual.—*Zahntechnische Reform.*

To prevent plaster of Paris from sticking to the palatine surface of a vulcanite plate, paint or brush the model in the flask well with soap suds.—*Zahntechnische Reform.*

UNCOMMON CASE OF SALIVARY CALCULUS.—Salivary calculus deposits at the ends of whartonian and steno ducts are easily diagnosed, through their locality as well as their consistency. The glands are generally considerably swollen, and the form of the deposits is oval. The deposit is found more frequently in the submaxillary and less in the parotid. The knowledge of their origin has not been fully brought to light. It is generally accepted to be a precipitation of uric acid salts around a foreign substance. In the majority of cases they will be found at the principal outlet of the glands, close to the buccal opening, as it is easy for a foreign substance to get into the opening of the duct. More difficult is the diagnosis if the deposit is deeper in the duct or even in the gland itself. In the latter it is scarcely probable that any foreign substance could find its way into them. It would be that it was forced in with the mucus. When such is the case, suppuration generally takes place, particularly in the parotid. The treatment is very simple; when there is a tendency to recurrence extirpate the glands.—*Zahnärztliches Wochenblatt.*

DEATH THE RESULT OF SWALLOWING ARTIFICIAL TEETH.—G. S. Scotson, in the *Journal of the British Dental Association*, states that a woman thirty-six years of age was admitted to the Manchester Infirmary in consequence of having swallowed her artificial teeth in a fit of coughing. Patient suffered pain, dysphagia, dyspnea, and speaking was very difficult. The plate could be felt with the finger—it was wedged in behind the larynx—but all efforts failed to remove it, even under the influence of chloroform, and not until tracheotomy was performed could it be removed, but the patient died the following day.—*Deutsche Monatschrift.*

A SIMPLE AND EFFECTIVE HEMOSTATIC.—Dr. Ramsay Smith, of Edinburgh, treats obstinate cases of bleeding where all other styptics have failed with bovist (*Lycopordon giganteum*) puff ball. He treated a patient who suffered with lymphadenom with several complications, one of which was profuse bleeding of the alveolus and gums. Teeth in a bad state with secession of the gums. Patient a habitual smoker, has suffered for some time, and the bleeding was periodical with intervals of three to four weeks, and sometimes lasting eight days. When patient came to him the

bleeding had lasted for several hours, and streamed from the alveolus of the right side of the upper jaw, from the third molar to the central. The bovist was cut into slices and packed along the gum margin and into the interproximal spaces. Bleeding was arrested almost immediately and no recurrence. Dr. Smith trusts that ere long he will be able to explain the theory of the effects of the bovist.—*Journal fur Zahnheilkunde.*

TREATMENT OF ROOT CANALS.—Dr. Schreier, of Vienna, uses a preparation of metallic potassium and iodine for removing the patrescent particles out of root canals and for cleansing them. He bases his theory on the saponifying of the contents of the canals, and thereby easily removed with warm water. He also considers it a good antiseptic treatment of the roots, and shortens the time considerably for treatment and filling.

SMALL wooden pincers are very easily made, and are convenient for handling medicines that effect steel instruments. Take two wooden tooth picks and place between them at one end a piece of a third, and bind together with thread; soften a little gutta percha and mould around the thread and you will have a simple pair of tweezers that will not corrode.—*Zahntechnische Reform.*

Calcification of Dental Pulp.

By A. ROSE, L.D.S., Peterborough, Ont.

The title of this paper as given in the programme would more accurately describe the subject if written, "Calcific deposits in the dental pulp chamber," because these deposits seldom assume the appearance of a calcified pulp.

Calcific deposits, as generally found in a pulp chamber of the human tooth by the dentist in ordinary practice, vary in quantity from a very thin incrustation adhering to the surface of the pulp, to a mass of semitranslucent substance usually resembling dentine in appearance and structure and completely filling the chamber and canal. They often occur in small granular particles or spiculæ through the pulp tissue, and also either attached to the walls of the chamber or to the sheath of the pulp, as minute pearls ranged along it. Many specimens, when removed from the chamber, appear to be cone-shaped, with the base spread out towards the opening in the dentine produced by the caries. Others show very irregular shapes.

Starting from a base looking towards the approaching caries or other irritating causes, they seem to penetrate the chamber, throwing forward projections in the direction of each canal in the roots of the tooth. Also, I would mention those deposits found in the chambers of the teeth of older persons when abrasion from the work of mastication has resulted in wearing the teeth to the gums, perhaps. In this class the canal seems to be in many cases simply closed up from the deposition of calcific matter upon its walls surrounding the pulp, until the whole cavity is filled and the pulp disappears entirely. As a last class I would mention what seems to me to resemble more than any other class a real case of calcification of the pulp. These are found in the teeth of very old persons, in which I have found the pulp to assume the appearance of the pith of a goose-quill but to possess a firmer structure, being more like a piece of the quill itself.

In all classes but the last two, those specimens which I have discovered and now have to exhibit, on being removed from the chamber and canal, were enclosed or surrounded by the pulp or the sheath of the pulp, except at the base where they were perhaps attached to the dentinal wall of the chamber. The sheath seemed to remain intact, even when the deposit had penetrated the canal nearly to the apex of the root, and when inflamed from any cause whatever (which inflammation is the usual cause of the trouble leading to the discovery of the deposit), this sheath is intensely sensitive to approach and is often possessed of a very tenacious vitality, resisting the action of arsenic and cocaine, and requiring several applications to overcome its sensitiveness.

The structure of these deposits seems, according to the opinions of leading histologists and microscopists, as Miller, Black and Iszlai, to differ, sometimes being organized similar to dentine, sometimes resembling cementum and sometimes bony in structure.

It would appear to one less skilled in histological knowledge of these parts of tooth structure, that the particular formation of these deposits depends upon that portion of the odontoblastic cells retaining most vitality and receiving the necessary stimulus which may be either local or systemic in character. The writer is also led to conclude that these deposits are the result of nature's efforts to repair an injury either received or threatened, and that they are really of a physiological character, and that any irritation which may render sensitive this monitor of the dental organization, the pulp, may engage its reparative function and cause, in many instances, a deposition of calcific matter upon the walls (or within them) of its habitation somewhere in the direction of the irritation, and this matter may be organized in the shape of dentine, cementum or bone, the morphological differences between these elements of tooth structure being very slight; and when we remember that they all originate in the cellular matter of the dental papilla, it is

not unreasonable to suppose that the stimulation above referred to may as readily produce the one form of matter as the other.

A strong reason for deeming this peculiar formation of calcific matter in the pulp chamber physiological rather than pathological as to origin, is the fact that the experience of almost every observer of this formation agrees in the statement that it is found most frequently in well-developed, well-nourished and usually plethoric individuals. I have often acted upon this assumption, and on discovering one, or perhaps two, of the canals of a superior molar closed to the finest broach, and having been attacked with caries which penetrated the tooth to the position of the pulp chamber originally, the tooth had, in the words of the patient, "just rotted away and never ached at all," I have cleansed the remaining root canals, if any, and after thorough antisepting with iodoform and eucalyptus oil, or aristol and eucalyptus oil, which is less disagreeable, or perhaps with hydrarg. bi-chlor. 1-500 or 1-1000, have dried and filled just as I should have filled any ordinary case. I have several such under observation which have been thus dealt with, one two years ago, and three or four for a shorter time, all giving good satisfaction. I feel quite well satisfied myself that the real office of the ordinary "nerve stone," "nerve nodule," "pulp stone," "odontome," or "endodonthele," by whatsoever term we may choose to call it, *is not to cause* the intense pain of neuralgia, or pericementitis, or any of those terribly painful conditions which usually precede its discovery, but its work *is to prevent* this trouble, and I would just here ask, "Who knows how often this latter purpose is fulfilled to the letter?" A good idea may be formed of a proper answer to this question by filing down a hundred of those diseased teeth which have been extracted for replacement with artificial dentures, as is done by the student of the first or second year where the system of Dr. Black has been adopted in teaching "*Operative Technique.*"

Very many of these cases "never ache but just rot away," and if examined will be found to possess ample evidence of this purpose in the formation of calcific deposits in the pulp chamber.

The diagnosis of this irregularity of tooth structure is comparatively easy where the tooth has been penetrated by caries to the locality of the pulp chamber. Any effort to remove the pulp will expose the presence of the deposit; but where this deposit exists in an apparently sound tooth, and having been produced through some irritation, perhaps of a systemic character, such as often causes loss of enamel at the gingival margin or very great sensitiveness in the same locality, its presence is suggested by extremely painful spasms, or occasional sharp piercing pain in the tooth, or perhaps a condition resembling pericementitis, which can best be ended by making forcible entrance with a good sharp bur, or a sharpened glyddon drill shank, dipped in cocaine crystals and

carbolic acid or glycerine frequently while operating, and forcibly removing both pulp and the deposit. The pain above referred to often yields to cold applications, but requires several applications of arsenious acid and cocaine or morphia to effectually end the trouble when access can be got to within even a short distance of the remaining portion of the pulp.

If these few lines result in a thorough discussion of this subject, and in bringing out the experience of our senior members with this *knotty* subject, I shall have accomplished all I expected while trying to express my own. I never flattered myself with the thought that I had gained more knowledge of this subject than any ordinary practitioner of four or five years' service should have acquired, nor in fact quite so much; but, on being asked if I would give a paper, I consented to do so, feeling it the duty of every member of our profession to aid this society as far as he is able in drawing forth what information can be gained from even an imperfect presentation of his views on any subject, and this subject being lately brought to my mind I adopted it for the occasion.

Hints.

By B.

Inspired by Dr. Beacock's interesting "dottings" in the DOMINION DENTAL JOURNAL, I send you the following snap-shots:

1. Put a piece of linen in your impression cup to prevent the pink compound from sticking to the metal.
2. Instead of linen, use a bit of rubber dam, wet with soap and water, when you want to separate your flashes while packing.
3. Dissolve black rubber in chloroform. Paint your model two or three coats, and wait a few minutes before you pack with red vulcanite. Having no vermilion, not so likely to have sore mouth.
4. Vulcanize repairs and small plates at 195°. Full dentures, three hours and fifteen minutes at 275°. Thin vulcanite is stronger than thick.
5. Varnish teeth with glycerine before taking impression with pink compound. It will not stick.
6. Alcohol, ammonia and chloroform; of each take equal parts to clean plates. Add pumice stone and quickly scour.
7. Burn borax before using the solder.
8. If you want a strengthener for upper vulcanite sets, solder a stiff iridium and platinum bar across the front blocks.
9. Bore a hole in your work bench and glue a cork in it.
10. Do not fail to consult a reliable physician if you feel too big for your hat. An expert in insanity preferred.

A Hint.

By G. H. WEAGANT, Cornwall, Ont.

Occasionally we have a corundum wheel which will not fit a chuck—the whole being too large. An easy way to remedy this fault is to make a small band, larger than the size of the hole, place it over the end of the chuck and pour in some fusible alloy. Remove the band, place the chuck in the lathe, and with a chisel, turn down the alloy to fit the wheel.

Selections.

Extent of Recuperation in Dental Tissues.*

By DR. W. E. BURKHART, Tacoma, Wash.

In the consideration of pathological conditions we are called upon as a matter of necessity to treat them in relation to, and as a departure from, a hygienic or physiological standard. In searching for relief from pathological phases we must first acquire a full and correct understanding of the anatomy and normal functions of the part. If we trace step by step the degenerative process we shall then, by reversing the conditions, be better able to assist nature in building up again the losses that have been sustained. After making ourselves familiar with the normal conditions, and as we take in hand the work of recovery of diseased tissue, we must keep in mind that all medical and surgical treatment possesses no curative virtues of itself, but is an effort on our part to present the most favorable conditions for nature to do the work of repair. This is recuperation or recovery. In such a busy occupation as dentistry mere theorizing is profitable only for the development of latent talent, and what we need more is the discussion of theories from which we may make practical deductions. I will, therefore, confine my remarks to such as will demonstrate practical conclusions. Whatever may be our theory of dental caries in detail, we know that all destructive agents of tooth structure proceed from the external surface of the tooth. The first substance to be acted upon by the attacking forces of the oral fluids is the enamel on account of its exposed position. This is the hardest of all animal tissues and was evidently the provision

* Read before the Midwinter Dental Congress, San Francisco, by request of the Programme Committee for Washington.

of an all-wise creator, evolved in the eternal fitness of things to protect the less defensive tissue within. Nevertheless, with all this original armor so ingeniously distributed, its very coat of mail constitutes its weakest point of recuperation. Tissue originally highly organic is so heavily loaded by the deposition of the inorganic elements that it is vested with no ability to recover from injury, and only becomes a receptacle for products such as invite further destruction and more disastrous results to the newly exposed dentine beneath. Recuperative power is exercised by the more highly organized tissues and is the result of a demand from the affected part for protection, and after the condition of the part has been made known through the nervous system this is furnished largely through the vascular system. We may consider the enamel as entirely composed of inorganic material in so far as nervous impressions are concerned, and therefore lacks the first principle of recovery, and we must content ourselves with restoring lost portions of it with foreign materials entirely. With all our assistance nature cannot raise a hand to help herself. The next substance in the line of attack is the dentine, which is a very hard and ivory like formation, but less dense than enamel, and the interstices of its tubuli filled with a quasi-organic material somewhat resembling protoplasm, and possessing no definite formation justifying its classification as containing either nerves or blood vessels. Here we begin to develop attributes of organized tissues, for by irritation to the dentine there is developed sensation which clearly shows that an impression has been conveyed even though we are unable to explain the manner in which it is done. A tooth that has been prepared for filling, presenting normal live dentine, if left exposed to the action of the oral fluids for a few days will often be found to have acquired a considerable degree of sensitiveness, though it may not have been sensitive at the time of excavation. This sensitiveness must be the result of some form of irritation to the exposed portion of dentine, and is a notification that destructive agents are at work. It is the office of the nerves to convey this intelligence, but in the absence of nerves the protoplasmic material present must be regarded as conveying these impressions to the pulp from which they can be transmitted in the usual manner. When we come to the question of recuperative power in dentine we must decide yes in some respects and no in others. In dentine not actually destroyed there is this function to a limited extent, but in portions missing art must restore with foreign material the same as in enamel. And here will be noticed, in tissue not yet dissolved, defensive action against destructive agents, by notification through the medium of sensation that all is not well and there is need of reinforcements in the affected location. In tissue diseased, but still possessing a considerable degree of vitality, there is often a decided

recovery to the normal standard following the insertion of a filling. The protection afforded the dentine immediately produces an alleviation of the irritation, and many times in the removal of fillings we are surprised to find such densely hard dentine exposed, which is defensive action of the pulp for its own protection. We must allow, then, that dentine under these circumstances has the power of recuperation, depending upon organic principles and general conditions localized in the pulp.

When we come to the pulp we begin the consideration of some of the most highly organized tissue in the whole economy, and within whose realm reaction is most decided and prompt. Immediately following any irritation to this organ there is a call for more blood in accordance with nature's laws, by which she intends to furnish more material for resistance. After resolution of blood to the part comes inflammation, and the blood vessels become engorged and somewhat weakened by their effort to do so much work, producing odontalgia by pressure upon the nerves of the pulp, confined as it is within unyielding walls of ivory.

This condition usually recovers very well under the influence of anodynes and sedatives; that is they appear to do so, but the permanency of the recovery depends upon the length of time the disease has obtained and the individual recuperative power of the patient. After the pulp is reduced to an apparently healthy condition we are face to face with that ever-recurring problem of capping pulps, the success of which does not consist so much in the visual condition of the organ as it does in its relative pathological aspect. If the pulp is healthy and the capping is done in accordance with well-known scientific principles, complete success may be expected. Why then do dentists who have been all through the capping experience finally give up the practice as a general rule, and only perform the operation in the exceptionably favorable cases and as a general procedure devitalize? Of course we may say that our experience teaches us that this is the safest practice, but what scientific reasons are there which produce results at variance with our early theories? One reason, usually mistaken, why they do not live under any covering than that provided by nature is that they are not healthy when covered up. If they are not healthy, in what condition do we find them? At the point of exposure and point of former irritation, there is in all probability still a discharge of pus, indicating an effort of nature to close up the break in her ranks, or at least a discharge of serum easily degenerated. If now the discharge is limited to the ability of the power of the vascular system to carry away by absorption, all may yet be well, but if sufficient space should exist for the accommodation of these products they will soon become a very decided irritant, or, if the capacity of the vessels is over-taxed, there is certain disaster, and recuperation is not to be expected.

Disappointments along this line come thick and fast. Pulp are very obstinate things; when you desire to save them they invite you by many pleasant smiles, and we smile to ourselves in congratulation of having discovered the key to unlock their confidence, but by the time we assure ourselves that we are master of the situation they seem to have dropped us in cold indifference, and we cast about us for consolation in approaching death. We find comfort—a mite cool—in the fact that the tendency of all pulps is toward extermination. Other things being equal a pulp would rather die than live. After maturity of a tooth, of course there is not the necessity for the preservation of the pulp that existed previously, nothing seeming to demand it but recuperative power. Nearly all recuperative power is lost with the death of the pulp. To understand the tendency of the pulps to die, let us follow the course of development. First we have all pulp, then a shell of deposited inorganic material at the periphery, gradually calcifying from here toward the centre, and co-extensive with this process is the reduction in sizes of the pulp until at mature life it remains a comparatively small organ occupying the central portion of the crown and root. After complete calcification has taken place there seems little use for it except to bestow its power of recuperation in case of disease or accident, as the gradual reduction in size is accompanied by gradually diminishing function. Some have said that the pulp is no longer needed after maturity, but I think that its value as a health-maintainer is sufficient to save it whenever that can be done.

There is always plenty of time to devitalize after a pulp will not live. Quite often the recuperative function is sufficient to bring about a state of health in the root after a portion is dead and amputated. The attenuated shape of the root portion is favorable for this, but I am of the opinion that the results will not justify the practice to any extent. Our patients expect from us usually more permanent work than we can expect from preserving stumps, and we must keep in mind that the recovery of pulps is generally temporary in its character, and considerable allowance must be made in prognosis. Sedatives may restore a pulp to the normal condition if the inflammation is of recent origin; but it is apt in more aggravated cases to show a steady decline, and at the least irritation at a subsequent time give up life entirely though you have put an abiding faith in it.

In irritations of the gums and peridental membrane from the deposit of salivary calculus, it is remarkable what a contrast is presented in recuperative power to that of the pulp, as it is well known with what rapidity inflamed and ulcerating surfaces of these tissues will subside after removal of the irritant, many times without further treatment. And in all diseases of the gums and membrane due to local causes nature only needs a chance to

do her repair work, and when this is afforded her she makes rapid strides and does all and more than we could well expect. It has been authoritatively stated by the originator of the implantation—Dr. Younger—that he has had under his observation an implanted tooth that has the attribute of “sensitiveness” when touched by an instrument. This seems at variance to all our understanding of an implanted tooth which may have been out of the mouth for a sufficient time to have completely desiccated the tooth and adherent membrane. A tooth out of the mouth for some time must be dead—so dead that it cannot be resurrected—neither can the dead membrane come to life again; that is out of the question in my mind; I mean the identical tissue that once was dead; I do not believe that the recuperative power in the most favorable cases can approach to this length. Though I have seen no explanation of the return of sensitiveness in the implanted tooth reported by Dr. Younger, it is clear to me how such a condition may be brought about. You know about the sponge graft, how new tissue may be rapidly produced and extended in which granulations are induced to rapidly flow in and fill up the graft, using the sponge as a matrix.

Now the sponge is never removed except as nature cares for it and removes it through the circulation by absorption, but we do not think the sponge is left in place as a sponge nor do we think that the sponge as such is created into live tissue. We believe that nature is able to carry away atom by atom in her mysterious way every particle of sponge according to her necessity, and replace it cell by cell with vitality, in a manner corresponding to that of petrification. When wood is petrified the wood does not turn to stone as we thought in our boyhood days, but each tiny atom as it is dissolved out is replaced by an atom of silica, which is, to all appearance of form, the structure of wood it always had been, but in fact they are cells of an entirely new material built in the same matrix. In the implanted tooth we are instructed to choose a tooth with a fair share of peridental membrane adherent to the root, as a necessary qualification for success, and left to infer that the membrane comes to life again. It does this in appearance, but as this result is not reasonable to me I believe that it forms the matrix for a new peridental membrane in the same manner that the sponge does in the graft, and is not revived to life again but is replaced by new tissue vitally formed. I see no reason why this should not be true, and that even the dental tubuli or the uncalcified portion of the cementum could not be penetrated by live matter capable of transmitting to the nerves impression in a relative manner to which it is conveyed by the protoplasmic substance originally occupying these same dental tubes. I see in this theory an effort of nature to extend her power of recovery to original conditions made favorable by

science, though it reaches beyond our usual expectations. Accepting this, we can easily see, even in the absence of a pulp, how sensation could be conveyed through the tooth substance to some of the many nerves reflected at the dental ligament. An analogous condition you may have noticed many times when a live pulp has been removed; there is still sensation along the sides of the canal conveyed by the many filaments, penetrating through the dentine and cementum, making connection with the peridental membrane. However, this usually disappears after a day or two on account of the death of the connecting substance, especially if the canal is dressed with a medicament that would tend to destroy it.

In alveolar abscess the tendency of the surrounding tissue to rapid recovery is well known. In the usual cases the removal of the cause of disease is all that is necessary, and in the unusual cases perhaps persistent treatment and occasionally the removal of necrosed bone, but this latter is very rarely necessary considering the large number of cases presenting. The remarkable thing about alveolar abscesses is that nature is particularly tolerant of them and very often carries them along for years without any very alarming effects, when, if situated in other parts of the body, the condition would immediately become serious. In closing, I will say that I have made no effort to exhaust this subject, but only an attempt to bring before you a few of the most prominent points that have claimed my attention at various times, and will here submit a recapitulation of my conclusions that you may get them in a few condensed statements:

1st. Enamel has no recuperative power, and all loss of tissue must be restored artificially.

2nd. Dentine has no recuperative power so far as the restoration of lost tissue is concerned, but does possess such from a defensive point of view, and may recalcify softened tissue.

3rd. Pulpas have recuperative power but,

4th. The tendency of all pulpas is toward extermination.

5th. The peridental membrane and contiguous tissue have remarkably strong recuperative power.—*Pacific Dental Journal*.

Science in Dentistry.*

In the April issue of the *Dental Cosmos* of the present year there appeared a thoughtful editorial on "The Scientific Status of the Dental Profession," in which it was held in effect that, in this country, the art of dentistry had outgrown the science; that our profession was tending toward a mechanical rather than a scientific

* Read before the Midwinter Fair Dental Congress.

excellence. It is not my intention here to combat or controvert in any sense the opinion of the writer, in which, indeed, I most fully share, but to call attention to certain aspects of the question that appear to me to have been left partly undeveloped, or, at most, merely suggested or touched upon.

Dentistry in America has, so far, been a natural growth ; it has developed from the needs of our people. The white race, not yet perhaps thoroughly acclimated to our extremes of climate, coming here as pioneers and undergoing the physical changes necessitated by the altered environment—the effects of mixture of races, new habits of diet, and especially a most rapid, and, as it were, abnormal mental stimulus—under all these new conditions, has, with the need, developed the remedy to an extent perhaps greater than in any other part of the civilized world.

The art of dentistry owes more to America than to any other country, as the standing and success of American dentists abroad during the past forty or more years sufficiently demonstrates. It is in this country also that the first systematic efforts at special dental education were made ; where the beginning of the elevation of dentistry from an art to a learned profession was first attempted ; and, whatever may be the status of dentistry here or elsewhere, so much must rightly be attributed to the credit of American dentists. The amount of human suffering that has been made unnecessary by the inventive genius of the dental profession of this country is incalculable, even when not taking into account its share in the giving of that priceless boon of surgical anæsthetics to the world.

In the natural evolution of things, however, a new state of affairs has been produced, one that requires a certain change of face on the part of the dental profession, if it is to hold what ought to be its proper place in the scientific world, and in the estimation of the public. While dentistry was only an art we easily held the lead, and it was not an unnatural presumption for us to think that progress on the same general lines that had so far lead to success would fail us no more in the future than in the past. We had created practical dentistry as an independent profession in which our pre-eminence was recognized throughout the world.

In doing this, however, we have narrowed our field and separated ourselves from those who should recognize us as co-workers in a common field of usefulness. Dental surgery is a branch of medical science ; it is really a specialty in the broader field of medicine. While this is the truth, which no one who considers it can gainsay, it is practically ignored by the public and by ourselves. There is no reason why a surgeon who limits his practice to the oral region should be less of a physician than one who confines himself to the eye, the nose or throat, or the pelvic organs ; the collateral relations of the one are not less extensive than those of the other.

Yet, at the present time, a dentist ranks lower in popular estimation, I think we must all admit, than a physician or surgeon.

If I interpret correctly a recent decision, this view has received judicial sanction, and is part of the judge-made law of the land. To-day the dentist stands, to the public, somewhere between the physician and chiropodist; his social position approaches the former; his professional rank as a specialist, outside of the lines of legitimate medicine, is nearer than we could wish to the latter.

I state these facts, as to the unsatisfactory status of our profession in certain respects, as a preliminary to what I wish to say as to its present needs, which have been so ably commented upon by the editor of the *Dental Cosmos*. The time has come, it seems to me, for us to take a higher stand to elevate our specialty, not only in popular reputation but in fact. We have one great advantage: the prestige of American dentistry from its past in good, and is only now threatened by the danger that we underestimate the importance of further progress. The world recognizes our manual skill and invention, and it is not a small matter that the leading teacher of dentistry in Germany, if not on the continent of Europe, should be an American, with all the honors that it is possible for a German university to bestow upon him. We have in this the advantage over our brethren in general medicine, for, notwithstanding what the world owes to American physicians in the progress of medical science, European writers have not yet learned to look to this country leading in the scientific branches of the profession. That this will be less the case in the future no one who observes the tendencies of American medicine at the present will doubt; and it should be our wish and our earnest effort that American dentistry should also continue the progress it has made. At the present, as Dr. Kirk says, the tendency is too much the other way; "no one who even superficially observes the matter can fail to see that our trans-Atlantic *confreres* produce an aggregate of scientific work in dentistry which far exceeds the output in this country in the same lines." This being so, and continuing to be so, it is inevitable that American dentistry must fall in the estimation of scientific men, and, as their dicta are followed invariably by the reading and thinking public, it must therefore decline still more in popular estimation.

There is no good reason why this should be so, and such reason as exists is not any defence for the actual conditions. Americans are not intellectually behind their co-workers in other lands; the ability to do scientific work is not lacking, nor are there in dentistry the deficiencies that exist in some other departments as compared to those abroad. Our clinical facilities are as extensive as those abroad, and our powers of observation certainly are not inferior. The real difficulty is the lack hitherto of the scientific spirit, and of what I may call the scientific atmosphere, which

is the encourager and breeder of the spirit of scientific research. Nevertheless this is coming to us, if it is not here; and, as Dr. Kirk says, there is, even now, "a proportion, small though it may be, of workers in the dental ranks who find or make the time to investigate problems in dental science which have a wider scope and broader application than the direct utilitarian." Were there more of these, and could they impress upon the whole of our profession a little of their spirit, the conditions of which I now complain could not exist. The trouble is that we have too much adopted what Mr. Howells says is the ideal of our country—business success—as our aim and not kept sufficiently in mind that "wisdom is the principal thing," and that with all our getting we should get understanding. We do not seem to understand what scientific work is, or how to go about getting it.

If we wish our profession to stand high in this country we should follow the lead of the regular medical profession that is now in almost every section raising its qualifications, and that has always had an ethical ideal which, although sneered at by the laity, has kept it, even at its lowest stage, within the traditions of a learned profession. At the present, in all our great centres, like New York, Philadelphia, Boston, Baltimore, etc., there is a large body of physicians acknowledged to be equals of any in the world, and their influence and example are elevating all the rest. I think I am safe in saying that, while there yet remains much to be desired, the time is coming and will probably be within the lifetime of some of us when there will be centres of medical education in this country that will turn the tide to some extent, and students will cross the Atlantic to sit at the feet of the masters on this side. The reproach that American medical science is in its "kindergarten" will not be, I think, much longer justified.

What is needed now is that American dentistry should raise its standard and make its reputation as a scientific specialty of medicine, not a manual art. Hitherto it has been one of the easiest ways to get a living—no thorough educational qualifications, no strict ethical observance, and, in short, no high grade of professional honor or feeling being universally exacted of its followers. Our cities are full of purely commercial dentists, who organize in associations, incorporate themselves for profit, and advertise without scruple or limit. To the general public we are all on one level, and that is apt to be the level of the lowest in its estimation. This is to a great extent due to the fact that some of the teachers in our colleges are men of mercantile propensities, uneducated, and in some instances not only dishonest but unprofessional. We should expect students graduated from such institutions to develop into a lower order of professional life.

To make dentistry a recognized specialty in medicine we will have to demand a medical education in the broadest sense for

our dentists, and I believe that it is in this way that true reform will have to be effected. If the dental profession of some State would work for a law modelled somewhat after some of the medical practice acts that are now going into execution, requiring every one who enters the practice of dentistry after a certain date to show proofs that he has received a liberal and a medical education, and to stand an examination, not only in dental manipulation, but also in the general principles of medical science, we would elevate our profession at once. It would be but a few years until the dentists of that State were appreciated both at home and abroad; they would take rank among their medical *confreres*, and share the advantage of wider association and a broader field of work and usefulness. With a medical education dentists could with a great advantage do a large share of the facial surgery that now passes into other hands.

With such a change the charge that American dentistry is not scientific could not long be justified. Instead of literature "replete with statements and arguments based upon mere speculation, with no foundation of fact beyond that constructed in the brain of the originator," we would begin to have reports judiciously made, original observations and scholarly criticisms upon those of others. Our people are observing and ingenious, and what they most generally lack is not the power of observation, but the education that will enable them to know what to observe. This can only be obtained by study, and can only become general with a higher grade of mental and scientific culture than we have hitherto deemed an essential for membership in our profession. However observant and ingenious a man may be, unless he knows what others have already done, he must waste his mental energies in vain in uselessly going over their work, and the publication of the results of his labors, however strenuous, instead of ranking him with the discoverers, gives him the credit only of his ignorance. There has been a vast amount of misapplied mental labor in this particular direction. I have in mind four men of ability who have contributed largely to the literature of the profession, in which hardly an original idea has been added to advance the progress of our specialty; a lifetime having been wasted in laborious work which has not borne the fruits desired.

Even when really original observations are made, this defective knowledge stands in the way of due credit being given to their author. The world does not look for figs on what it is inclined to consider as thistles, and valuable facts may be ignored or overlooked because they are published where no one looks for them, or because they are hidden among the mass of comparatively worthless material that emanates from so many writers whose only ability is to rehash old facts or emit baseless speculations or commonplace generalities. To be sure this is also done abroad,

but there is less of it and at least a reputation of more scholarship and original work. They are now learning to respect American medical science more than was formerly done, and yet "*Americana sunt, non legunter*" is too often their off-hand disposal of really meritorious contributions from this side of the ocean. Some eighteen or twenty years ago a New York physician published a paper, giving out views, based on observation that within the past few years have revolutionized opinions in regard to an important class of ailments the world over. A German author recently in alluding to them said, in excuse for the neglect they had met with in his country, that they originated in America, where medical science had been up to the present and still is in its "kinderschule." The "certain condescension in foreigners," that Lowell satirized, is often still too manifest in medical matters, and it should be the wish and endeavor of every true American to do away with any just ground on which it can be based. I say nothing of unjust ones, for I trust we are not a people who will willingly submit to injustice.

If American dentistry wishes to keep the rank it has won in the practical development of the art, in its present more scientific phases, it must raise its standards of culture, and require of its practitioners a higher grade of requirements, both general and professional, than has heretofore been its rule. I see no better ideal for it than that of being considered as a specialty in the great field of medicine. To be recognized as such we must widen our studies and be able to view our work in all its relations to the human system; a specialist who is not also a well-educated physician is justly not in good standing in the medical profession. I care not what views are held by others in regard to the study of our specialty, if any advancement is made, it can only be accomplished (as I have said over and over again) by obtaining a broad, liberal, medical education. We must cultivate a liberal professional, rather than a commercial, spirit in our specialty. We may not be able to realize this ideal at once, but we can work toward it, and that it will be attained, if we desire it, I have no doubt. We cannot look to the medical profession to come to us; the lesser cannot include the greater; but it has abundant room to take us in, and there is no doubt of its good will if we only accept the conditions it imposes upon its own members. For the present we might look for a friendly appreciation only; an organic union is only a possibility of the future. But by standing still, or following some of our present tendencies, I fear the difference between us, both as regards professional standing and public estimation, will widen instead of diminish.—*Pacific Coast Dentist.*

The Effect of Exercise upon the Teeth.

By A. HUGH HIPPLE, L.D.S., D.D.S., Omaha.

The action of the American Medical Association in establishing a dental section, and thereby recognizing dentistry as a specialty of medicine, has not only conferred dignity upon that calling and secured for its practitioners recognition as professional men, but it has also furnished them with an incentive to familiarize themselves with those broad principles that underlie the practice of medicine. On the other hand it has called the attention of physicians to the fact that the condition of the teeth has much to do with the condition of the general system, and patients are nowadays referred by them to the dentist quite as frequently as to the surgeon. But although physicians are beginning to recognize the seriousness of diseases of the teeth, and to impress upon their patients the importance of having them properly attended to whenever they show signs of decay, the fact that a rapid deterioration of these organs is now going on and that serious results are likely to follow this deterioration has been almost entirely overlooked. A little inquiry and investigation, however, must convince anyone that such a change for the worse is taking place. Children rarely have as good teeth as their parents had at the same age, but on the contrary their teeth are often almost hopelessly decayed before the dentures of their parents show signs of impairment. A century ago the city of New York, with a population of about fifty thousand, had only one dentist, and although much less attention was paid to the teeth then than is paid to them now, there is abundant evidence to show that our forefathers had better teeth than we have. Dr. Hammond tells us that the coming man will be hairless and toothless, and the tendency certainly seems to be in that direction. The conservation of the natural teeth is the end toward which every intelligent and conscientious dentist directs his efforts, but if the quality of the teeth continues to deteriorate the replacement of lost dental tissue must gradually give way to the replacement of lost dental organs. Every physician knows, of course, that this would not be conducive to health, but that medical men generally do not realize how important a bearing the condition of the teeth has upon the health and longevity of an individual is shown by the fact that in examining applicants for life insurance no question regarding the condition of the mouth is ever asked. The teeth may be so badly decayed that the proper mastication of food is impossible, the saliva may be vitiated, the gums and alveoli may be the seat of abscesses that are continually discharging pus,

but these conditions do not concern the examining physician. Probably not one in a thousand, in reporting upon the application of a man twenty-five years of age, would think of mentioning the fact that he had lost, say, all his upper teeth and half his lower ones, although after giving it a little thought few would probably care to dispute the statement that the loss of the teeth before the twenty-fifth year will on the average shorten the life of an individual by at least several years. If this be true, no apology is needed for calling the attention of medical men to the dental deterioration that has been referred to, for discussing its probable causes, and for suggesting possible remedies.

In endeavoring to ascertain why it is that imperfect dentures are so common and dental diseases so alarmingly prevalent, it must be borne in mind that although the teeth are vital organs, developed and nourished very much like the other organs of the body, they differ from them widely in susceptibility to disease. While other organs may be delicate early in life and afterward become quite strong and healthy, or *vice versa*, the teeth, if not impaired by disease, remain the same, with the exception, perhaps, of a slight increase of density as age advances. All the other organs of the body, too, including the bones, are endowed with recuperative powers whereby injuries are to a greater or less extent repaired; but the teeth possess no such attributes, and are apparently governed by somewhat different laws from those that regulate other parts of the animal economy. Teeth that are perfect in form and structure are rarely, if ever, attacked by decay. It is only where the enamel is defective that dental caries can obtain a foothold. As the teeth are developed early in life, it is during childhood that those influences are exerted which by interfering with their development predispose them to disease, and it is to childhood, therefore, that we must look for the causes of dental deterioration.

Scientists tell us that use and disuse have much to do with the development of organs, and that with the progress of civilization the brain has increased and the jaws have decreased in size. The wisdom teeth from disuse have degenerated and become rudimentary; the canines, being no longer needed to tear flesh from the bone and do other heavy work, have become smaller and less prominent; the teeth in general have become soft and chalky and very susceptible to decay. This, they say, is the result of the substitution of soft, well-cooked food for that which required vigorous use of the teeth and masticatory muscles, and as there seems to be no likelihood of civilized man going back to primeval methods of preparing food, the inference is that dental deterioration is one of the prices we are obliged to pay for a high state of civilization. But use and disuse not only modify the size and structure of organs when persisted in for a series of generations,

but their effect upon the organs of any one individual are no less marked. Tie up an arm so that it cannot be used, and the muscles will soon become soft and flabby, and will eventually disappear. Lock up a child in a room by itself with nothing to occupy its thoughts, and it will in time become an imbecile. It appears that a certain amount of exercise is essential to the development of most organs. A part when performing work requires and receives more blood than when at rest, and if much work is performed the blood-vessels increase in size and the part is better nourished. That a close relationship exists between development and nourishment, and between nourishment and exercise, is a fact so well known that it need not be discussed here; but so far as the study of the teeth is concerned the principle has been applied to the race rather than to the individual. It is undoubtedly true that what the people of a country eat for eight or ten generations will determine in a general way the size and shape of their jaws and the form and structure of their teeth at the end of that time; but it is probably no less true that what a child eats up to the time he is eight or ten years of age will determine just as certainly what will be the condition of his dental organs for the rest of his life. If the food of the child is such as requires vigorous use of the jaws, the blood supply will be liberal, the parts will be well developed, and the teeth will not be likely to suffer from decay. On the other hand, if the child is fed on soft food, requiring little or no active mastication, the jaws and teeth will be poorly nourished, and the latter at least will be defective in structure. Erupted into the mouth in that condition, no amount of care can protect them from the ravages of decay, which will sooner or later impair their usefulness and mar their beauty.

It must be remembered in this connection that although none of the temporary teeth make their appearance in the mouth until the child is five or six months of age, their crowns are almost fully developed at birth, and that the jaws of a newly-born child also contain the germs of twenty-four of the permanent teeth in various stages of development. These permanent teeth do not begin to erupt until the child is about six years of age, but during that time the process of calcification is continually going on. With the first molars, the incisors and the canines, it is well started by the end of the first year; with the bicuspid, at the end of the second year; and with the second molars at about the fifth year. It will thus be seen that between the second and fifth years this process of calcification upon which depends the future character of the teeth is in most active progress. Nature intended that during this period the jaws and teeth should be well exercised, and to that end provided the child with a perfect temporary set of teeth, but, as a matter of fact, they are used but very little compared with the other organs of the body. The muscles of the arms, legs and

head are in almost constant use, and are consequently always well supplied with blood. The brain is wrestling with the problems of life as they present themselves, and it, too, is being exercised and developed. The eye is being trained to examine every object, and the ear to catch the slightest sound, but the teeth are hardly used at all. Nine out of ten mothers feed their children of that age on soft food. Bread made from fine flour, biscuits soaked in tea or milk, meat cooked tender and cut into small bits, with potatoes and other vegetables in such a condition that they require little or no mastication, form the chief food of the little three-year-olds. Not being actively exercised, the teeth and jaws need but a small quantity of blood, and, owing to the imperfect development that results from insufficient nourishment, they are unable to resist the attacks of the pathogenic germs that are always present in the mouth, and which eventually destroy them.

The remedy is in the hands of parents. If they will see that their children, at the earliest possible age, use their first teeth vigorously, they need have little anxiety in regard to the second set. In other words, if a demand is created for sound, solid teeth, nature will be almost certain to supply them. It is by no means difficult to teach children to chew their food. Nothing pleases small children more than to be allowed to nibble a hard biscuit or bite the meat from a bone. Nature prompts them to exercise their teeth in that way, just as it prompts a puppy to spend hours gnawing at a bone which has long since been stripped of its meat. But the average mother, partly, no doubt, out of respect to dainty dresses and well-kept carpets, but more particularly from fear of possible injury to the teeth themselves, objects to the dental calisthenics in which the child would gladly indulge, and thereby unconsciously opposes the efforts of nature to develop good teeth. Since teeth that are perfect in structure rarely if ever decay, an ounce of prevention in the way of developing healthy dental organs is certainly worth more than a pound of cure after they are diseased; and if parents will supply their children with an abundance of bone-producing food, see that the teeth are kept clean, have them examined and attended to from time to time by a competent dentist, and, above all, have them well exercised by chewing hard food, nature will do her part, and their children in after years will rejoice in the possession of that almost priceless endowment, a beautiful and complete set of teeth.

Correspondence.

Errors in Report of Union Meeting of Ontario Dental Society and Eastern Ontario Dental Association.

To the Editor of the DOMINION DENTAL JOURNAL:

SIR,—I wish to draw attention to a few errors in the report of the above meeting. While they are comparatively unimportant they are slightly misleading to those who were not present.

For instance, in the report of members present, Dr. Clement, Kingston, who was ill during the forepart of the convention, and Drs. Black, Daly and Aykroyd, also of Kingston, who did not happen to be at the first meeting, attended subsequent meetings. Others arrived after the first meeting, *e.g.*, Dr. Barce, Brockville, detained in the West, Dr. Mabee, Gananoque, Dr. Weagant, Smith's Falls, and Dr. McCulloch, Perth. All these were members of the Eastern Ontario Dental Association.

I am represented as reporting Dr. Abbott to recommend Hg. Cl. "1 to 1,000" for disinfecting pulp canal. He says "1 to 10,000." In the discussion, Dr. Klotz said he himself used 1 to 1,000.

The report tells us that the Eastern Ontario Dental Association did not decide upon a place of meeting next year; while, as a fact, an invitation from Smith's Falls was accepted for next year's meeting.

R. E. SPARKS.

Reviews.

Napheys' Modern Therapeutics. In two handsome volumes of 1,000 pages each. Vol. I., General Medicine and Diseases of Children. Vol. II., General Surgery, Obstetrics and Diseases of Women. Ninth edition. Edited by ALLEN J. SMITH, M.D., and J. AUBREY DAVIS, M.D. \$6 per volume.

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This is not only the latest, but the most complete text-book on Surgery. Critical authorities declare that this is the best text-book for the student and general work of reference for the practitioner, and is eminently practical. The special attention to treatment, so systematically neglected in similar works, is one of its leading features. To the dentist it is specially useful wherein it discusses the injuries and diseases of the head, face, nose, mouth and jaws, tongue, salivary glands, tonsils, larynx, etc.

Special for Dental Students.

"Tomes' Dental Surgery," "Tomes' Dental Anatomy," "Stocken's Dental Medicine," "Gorgas' Dental Medicine," "Mitchell's Dental Chemistry," "Sewill's Dental Surgery," "Richardson's Mechanical Dentistry," "Essig's Dental Metallurgy," "Taft's Operative Dentistry," "Black's Dental Anatomy," "Harris' Principles and Practice of Dental Surgery," "Harris' Dental Dictionary," "Fillebrown's Operative Dentistry," "Evan's Crown and Bridge Work." Mr. E. M. Renouf has made special arrangements to supply dental students with the above text-books, as well as the text-books required by medical schools. The dental works which have been translated into French will be found specially valuable to French students.

Editorial.

A Word to Students.

When a young man starts out in life to equip himself for a profession, one would naturally suppose, that he would prefer to select a college whose facilities for teaching are not only of the best, but whose reputation is, to say the least, savory. There are colleges and colleges, and there are students and students. We have seen with our own eyes, and heard with our own ears, the desperate efforts made to cheapen the curriculum, the bait of "Professor-

ships," etc., offered *ad libitum*, and the generally accepted belief that the degree of D.D.S. is an assured condition of attendance at such and such a school. Even universities under State charters, have stooped to the undignified position of truckling to that element in the dental profession who are affected with "big head," and who verily believe their clay to be a sort of which the Creator had very little to spare. The Sancho Panzas of dentistry who "think themselves fit for government," and who are the first themselves to discover it, are not disposed to bide their time and win their spurs in service. In choosing a school organized from purely factious opposition, a student reveals his own character—that it is not education he yearns for as much as for a title or tail to his name. In a visit we paid several years ago to Chicago, we were struck with this fact, from the very personal appearance of the students in a college under the government of the National Association of Dental Faculties, and one which did not seek that distinction. The latter recalled very forcibly experiences of the average dental college twenty-five years ago.

It is much wiser for a student to make sacrifices to attend the very best school than to receive the highest "honors" an inferior one has to bestow. If the student is poor and ambitious, it is all the more reason why he should endeavor to avail himself of the best. He had better wear a threadbare coat all his life than turn out a gowned fraud. It is no mystery why there are students who positively prefer to attend a cheap and inferior school. It is as clear as noonday. It is no mystery why disappointed people, who over-estimate their own abilities, oppose established colleges, and foment discord. It is as easily understood as the bite of the mad dog.

Doctors, Dentists and Druggists.

They are a drug in the market. You find them in every hole and corner, especially in our cities, many of them having all the evidence externally of hard times. In Quebec, it is the ambition of the *habitant*, who perhaps can neither read nor write, to make some of his sons priests, doctors or lawyers. It seems to us that this thing is overdone in Canada, especially in Ontario and Quebec. It is only by raising the standard that it can be restrained. Unfortunately, however, there seems to be a factious desire to cheapen education. We fully expect to see our profession reduced again to the ranks of the peddling "tooth-carpenter."

There was nothing but the diminished tail of that "same old herring" to be discovered in the last issue of the *Dental Practitioner and Advertiser*. *Requiescat in pace.*