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Original Communications

FERMENTATION IN THE MOUTH CAVITY AND ITS BEARING ON DENTAL CARIES.*

By PROF. J. J. MCKENZIE, Toronto, Ont.

By the term fermentation we understand usually, that decomposition of organic matter of a carbohydrate character, due to the action of micro-organisms, which results in a series of simple chemical compounds. The term fermentation is thus restricted to this decomposition of carbohydrates, whilst the similar decomposition which occurs in proteid and albuminous material we call putrefaction. There is really no reason why these two terms should be given to two processes which are essentially similar; but the terms have come to us as a legacy from the days when the processes were not understood. The decomposition of carbohydrates is frequently associated with the active evolution of carbondioxide gas, and from the bubbling and boiling of the fermenting mass due to this evolution of gas the term arose. At first, of course, fermentation and putrefaction were supposed to be due in some way to the chemical action of the air, as the results of the decomposition were found to contain a greater percentage of oxygen than the bodies decomposed—*i.e.*, that the process was one of oxidation. It took some time before these ideas were overthrown, but finally, due chiefly to the labors and experiments of Pasteur, it was shown that the decomposition was due to the presence of minute plants, either yeast or bacteria, and that without

* Read at the eighth annual meeting of the Ontario Dental Society, Toronto 1896.

the action of these organisms no fermentation or putrefaction could take place.

The fermentation of carbohydrates due to the action of yeast does not concern us specially this evening. The resulting products of yeast fermentation are chiefly carbon dioxide and alcohol, with traces of other bodies; but this is not the fermentation which ordinarily occurs in the mouth cavity, and it is that which we have specially to consider. This fermentation in the mouth is chiefly due to the action of bacteria.

Bacterial fermentation of carbohydrates varies very considerably in its character, according to the carbohydrate which is fermented or decomposed, and the organism which is causing the decomposition.

Most of the carbohydrates must undergo change before they can be fermented. Starch, for instance, must be converted into glucose, cane sugar inverted, cellulose changed in some way, before decomposition can take place. This change is brought about by the so-called unorganized ferments or enzymes which are secreted either by animal cells or by the bacteria themselves. That is, the process is begun by a simplification of the carbohydrate before ever any decomposition takes place. The nature of this simplification is one of the obscure points in physiological chemistry about which we have many theories, but no one of them satisfactory. The extent to which this simplification takes place frequently determines the results of the fermentation.

I have here two tubes containing beef broth infected with the same organism. The one contains a certain amount of glucose, a simple sugar; the other, the same amount of lactose. You will perceive that the tube containing glucose has undergone more rapid fermentation than the one containing lactose. This is shown by the amount of gas in the closed arm of the tube, which, being a product of the fermentation, is an indication of the extent to which it has taken place. This particular bacillus is more capable of decomposing glucose than lactose. Similarly, if a material contains starch, many bacteria might go on living in it indefinitely without touching the starch; but as soon as we introduce a little saliva, which contains the enzyme ptyalin, immediately fermentation begins, as the ptyalin converts the starch into glucose, a carbohydrate which these bacteria can use.

The chemical nature of the carbohydrate has a very curious bearing upon the whole question of fermentation, as it has been but recently discovered that only those sugars with three, six, nine, or some multiple of three atoms of carbon in the molecule can undergo fermentation. This is something which we do not as yet understand, but indeed the whole question of the chemistry of the carbohydrates is still in its infancy.

The character of the micro-organism causing the fermentation also plays an important part in the products of fermentation. This at one time was thought to be of so specific a character that certain bacteria were named according to these products, *e.g.*, bacillus acidi lactici, bacillus butyricus, etc., but we now know that in the case of the production of lactic acid, for instance, quite a number of different micro-organisms may cause it.

As a rule, we may state that where carbohydrates are decomposed by bacteria, one of the most important products is an acid. I do not mean by this that only one acid is formed, as a whole series of acids may be produced during the fermentation, but usually one predominates so as to give character to the process.

When we examine these acids produced, we find that they all belong to that group which we call organic acids, and if we study them we find that perhaps the three commonest are lactic, acetic and butyric acid. Formic and propionic acid may perhaps be added; other organic acids also occur, but in extremely small quantities.

Mineral acids are not found as a result of the fermentation of carbohydrates; in fact, the only mineral acid which we know of as a result of bacterial activity at all is nitric acid, which is the result of the so-called nitrifying organisms, and this formation of nitric acid only takes place under those very special conditions in the soil which results in the process of nitrification. No trace of nitric acid has been found as a result of the processes which we ordinarily understand as fermentation or putrefaction.

These organic acids which are produced during carbohydrate fermentation are naturally not as strong as the mineral acids, but yet they have the same character that mineral acids have of entering into combination with other elements to form salts. They are therefore capable of acting upon such a substance as carbonate of lime and by combining with the lime to dissolve it.

Ordinarily the process of fermentation is self-limited, just as in the yeast fermentation of sugar. When a certain percentage of alcohol is reached the process stops owing to the injurious effect of the alcohol upon the yeast; so in the lactic acid fermentation, when a certain percentage of acid is reached the fermentation ceases and the micro-organism may even be killed by the lactic acid which has been formed.

But if we add something to the fermenting mass which will combine with the lactic acid as it is formed, such a substance, for instance, as carbonate of lime, we may have the process continue as long as the fermentable substance (sugar) holds out, or until all the lime has combined with the acid. If we watch this process in a test-tube we find that the calcium carbonate gradually disappears, that it is dissolved by the acid set free during the fermentation.

Now, if we apply these facts in regard to the bacterial fermentation of carbohydrates to the changes which take place in the mouth cavity, we see at once that these may have a very important bearing upon dental caries. For if we should have there a fermentable carbohydrate and a bacillus which can cause it to ferment, we must necessarily have the production of a free organic acid, and if there is present a lime salt with which this organic acid may combine, we must expect a solution of this lime salt by the acid and a continuation of the process.

Quite a large percentage of the food material which enters the mouth consists of starch; this starch is acted upon by the enzyme of the saliva ptyalin and converted into glucose, and we have our fermentable sugar.

The question now arises, have we present these micro-organisms, which may cause fermentation with the production of acid. This can only be answered experimentally. I have in these flasks small quantities of a mixture of bread and water which have been colored blue by litmus solution and sterilized; as long as they remain uninfected they will remain unchanged, but certain of them I have infected with a small quantity of my own saliva, and have placed in an oven kept at blood heat. These, you see, have become bright red, showing that fermentation has taken place and an acid has been produced. I may say that I have frequently seen this change take place within five hours after the infection of the mixture. This shows very plainly that there are in ordinary saliva organisms, which may cause the fermentation of carbohydrates with the production of acid. But this can be shown more conclusively in other ways, viz., by bacteriological methods. We may isolate the different species of bacteria which are present in the mouth cavity and study their relationship to the fermentation of carbohydrates. My own researches along this line have not been very extensive, but I have found no difficulty in isolating bacteria which can cause fermentation of carbohydrates.

Miller, to whom we owe most of our knowledge upon the subject of the bacteriology of dental caries, found at one time of twenty-two different kinds of bacteria isolated from the mouth cavity, sixteen which caused an acid fermentation of sugar. At another time, out of twenty-five, sixteen were acid producers. Other observers have confirmed his results, and apparently a larger percentage of the mouth bacteria are acid producers than those of the stomach or intestines.

As to the acids which are produced by mouth bacteria, the greater majority produce lactic acid, a few acetic and a few butyric, whilst other acids are produced in smaller quantities.

The highest percentage of free acid which Miller found at any time was 0.75, and it is probable that this is about the limit of concentration.

Acetic acid is possibly a commoner result of the fermentation in the mouth than Miller would admit, but there is no doubt that lactic acid is the most common. In one experiment of my own with mixed culture in bread solution, the odor of acetic acid in the mixture was most marked.

There can be no question then as to the presence of free organic acids in the mouth cavity as the result of the fermentation of carbohydrate food, and if we have a lime salt freely exposed to these acids we must have a solution of that lime salt by the acids formed. Now, in the teeth themselves we have a lime salt (chiefly phosphate with a little carbonate) which must necessarily be acted upon if exposed for any length of time to the acids.

There are several objections which might be raised to the possible solution of the calcium salts of teeth by organic acids. One very important one is, if, as is evident, fermentation in the mouth cavity usually gives rise to organic acids, why are the teeth able to resist at all?

There are several conditions which explain this. First of all, for the formation of acids a certain amount of time is required; consequently, it is only where carbohydrates become lodged between teeth or in imperfections of the calcification that the fermenting mass remains long enough to produce sufficient free acid to cause decalcification. Secondly, the normal reaction of the saliva is alkaline, and this must necessarily neutralize a certain amount of the acid formed. Thirdly, in that form of fermentation to which we have given the name of putrefaction, *i.e.*, the decomposition of proteid material, we frequently find free alkali produced instead of free acid, and in a mixture of food material lodged between teeth or in a cavity the carbohydrates will need to be in excess of the proteid before we can be certain that free acid would be produced. All these factors, of course, have a retarding effect upon the process of decalcification.

It may be objected by some that the acids produced during fermentation are not sufficiently active to cause solution of such a substance as the enamel. This is very readily answered by allowing a solution of lactic acid to act for some time upon calcium phosphate, calcium carbonate or on powdered enamel. It will be found that although the solution does not occur with the rapidity that it would if a strong mineral acid were used, still it is possible very soon to show by the ordinary qualitative tests that lime has been dissolved. I have here two flasks, one of which contained calcium carbonate in addition to the mass of fermenting bread, and it will be very easy to show that in the one in which the carbonate of lime was present a certain amount of it has been dissolved.

I think I have made it clear that in the fermentation of carbohydrates in the mouth cavity we have a sufficient explanation of

the first stage of dental caries, viz., the decalcification of the enamel and the dentine, and I believe that in this stage we have by far the most important one in the whole process.

There is apparently during the process of decalcification a distinct reaction on the part of the dentine, or rather on the part of the fibrils of the odontoblasts. This is shown by the formation of a more transparent, more homogeneous and apparently more resistant layer of dentine just beyond the area of decalcification, but once decalcification takes place all resistance as far as the dentine itself is concerned ceases, and it behaves like any other dead proteid material in undergoing dissolution more or less rapid, depending upon the bacteria which have infected it. Decalcification having taken place, the destruction of the proteid part of the dentine must necessarily follow.

It will be seen then from this that the all important factor in dental caries is the fermentation of carbohydrates in the mouth, and in lessening that fermentation and preventing the products of fermentation from acting upon the teeth we have the all important factor in the prophylaxis of dental caries.

COMBINATION FILLINGS.*

By DR. MOYER, Galt, Ont.

Yes, I believe in combination fillings, where they can be properly used, where there is room or sufficient depth of cavity for such a filling.

Combinations with gold are: Cohesive foil with non-cohesive gold foil, 1 to 2, the non-cohesive folded within the cohesive. Utility: Thermal changes not so severe, packs more readily, makes a solid filling, with stronger and better margins than either form alone.

Gold with Tin.—The only filling that may probably exclude bacteria. Use indicated in deep cavities in posterior teeth, where the dentine is of low grade. If gold alone be used the tooth may not be preserved. Tin, being softer, is more easily adapted to the walls of the cavity, especially at the cervical margin. Gold may then be added, or gold and tin in alternate layers. Utility: Better adaptation, and moisture in soft dentine oxidizes the metal and the stannic oxide fills the tubuli, and covers the surface of the dentine with an insoluble lining, and decay is impossible; more economical.

*Read at eighth annual meeting of Ontario Dental Society, Toronto, Ont., 1896.

Gold with Amalgam.—One of the very best for large cavities in teeth of ordinary structure, especially where cavities go far below the gum. The visible part of filling gold, the rest amalgam. If filled at one sitting, use matrix and press first few layers of gold with kid strip. If two sittings, first sitting, add amalgam; second, drill retaining pits in amalgam and thus anchor gold. Two sittings are needed for incisors. Utility: Better adaptation, dentine does not give way as in the use of each separately, saves time for both patient and operator, and is more economical and more permanent.

Gold with Oxyphosphate, or Oxychloride.—The acme filling for large crown cavities in such positions as may be properly reached by the operator. Press the foil into the soft cement for anchorage, or let cement harden, and drill pits or grooves into it for anchorage. Utility: Perfect adaptation, in better harmony with tooth structure than gold, economizes time, patience, tooth substance and gold, prevents thermal changes from causing injury to pulp.

Amalgam with Cement.—The most nearly perfect filling for deep cavities in posterior teeth where patient will not pay for gold or where cavity is difficult of access. Use as much cement as possible without covering margins of cavity, leaving sufficient anchorage for amalgam covering. Utility: Perfect adaptation, little or no effect from thermal changes; cement adheres to walls of cavity and retains filling with least amount of undercut; economy and comfort to patient; less amalgam used, therefore, less change of form.

Cement with Gutta Percha.—Where cavities extend under the gum margin, cover the bottom of the cavity and the cervical margin with gutta percha and prevent the possibility of a space being formed between the filling and the tooth, so frequently found when cement is used alone, owing to the disintegration of the cement at that point.

THE DENTAL PRECEPTOR.*

By R. E. SPARKS, M.D., D.D.S., L.D.S., Kingston, Ont.

At this time, upon the occasion of the opening of the new building of the Royal College of Dental Surgeons, it would seem opportune to read a paper upon any subject pertaining to education. Particularly is this the case if pertaining to dental education.

The dental student is discussed at the convention and in the journals, and forms an interesting subject. What shall we do with

* Read at eighth annual meeting of Ontario Dental Society, Toronto, 1896.

him is an important question at the present time. His numbers are becoming formidable and are viewed with alarm by the pessimistic practitioner, as he sees his practice jeopardized by the wholesale manufacture of new dentists out of all proportion to the increase of population. He sees the profession degraded to the level of a trade, by the competition which numbers afford.

I was recently in receipt of an anonymous letter, asking me to take advantage of my position as an examiner to prevent the graduation of so many candidates. I have heard that even the new Dental College building is viewed with suspicion by some, as being an additional attraction for young men to enter the dental profession in Ontario. Others claim that the better educated the man the better the interests affected by him, and welcome every facility for advancing that education. But it is argued we have had a School of Dentistry in Ontario for over twenty years, and yet we have among those graduates some of the most magnificent quacks that ever disgraced a profession. That does not prove that the state of affairs might not have been much worse had not the school and legal regulation of the profession existed. Who among us would favor abandoning the School of Dentistry and repealing the laws regulating the requirements for practising our profession?

There are three classes of men—those who are gentlemen in spite of conditions and environment; those who are not naturally gentlemen, but who may be made so by education and surroundings, and those who could not be gentlemen under any circumstances. A few of the latter get into all the professions—not more into dentistry than into the others.

As the students of to-day will be the preceptors of a few years hence, it is desirable that as few as possible of this class shall gain entrance into the ranks of dental students. Public safety demands that the man who presumes to operate upon the human body, shall have a knowledge of the part he undertakes to operate upon. How he shall best acquire that knowledge is a matter of vital importance to man himself and the public at large. It may be done by private tuition, by college education, or by both. The great desire to enter the professions has made a great demand for colleges where the professions may be taught. The dental profession has kept well apace with the others in numbers of candidates. So great has been the demand for dental colleges in the Republic to the south of us, that many charters have been obtained by private individuals as investments for capital. To such an extent has this prevailed that few large cities have no dental college, and many have two or three each. As the dividends upon the capital invested in those institutions depend upon the number of students attending, there is a danger of the interests of

the public being sacrificed to those of the colleges. With us in Ontario the law requires that the candidate for graduation in dentistry shall, in addition to attendance at college for three sessions, be articled to a practitioner for a term of three and a half years including the time spent at college. This we consider an advantage over all private tuition or all college instruction.

Few men who are engaged in practice, having the cares of an office, and especially if to that be added the cares of a family, can keep themselves sufficiently posted upon what we usually term the theoretical subjects, as chemistry, physiology, anatomy, materia medica, etc., with their changes by development and discovery; to thoroughly instruct a student upon these subjects. And supposing they were capable, how many could take the time to instruct one student upon the many subjects necessary for a thorough dental education? This can better be done by congregating students, and dividing subjects to be taught among a number of men, who may be paid to devote sufficient time to keep themselves acquainted with all new discoveries and developments in connection with their subjects, and to impart a knowledge of those subjects to their classes.

On the other hand, there is much in a dental education which can better be taught in a private office than in a college. A dental student recently stated in my hearing that he regarded one year in an office better than five years at college. This may be an exaggerated statement, but there is no doubt but in a well regulated office there is much that may be learned of private practice which it is impossible to teach in a crowded college. However, leaving this argument out of the question, the fact remains, that in order to enter the ranks of our profession in Ontario the candidate must pass through the hands of a preceptor, and it is with this individual that this paper is calculated to deal.

No practitioner is under obligation to take a student into his office, and many refuse to do so, for various reasons. Some consider that after taking the college sessions out of the term of pupilage, the balance of time, even though a tuition fee be charged, is not sufficient to warrant his turning out a possible competitor. Others shrink from assuming the responsibility of allowing a student to operate upon their patients.

I recently read a discussion which took place at a dental convention upon the subject of education. One gentleman stated he would not take a student into his office for \$1,000.

There are three classes of practitioners who should never assume the responsibilities of a preceptor: Those who have no work for students to do, those who have work but will not allow students to do it, and those who allow students to operate indiscriminately. The two former classes do not do justice to their students, and the latter does an injustice to the public.

The first named takes a student to avoid having to do the dirty work of the laboratory, or for the tuition fee which he charges. The student, after graduating from such an office, has learned little more of practical work than how to boil and finish up rubber plates. We find men of this class trafficking in students. They charge a tuition fee. After a year or so the student asks to be released, as he is not getting the class of work which he knows he should get to do. The release is readily granted when the preceptor is in a position to accept another student. The student starts out to seek a situation upon salary for the balance of the term. Cases of this kind have come under the writer's notice.

The second class has plenty of work, both mechanical and operative. The student is taught to do the mechanical work and may be brought into the operating room to see operations performed in the mouth, or he may take his personal friends into the extracting chair and operate upon them, but to allow him to operate upon his preceptor's patients and possibly warm himself into their good graces, is out of the question.

I once called upon a practitioner and found his student in the laboratory taking an impression of his own mouth. This he said he was doing for practice, that his experience had been very limited and he did not wish to appear to disadvantage at college, where he was about to attend his last session. He was completing his fourth year's pupilage when the law only required two years, and yet he had not been allowed to perform the simple operation of taking impressions. His preceptor told me his patients would not allow a student to work for them. Another, who regularly kept a student and who also charged a tuition fee, told me he wanted no man to work for his patients but himself.

The practitioner who undertakes the education of a dental student assumes a grave responsibility; first, in regard to the student himself; secondly, to the profession; and thirdly, to the public. When a young man enters upon his life work it is of vital importance to him that he selects the calling for which he is best suited.

Perhaps no calling requires a more varied combination of qualities to insure success than does dentistry. The preceptor should recognize this, and take every precaution to ascertain whether or not the applicant for articles possesses sufficient of those to make him ordinarily successful. Should he find him lacking in any of the principal qualities which combine to make a successful dentist, he should point it out and advise him to adopt a calling for which he may be better adapted. This cannot always be ascertained until a young man has been some time in the office. It is, therefore a good plan to have an applicant, to whom there is no known objection, spend a few weeks or months in the office and laboratory before signing articles.

No preceptor should accept, as a student, one who lacks the principles of a gentleman, and it is a serious matter when a student has a preceptor who is lacking in this direction.

As we said before, some cannot be spoiled by environment, but more are influenced by surroundings. What then can be expected of the student who graduates from an office where all professional etiquette is disregarded, and every principle of the golden rule violated; where the public are informed by flaming advertisements that they can be better served than elsewhere, or that they can be as well served at greatly reduced fees, and then are imposed upon, either by trickery or incompetency; who also slanders and misrepresents his confreres to his patients?

The ideal preceptor selects only a student who manifests a desire for an education, and has natural mechanical ability, and who is of good moral character. He teaches him neatness by keeping himself, his office and laboratory neat and clean. He has a place for everything and keeps everything in its place. His office library is supplied with books of reference. He takes a number of up-to-date dental journals that he and his student may see the latest methods and appliances pertaining to their profession. He attends the Dental Society meetings to become broadened and improved by contact and interchange of ideas with his professional equals. In his operations he is thorough and conscientious, gentle, but firm, upholding the dignity of his profession at all times. He lays out for his student a course of reading upon practical dentistry. When working in the laboratory he has his student at his elbow, and explains each step in the work he may be doing. He gives him some lessons in operative technique, and, as soon as he can appreciate it, brings him to the chair when operating for some one who may not object to the presence of a third party, and explains what is being done and why.

As soon as the student, by reading and demonstration, understands the principles of filling and extracting teeth, his preceptor allows him to commence operating upon the living subject, very simple operations at first, and increasing in difficulty as he advances in experience. His preceptor examines the operation at various stages, pointing out any decomposed tooth structure which may have been overlooked, walls too frail to be left with safety, extra retention necessary, etc. If gold filling be inserted, he sees that the retention points are being well filled, cervical wall well protected; that the gold be well condensed around the enamel margin; that overlapping material be removed in finishing, etc. But, says one, what busy practitioner can afford to devote as much time as that to a student? He might better do the work himself. The busier he may be the better it will pay to take time and pains to give this personal instruction and demonstration.

As the student progresses from one grade of work to another, his interest increases until, when he sees his first contour gold-filling, or his first piece of bridge-work successfully inserted, his interest has arisen to enthusiasm. It is plain that the more attention is given to the student's instruction the sooner he will be competent to undertake all classes of operations, and the sooner he can do this the more assistance he will be to his preceptor during his term of pupilage. To the argument that the time spent in the office is not sufficient to pay for loss of time, waste of material, injury to reputation, loss of practice from competition, etc., and these are all arguments which have weight, I would reply, insist upon a reasonable tuition fee before undertaking the preceptorship, or, what is better for both preceptor and student, have a private agreement for a longer term of pupilage, together with a bond not to enter upon practice in the same locality for a reasonable time after graduating. This will enable the preceptor to give his student the time and attention I have mentioned without pecuniary loss. The student's physical condition should not be overlooked. If he be of a studious temperament, and become deeply interested in his studies, there is a danger of his neglecting to take sufficient exercise to develop and keep in tone his physical nature. He will thereby contract ailments which many dentists suffer from as a result of a too sedentary life. He should be given a little time for lawn-tennis and other out-door exercise, and his attendance at a gymnasium recommended. In addition, his preceptor should have a fatherly oversight over his social life; particularly is this the case if the young man be removed from the influence and restraint of home. He should see that he be introduced into respectable society, such as would be elevating socially and religiously; for, after all, his life is not the success it might be who develops his physical and mental natures and neglects his spiritual life.

We are recommended to "Render unto Cæsar the things that are Cæsar's, and unto God the things that are God's." If these suggestions be followed, and we claim they are thoroughly practicable, there need be no fear of the overcrowding of the profession. With the additional education which the able faculty of the School of Dentistry of the Royal College of Dental Surgeons, with their new and well-equipped building, can afford, these men will go out to become ornaments of society, an honor to their profession, and a credit to their preceptors, whom they will in after years rise up and call blessed.

SILVER NITRATE.*

By D. BAIRD, L.D.S., Uxbridge, Ont.

In presenting this subject, it is not because I have anything new to offer ("Verily there is no new thing under the sun" says King Solomon), but because I think there may be not a few of the young men who, like myself, when commencing the profession, are averse to it because of its caustic properties.

There was a time in my practice when I did not have it among my stock of medicines. I thought it was a deadly poison and so caustic that if introduced into the soft tissues of the mouth it would burn its way out. These fears have passed away since I have become familiar with its use, and now I use it more freely where it has to be employed than I would carbolic acid, and with less danger to the mucous membrane. I say with less danger, for there is this difference in the cauterization of mucous membrane by the two. Carbolic acid destroys and induces a slough and the ulcerative process, but if we touch a part with silver nitrate, the eschar remains for a time and then falls off, leaving the subsequent parts healed, or if an ulcerative surface secreting pus be touched by silver nitrate the succeeding discharge is immediately converted into lymph. It is the property of carbolic acid, on the contrary, to induce not only ulceration but suppuration. The silver nitrate and carbolic acid are as the poles to each other; the former preserves, the latter destroys; the former induces cicatrization, the latter ulceration. In our professional use of it, such a slight amount of it is required that if properly handled no harm can arise. But should an accident happen, the application of sodium chloride (common salt) to the part is all that is necessary.

Before using this remedy in connection with any disease of the dental organs, it is well to advise the patient as to its effect in discoloring, for once applied it is only with difficulty that it can be erased. Regardless of the great objections to its use, viz., discoloring, I will enumerate some of the cases where it may be employed in treatment of the diseases of the teeth.

Devitalizing receded pulps where an endogenous growth seems to obliterate the pulp chamber. Such teeth are generally bothersome after the death of remaining tissue. A five per cent. solution introduced into the root, I have found beneficial, preventing trouble from thermal changes, and in relieving soreness on percussion.

In bridge work, where the enamel is cloyen from the tooth to any

*Read at eighth annual meeting of Ontario Dental Society, Toronto, Ont., 1896.

extent to cap, a deposit of silver nitrate in the dentine will prevent thermal shocks, and consequent death of the pulp. White rings or softening of the enamel at the gum margin, or extreme sensitiveness to the necks of the teeth where the gum has receded, or in erosion, silver nitrate is one of the most effectual remedies that can be applied. A small crystal of the powdered salt placed on the moist surface and rubbed well over it with a wood point, is about all that is required. In erosion, perhaps the better way is to cover it with cement filling till it is permanently set in the dentine. Sometimes erosion has destroyed so much of the tooth that a filling will be required. This preliminary treatment insures against subsequent failure of the operation.

Masticating surfaces where attrition has worn down the enamel until the interzonal layer of dentine becomes exposed, is a good place for the use of silver nitrate. Apply the crystals with a stick to the moist surfaces, rubbing in well, then immediately rub a few grains of amalgam on, and instruct the patient to triturate the teeth, which will force it still better into the polished surface. Give the patient a mouthful of water to rinse the mouth, and renew the operation two or three times at successive intervals of a few days, getting the surface well blackened, when you are assured a heavy deposit coats the parts, and in every case sensitiveness will disappear.

In pyorrhœa, after removal of calcareous deposits, a crystal shoved into the pocket and left for a few minutes and then washed out has rewarded my efforts by effecting a cure where other remedies failed.

It is a valuable addition to our list of remedies as a preservative to the deciduous teeth, keeping them to a proper time for shedding, and thus aid in the eruption of the permanent set. Before I commenced the use of it for this purpose, I was at my wits' end to know what to do for little patients three or four years of age. But with this valuable agent at our disposal we can gladden the hearts of the parents and give our little patients and ourselves an amount of comfort that every dentist can appreciate.

The line of procedure in these cases would be about as follows: Take, for instance, the approximal cavities in the posterior teeth. Where the child is not too timid, cut away to a "V" shape, and by a piece of Gilbert's temporary stopping, large enough to fill the cavity, softened by heat and touched to powdered crystals of silver nitrate, and inserted in such a way as to bring the crystals into direct contact with the walls of the cavity; pack firmly and leave there to be worn away by mastication. When that has taken place the surface of the cavities treated will be found black and hard, with no sensitiveness to the touch or change of temperature. Then the little patient will be older and better acquainted with the

dental office and will readily submit to whatever treatment you think advisable to give them.

In sensitive dentine in adults' teeth, its action is with good results in from one to three months' time, treated in the same way as in deciduous teeth. In those terribly sensitive buccal cavities in molars it acts like a charm, relieving sensitiveness and hardening the walls of the cavity.

In those after-pains from extraction of teeth caused by the nerve breaking in the canal and being left in the socket, or even where there is no evidence of a portion remaining, if there is irritation at the point owing to the union between the tooth and the maxillary nerve, an application of silver nitrate will be found to give relief.

It is not an unusual thing to have pregnant women call with a lot of decayed teeth, so sensitive that the use of a tooth brush is impossible, and extraction is out of the question. Silver nitrate is our fort again. First go around them with a saturated solution, and in a few weeks fill the cavities with temporary stopping dipped in the crystals.

ACTION.—As to the action, I believe that nitric acid is liberated through the affinity for H_2O , and affects the animal matter in the dentine, and the silver fills up the dentinal tubules to some extent. Its application may be made in four ways: By the powdered crystal to the moist surface, or a solution newly made; or by silver wire dipped in nitric acid, or by dipping blotting paper in a forty per cent. solution of silver nitrate and drying it; cut a piece the size to lay in the bottom of the cavity. In nearly all cases protect from the fluids of the mouth by some temporary covering.

BLEACHING AGENTS.—These are few, though there are many which can be used out of the mouth. Cyanide of potash has been recommended, and does its work well; but I would caution against its use. It is very poisonous. I had a case where a little got on the inside of the cheek, which almost resulted in blood poisoning. Iodide of potassium, a stick, and pumice powder is safer. Where the rubber dam can be used touch the spot with iodine, which will convert the silver into silver iodide. Silver iodide is soluble in potassium iodide, then wash with water. This process is slow, but leaves the tooth in good condition. Some grind discoloring off with corundum stone, but this causes a recurrence of trouble.

WHY DO SO MANY AMALGAM FILLINGS FAIL?*

By G. E. HANNA, L.D.S., Ottawa, Ont.

I presume the question is not intended to include those cases of recurring caries clearly due to predisposing causes prevailing in the oral cavity; such causes have, and ever will, continue to produce recurring decay, irrespective of the filling material used or the quality of operations performed.

I deny that we should in any degree recognize failure in those cases of recurring caries due to causes and conditions entirely beyond our control, any more than the physician acknowledges failure in his treatment, when a patient has a second seizure of typhoid a year or two subsequent to treatment for the same disease.

It is not the intention to enter into any so-called scientific solution of this question. I propose briefly to state the conclusions arrived at from years of observation of amalgam fillings inserted by others as well as by myself.

I am convinced all cases of recurring caries which may be properly called failures are due to two general causes—bad amalgam and defective preparation of cavities. Bad amalgams may result from improper proportions of desirable metals, or from the introduction of some objectionable element in the alloy, or a good alloy may be spoiled in the amalgamation by leaving too much mercury, or by using impure mercury, or by allowing the amalgam to partially set before using.

Amalgams made from improper alloys shrink or swell in the setting—according to the excess of either metal—in either case making a defective operation. Fillings made from amalgams too soft, or partially set, lack the so-called “edge” strength, and have not the resistance necessary in grinding surfaces. The alleged “balling,” or “spheroiding,” of amalgam fillings I have not observed. Defective preparation of cavities is undoubtedly responsible for the greater number of failures. Without implying censure on my professional brothers, or admitting fault on my own part, I make the statement that three-fourths of all amalgam fillings in approximal cavities have been placed on imperfectly excavated or defectively formed cervical walls. The disposition to avoid “hurting” the sensitive and timid, is a barrier few of us have the moral courage to surmount, and a still smaller number can afford to disregard the protests of such patients. The

*Read at eighth annual meeting of Ontario Dental Society, Toronto, 1896.

most thorough and conscientious graduate soon learns in practice, that having to renew his fillings at unreasonably short intervals, does not have such dispelling effects on his clientele as the reputation of being "rough and harsh," as it is generally termed.

There are, however, defects in cavity preparation which none of us are justified in overlooking, viz., the proper trimming and beveling of ragged enamel borders in all cavities, and the thorough excavation of underlying carious matter, where it is not desirable to cut away projecting enamel on grinding surfaces and in buccal cavities.

My estimation of amalgam as a filling material may be stated by saying, if a good article be used in the same locations, under similar conditions and with equal exactness required in the use of gold, we find it no mean competitor with the fellow-metal in arresting the progress of dental caries.

WHY DO AMALGAM FILLINGS SO FREQUENTLY FAIL?*

By G. S. MARTIN, D.D.S., L.D.S., Toronto Junction.

This question would indicate a belief on the part of the person who proposed it, that amalgam fillings fail very much more frequently than fillings made of other materials. Amalgam fillings fail more frequently than any other, primarily for the same reason that more people die in China in a given time than in Canada. I think you will bear me out in saying that more amalgam fillings are inserted than of all other materials combined. While not wishing to enter into or draw this convention into a discussion of the relative values of amalgam and other available materials, I will take the opportunity of repeating the statement I have seen in print somewhere: "Amalgam fillings will save many teeth for a longer period of usefulness than will any other material." Whether or not this is recognized as a principle by the profession, we find amalgam used in teeth of the frailest nature, where the "life expectancy" is extremely low, and in cavities almost inaccessible, where thorough preparation is almost out of the question. Failure in these cases is too often unjustly laid on the material. Amalgam may be said to be in the position of certain frail mortals who are often described as "more sinned against than sinning."

The case with which amalgam may be plastered into a cavity no matter how indifferently prepared, has tempted many of us to less careful work, than we know in our inmost souls to be

*Read at eighth annual meeting of the Ontario Dental Society, Toronto, 1896.

compatible with durability. In preparing for the insertion of a gold filling we are careful to remove all decay, to cut margins down square and smooth. Are we always so careful in the preparation for amalgam. We trust to thin and brittle edges of enamel unsupported by dentine—edges that we know would be pounded off were we inserting gold; we leave slight dark spots unremoved; we do not prepare cervical margins thoroughly enough. In approximal cavities amalgam fillings are often wanted without attempting to restore the contour of the tooth and the side walls are left so that the margin of filling is at the point of contact, thus endangering the permanency. There is also a lack of carefulness on the part of some operators to finish approximal cavities properly. A fine tape or sandpaper strip is the best means of finishing. You have often seen approximal fillings where there is a mass of amalgam overhanging the cervical portion of the cavity in such a way as to be an irritant and constant source of trouble. Food particles are thus also retained at the weakest point of the cavity and the inevitable follows. Crown cavities of very innocent nature are filled without a careful following out of seams of decay between the cusps.

Many cavities are filled entirely with amalgam when combination fillings would be infinitely better, as in large fillings the tendency to shrinkage is lessened by filling the greater portion of the cavity with cement. Before the cement is set the amalgam may be burnished, thus adding strength to frail cavity walls.

There is, however, a danger which must be guarded against here. The margins of the cavity must be freed of all cement, or otherwise there will soon be a leakage from its dissolution. I have noticed this mistake in cases where pulps have been capped with a small amount of cement.

The use of a moisture-proof varnish is of great advantage in a cavity, as margins are better protected. A good varnish for this purpose is composed of virgin rubber and gum mastich dissolved in Ch.-Cl.₃. Although some of our best authorities advocate a soft amalgam, I believe in a pretty dry mass carefully inserted and followed by use of a rotary burnisher in the engine, and tin or gold-foil or alloy filings used on top to absorb any surplus mercury that may come to the surface. Your filling will then be hard almost by the time your patient leaves the chair. It is preferable where possible to have patient in a second time for polishing, as this tends to carefulness and leaves filling in a better condition of polish.

Finally, my brethren, amalgam fillings fail because they are inserted for forty cents. If the people want a dollar's worth for forty cents, some men will always pretend to give it, and amalgam fillings will frequently fail.

ARE COMPOUND FILLINGS DESIRABLE ?—YES, AT TIMES.*

1. In cases where pulp is alive and nearly exposed, a metal applied directly to pulp would cause irritation and finally death of the pulp. In this case we use some non-irritating guard filling.

2. In cases of pulp exposure, a capping is necessary, if it is desired to try saving pulp.

3. For purposes of economy, *e.g.*, in gold filling may fill bulk of cavity with cement and finish with gold.

4. In approximal cavities cement is useless, where it approaches the cervical border. If desired to fill with cement, use amalgam or some substitute at gum margin. Amalgam may often be combined with gold by filling lower half of cavity with amalgam, either waiting until the amalgam sets before finishing with gold or packing gold on the soft amalgam.

5. When the pulp is removed the roots are seldom filled with same material as the crown. This may be called a combination.

6. Tin and gold rolled together has the advantage in point of color. Have never used it.

7. Where walls of enamel are thin and translucent, cement should be used under gold or amalgam. Care should be taken to have all margins free of cement before filling over it, as otherwise a leaky filling will result.

8. Aluminum fillings are incorporated with the powder of cement fillings. The utility of this is doubtful, as the maker has by experiment already what is to him the exact amount of rocky base to form best resistance. Burnishing of aluminum points down over cement will not make complete covering, and the metal interferes with setting, leaving a pitted surface.

9. A large amalgam may be faced with gold by using judicious undercuts or pits. This is nearly as much or perhaps more work than to make a gold crown.

10. Where a gold filling has become defective it may be repaired with amalgam. Like the matrix, this should be used with caution.

11. An inlay of porcelain may be called a compound filling. If the space between inlay and tooth be wide, some of the cement

* Answer by Dr. Leggo, Ottawa, before the eighth annual meeting of Ontario Dental Society, Toronto, 1896, to question, Are compound fillings desirable, if so give proper combinations and utility?

may be cut out and a gold filling inserted that will have the appearance of a small band of gold.

12. In cervical cavities difficult to fill with gold, when the cavity extends beneath gum margin, fill amalgam above gum line and finish with gold if desired.

13. Those who believe in electrical disturbances when two fillings of different materials are placed in same mouth must use gutta percha or some such material for purposes of insulation.

Finally. The combination of amalgam fillings and a homœopathic physician is an incompatibility and is not a success.

CAPPING PULPS.*

By A. H. ALLEN, D.D.S., L.D.S., Paisley, Ont.

The question of capping pulps opens up, as we all know, a wide field for discussion, and I am sorry that it is not practised to a greater extent. I find that most of the Toronto dentists, and, I believe, most throughout the Province, practise devitalizing the pulp as soon as they find it exposed—a practice I most certainly condemn. I believe that 95 per cent. of exposed pulps that have never been disturbed enough to give symptoms of pain or soreness, are saved for many years when capped according to my method, or in similar methods, so long as the important points are attended to. These we will know later on. Many of those that have ached, and are even sore upon percussion, will readily yield to treatment and take kindly to a capping.

How, then, can dental surgeons satisfy their consciences in devitalizing? If anyone can prove to me (I have never read or heard of anyone bold enough to make the assertion) that a dead tooth is as good as a living one in good condition, and that its usefulness will be continued to as great a length of time, then I say, destroy the pulp in the easiest and most painless way possible, and never try pulp capping. Then there is the question of fees. One can cap a pulp and fill the tooth for a great deal less money than for treating and filling root canals as well as crown cavities. This is no small consideration to the patient, and intelligent ones appreciate very much your endeavors to do good work in the cheapest way.

A great many dentists say that "they extract the pulps on the principle that dead men tell no tales." This seems to me a

*Read at the eighth annual meeting of the Ontario Dental Society, Toronto, 1896.

confession, that they are willing to do patients a wrong, rather than have some ignorant person once in a while complaining of bad treatment at their hands, because of the failure of a pulp to tolerate the filling. All dentists have to suffer more or less from the ignorance of patients as regards our work, and I question very much if those who pursue the relentless destruction of pulps, do not suffer as much or more from this form of persecution than those who cap pulps with fair judgment and skill. I do not believe that anyone is always successful in devitalizing and treating pulps so as to make them comfortable and useful, nor do I believe that anyone can be always successful in capping pulps to save them ultimately from death. I feel, too, that there is some reason in the claim that climatic influences have something to do with the success or failure of capping pulps, but not nearly so much as is claimed by some.

The chief causes of failure may be attributed to one or more of the following causes: (1) Failure to remove all causes of irritation, such as loosened decay or foreign matter of any kind that may not be tolerated by pulp. (2) Too much injury to pulp in the preparation of cavity. (3) Too little treatment to remove inflammatory symptoms. (4) Too much treatment to remove inflammation or the effects of irritation. (5) Failure in drying of cavity and thus leaving an aperture for the play of extremes of temperature, the moisture not allowing the cement to stick to walls. (6) Failure to locate, and therefore to treat, all the exposure. Sometimes the exposure may be so fine that the naked eye cannot detect it, and if there is a second exposure of this kind in the same cavity, only one may be properly capped. (7) Too small a capping. (8) Too much pressure—a very fruitful cause of trouble and that requires a nice touch and skilful handling of the instruments to avoid. (9) Too much spreading of the matting on inner lining so that cement does not thoroughly envelope it, and is not therefore firmly attached all around it.

If the fine powder of the oxyphosphate of zinc cements be mixed with creasote to a creamy consistency, so that it will lift on the end of a plugger and touched to the pulp (not pressed to cause pain), and then gently spread with batting, rolled soft or soft spunk, at the same time drying the cavity, and the cement spread gently over it so as to stick to wall all around the lining, and over as much of the sensitive dentine as cavity can afford without filling retaining grooves—there is not much danger of trouble where the patient is in fairly good health and not hypersensitive; but I would condemn no case without a trial if there was no irritation beforehand.

Where inflammation has set in, as indicated by pain in temple or ear, soreness upon percussion results are not satisfactory, though a great many of even these can, by treating to remove inflammation, be made comfortable for a long time. If it only aches at night

and is not tender upon percussion, it is a good indication that a little treatment, such as a mixture of creasote and chloroform applied to the pulp, and aconite and chloroform (equal parts) applied to gum over affected root, will relieve inflammation. If we can save a pulp for two or more years, I consider we have added that much usefulness of the tooth to the patient, and therefore indiscriminate devitalization is to be deplored.

Correspondence.

OUR CHICAGO LETTER.—No. 3.

By C. N. JOHNSON, L. D. S., D. D. S., Chicago.

To the Editor of DOMINION DENTAL JOURNAL:

SIR,—The Hayden Dental Society, named after Dr. Horace H. Hayden, of revered memory, was organized principally for the benefit of dentists in that part of the city formerly called Englewood. Meetings are held monthly at the offices or residences of the members, and much benefit is thus derived by men who would not ordinarily care to come to the other society meetings held in the centre of the city.

The Odontological Society may be said to be one of the most exclusive of any in Chicago. It has a membership of fifteen—twelve active and three honorary. It meets monthly, the distinctive feature being that the members dine together and then proceed to the discussion of some scientific topic. The meetings are really very enjoyable and profitable. Much good has been done by this society, notably the publication of a pamphlet several years ago on the treatment of pulpless teeth. It would sometimes seem that an additional good might be accomplished by the regular publication of the discussions in some journal. Occasionally a paper read before the society is published, but it is seldom that the discussions are written up. When it is considered that some of the most progressive men in the city are connected with this society, it would appear profitable to have their deliberations presented to the profession. An innovation has been introduced during the past year whereby the meetings, instead of being held down town at some hotel as formerly, take place at the residences of the members. One evening the meeting is held at the residence of one member, another night at another, and so on in rotation until the round is completed. The member at whose residence the meeting is being held is the host of the society, and is responsible for the entertainment of that evening. He gives a dinner, and

then reads a paper on any topic he may select. This plan has resulted in some very enjoyable evenings both socially and scientifically, the most obvious drawback being the fact that Chicago is a city of immense distances, and some of the members live far apart. This causes inconvenience in reaching the place of meeting and returning home late at night. When the meetings are held down town at a common centre all of the members can attend with little difficulty, and it is possible that the society may return to this plan.

But I have surely said enough—more than enough—about the dental societies of Chicago. I can only wish that the readers of the *DOMINION DENTAL JOURNAL* could have the privilege of attending these societies, or societies like these, and reaping the inestimable benefits to be derived from such association. My personal experience with the societies of Chicago and of the State of Illinois, has been such as to make me a most enthusiastic advocate of society work, and I can ill imagine how men get along in the profession and live up to the highest possibilities of this progressive age without some such association. Canada could well support more societies than it has at present, and Canada must have more societies if the reputation of Canadian dentistry is to be advanced as it ought.

And now, Mr. Editor, in this connection, I wonder if you will allow me to preach a little sermon to the dentists of Canada, on a subject that has long impressed me forcibly, and is impressing me more and more as the years go on. It is my good fortune to spend most of my vacations in Canada. I go there at least twice a twelvemonth, and I travel somewhat extensively while there. Last summer, for instance, I drove over the country districts to the tune of five or six hundred miles—and, by the way, let me pause to remark that I drove one of the best teams that were ever hitched together in Canada. You see, Mr. Editor, my horsey propensities must crop out in spite of myself, even in correspondence to a professional journal; but I justify myself somewhat in the present instance, because it gives me the opportunity of saying that I consider this one of the very best ways for an overworked dentist to spend his vacations—always provided that he loves horses as I do. I could write an eloquent dissertation on this subject, but my charity leads me to forbear.

Well, in my travels through the nooks and corners of Canada I am not accompanied with closed eyes. I manage to see many things of interest; but most of all, I see the condition of the people's teeth; and let me tell you frankly, that if dentistry in Canada is to be practised along the lines it has been following in the last decade, you will have in a few generations a race of "pie faces", over there that will vie in monotony with the most exclusive

tribe of flat-faced Indians. Of course, I do not for a moment intimate that your robust and canny Canuck will ever look like an Indian, or that your winsome and rosy-cheeked maiden will ever resemble a squaw ; but if the mouths of your growing generations continue to be managed as they are at present, they will take on a uniformity of expression, or lack of expression, that will soon become a national characteristic. I refer to the havoc made by the tooth-puller, beside which the "slaughter of the innocents" becomes mere by-play, and the substitution of artificial dentures on lines suggestive of the china shop. The extreme youth at which this defilement of the human face divine is generally begun seems amazing. Take an average crowd of young people at a country gathering of any kind, and not one in ten has a perfect set of natural teeth. If they are not decayed or covered with calculus, they are missing entirely ; and heaven shade us while we blush at the artificial substitutes which usually take their place ! I have seen a dozen sets of teeth of an afternoon, worn in as many mouths, with little more variation among them than there would be in a row of china dishes set up in a butler's pantry. This in face of the fact that the individuals wearing them were of all shades of complexion, temperament and individual characteristics, from the lightest blonde to the darkest brunette, and from the largest and thinnest in face to the shortest and chubbiest. The one monotonous line of small, white, regular chinaware, glistening an accompaniment to every smile of the victims, is a spectacle for the gods of dentistry to go out in the wilderness and weep over.

"Something is rotten in the state of " dentistry in Canada when such things can be. I have studied the condition somewhat closely and looked into the causes that have led up to it, and if you will permit me I will enumerate briefly the things that seem to me to be accountable for it. First, is the lack of care on the part of the patient ; second, the lack of faith in filling teeth, caused by so many failures following this operation ; and third, the cheapness of artificial dentures. The reason that so large a percentage of teeth fail after being filled, relates not only to a want of care by the patient, but also to imperfect work by the operator. This is not intended as a wholesale arraignment of Canadian operators, but it is not saying too much to affirm, that the majority of dentists in Canada are not living up to the highest possibilities of their art. Nor can they be expected to do so, when their main energies are directed towards the replacement of lost organs rather than the saving of the natural ones. I have talked with many of the country practitioners over there, and have been surprised to learn what a large proportion of their practice—among most of them—consists in prosthetic work. They invariably tell me that they are simply submitting to the inevitable, that their patients will not

have their teeth filled, and would not take care of them even if they did have them filled. To be sure, there is a nugget of truth in all this, and yet it leads up to the kernel of the nut I wish to crack with my Canadian friends.

The one great limitation working against more satisfactory results in the conduct of the average practice in Canada lies in the fact, that the dentist allows the patient to dictate too much as to what shall be done and the manner of doing it. The Canadian people are too prone to demand of their dentist, that things be done in a given way, instead of relying on the judgment of the operator as to the proper course to pursue. And I fear the average Canadian practitioner has not sufficient stamina to insist on doing it the proper way, or doing it not at all. If dentists would take on an independence of spirit, and contend for the sovereign right which every true professional man should command, the people would soon recognize this quality among dentists as they do among ministers, lawyers or physicians. As it is at present, there is too much dictation on the part of the patient, and the result is as we see it.

A young girl notices some china teeth in the mouth of another girl, becomes envious and wants some like them, or rather she wants some a little bit nicer—straighter, smaller and whiter. And the dentist, fearful of losing her patronage, does her bidding like a bond-servant. Thus the wretched work goes on, and we see the defilement all over the land. Some of the most beautiful girls in all the world—for they have them in Canada—are rendered expressionless and inane by this line of practice, and it is time the dentists of that country took on new methods and developed their calling into the dignity of a delightful art, which dentistry aspires to be when practised on the plane of its highest possibilities.

But, Mr. Editor, I must not preach so long that I become prosy, and to make sure that I avoid this I must stop at once. My final wish is that whatever I have said that may seem critical of my Canadian colleagues shall be taken as kindly as it is meant.

OUR NEW YORK LETTER.—No. 1.

To the Editor of DOMINION DENTAL JOURNAL:

SIR,—As Canadian dentists—some of them—are frequently seen on our side of the border, fraternizing with us, we have it in our heart to tell them a little of the goings on in our "Greater New York." Let us remind you that in the near future when you come among us it will be no longer Manhattan Island, but a large part of Long Island, Staten Island, etc.—the etc. would include Jersey if they had been in United States longer; but, as you may

know, they only got in last November by electing a Vice-president. It is a saying that originated with someone, that as goes the politics of the C. D. A., so goes the politics of the A. D. A. There is so much "fit" among these fellows, particularly among meeker men, there is no telling what they may do. We will say this, if any of you Canucks fail to get a square meal for a satisfactory fee, resolve to try to be at one of the monthly meetings of the C. D. A., and get one of their dollar suppers, and you will not soon forget it—nothing like it this side of a lumber camp in mid-winter—and anyone that has eaten brown bread and beans cooked in a "bear hole" would exclaim nothing can excel such a feast. If you choose to come in mid-summer you will find the Society all in camp at Asbury Park, and there you can have the next best thing they can give you, *i.e.*, a free run of all the park and the whole of the Atlantic as far as one can see, and a burlesque entertainment by Prof. Foster Flagg, of Philadelphia; he has never been equalled. Since his first attempt at plastics before the Odontological Society of New York, *viz.*, "The New Departure," he has never improved upon that, although he has tried it. Only this week he has appeared before the second district and the United first district in Brooklyn. Report says he did not rise to any of his former altitudes. He has been a very useful member of our calling; although going towards eighty, it is a marvel how well preserved he is. We think he is the nobbiest dentist in Philadelphia, if not the best looking. We are glad that all good men don't die young. The dental event of the year has come off this month. Never has the anniversary occasion of the Odontological Society been dedicated with greater success than this month. When an active practitioner will cross the ocean in mid-winter, subject to the freaks of the angry billows, that show no mercy to a fastidious stomach (if he was a stomatologist it might be different), we are led to believe that he thinks he has something worth coming for. Not many weeks hence the reading practitioners will have an opportunity to peruse, we think, the ablest and most useful paper ever presented to our profession. We believe that Dr. J. Leon Williams, of London, England (No. 30 St. George's, or Hanover Square), stands as the most brilliant scientist—in the line he is now working—of the age. We know this is saying a good deal, but we believe in putting dentists in their rightful place. We have not been guilty of doing too much of this. Dr. Talbot told the California Dental Congress that it was a great failure of ours, *i.e.*, giving credit to our fellows. Not all scientists are "all-round" men; but Dr. Williams is a bright exception, everything that he touches has the mark of talent upon it. We are told by visiting Americans that he has doubtless the best practice in London, embracing most

of the leading literati and artists. His talent as a conversationist gives him the *entrée* to the best society in this connection. His ability as an artist has been exhibited with financial success, associated with his literary ability. His first was a volume by Putnam's, of New York, "The Haunts of Washington Irving at Sleepy Hollow on the Hudson;" his second, by Appleton, of New York, "The Early Scenes of Shakespeare at Stratford on the Avon." A copy of the latter was presented by the author to your noble Queen Victoria, and acknowledged by her in a letter. We are indirectly informed that he is contemplating a similar work from the scenes in Switzerland to be published by a New York firm.

We are glad to emphasize that dentists are not all "tinkers" and "tooth carpenters." There are others Johnson, Ottofy and Newkirk of Chicago, Ottolengue of New York, etc. I think these have also shown that their talents found attractive attention outside of the dental office. Dr. Williams' paper was titled the "Comparative Anatomy of the Teeth and Some of the Phenomena of Decay of Enamel." It was beautifully illustrated by ninety-five micro-photographs, which were thrown upon the screen by the stereoptican light. They demonstrated the claims of Dr. Williams, which were conceded by all as a demonstrated fact, that dental caries will no longer be incapable of explanation. Bacteria take the initial step, without a doubt. Wherever they can get a point of weakness in structure, and the environments are favorable to their pathogenic condition, they eject an acid (or acids), possibly lactic or acetic, through their albuminous pseudo-phobic mouth, which so protects itself from the association of the surrounding fluids of the oral cavity, therefore dissolving, atom by atom, the enamel until the dentine is reached, and as the destruction deepens the accumulation of bacteria hastens the devastation of the tooth structure. Predisposition is first considered; active causes second, and antiseptics, latterly. We have never witnessed such undivided attention given to any reading of a paper, and when we consider that two and a-half hours were consumed, it was a tension upon all, but not for a moment did interest slacken. On all hands by acclamation it was voiced that the paper needed no discussion. But more from a complimentary motive, Drs. Black, Kirk, Harlan, Burkhard, Ottolengue, Darby and others said a few pleasant words, and the invitation was given to others that had been invited to take part in the discussion to write out what they would have said, and their remarks would be published in the proceedings of the Society (in the *Cosmos*). We wish we could have dropped the Canadian dentists down into the elaborately decorated rooms of the Lotus Club and looked upon the Round Table, so beautifully arrayed with a lavish display of strewn flowers of multiplied forms and

colors, and around this table were seated twenty-six dentists, including one literary gentleman, Mr. Arthur Warren, the London correspondent of the Boston *Herald*, an intimate friend of Dr. Williams—in fact they have figured as co-partners in literary work in our American magazines, greatly to their credit. We do not know how much our friends across the border are accustomed to dental festivities, but if they could have been with us, and seen or participated they would have carried away an itching to repeat it at home. Among us American dentists, there has been no little innocent indulgence in this regard since the late Dr. Atkinson came among us and inspired us with his noble enthusiastic social nature, turning the icebergs of exclusiveness into streams of warm professional brotherhood—we trust never to die out. Some of you know the blessings lavishly heaped upon them by his marvelous power and incentive to higher attainments of professional skill.

Dr. Williams has been exceedingly happy and fortunate in receiving such attentions as has been accorded him throughout his entire visit. The supper given him was a most gracious termination of his stay, and he can but carry back the choicest recollections of all that has been lavished upon him. Dr. A. L. Northrop, so largely known for his marked ability as a presiding officer, quite excelled all past efforts as master of ceremonies; his call for the different speakers was happy in a large degree, and all responded in the same spirit. Drs. Jarvie, Harlan, Carr, Perry, Hodson, Walker, Lity, Starr, the author of this letter, and Dr. Williams responded to the call of the chairman. The menu was elaborate and choice. Let us suggest that you thaw out some of your bright men, and give us a chance to show the liberality and appreciation of the New York Odontological Society.

GREATER NEW YORK.

Question Drawer.

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

Q. 28.—It often happens that upon removing pulps that have had arsenical application it is found that near the end of the root or roots the nerve is extremely sensitive. This is particularly so in case of molar roots. What is the best method of treatment?

A. 1.—Dr. Beacock's answer to question twenty-six led me to try his treatment in these cases. I was quite encouraged to continue experiments. Mix on a slab as many cocaine crystals as a drop of carbolic acid will take up. Keep the tooth dry and convey the mixture to the root canals by means of a few shreds of cotton

on a broach. Then, with a new broach of proper size work up the canals little by little. Withdraw the broach frequently, going a little farther each insertion. Generally, after a few minutes of patient manipulation you will have the satisfaction of finding the broach reach the end of the root. R. E. SPARKS, Kingston, Ont.

2. In my experience, directing a current of hot air into root canals and followed up by injecting oil of eucalyptus, or forcing it up with rubber compress; repeat the treatment three or four times or more, if necessary, at intervals of three days, and seal cavity well during same time; also make external application of mixture composed of iodine, aconite and chloroform in proportion of 3, 2, 1.

O. H. ZEIGLER, Toronto, Ont.

3. Use 4 per cent. solution of cocaine by hyperdermic point or put your wires in roots, and apply mild current, as in cataphoric treatment of dentine. Use 20 per cent. solution in cataphoric treatment.

P. BROWN, Montreal, Que.

Q. 29.—What is the best method of treatment for toothache and neuralgia, so frequently found in pregnant females?

A. 1.—Inject a few drops of the Edinburgh solution of bimeconate of morphia in the gums over the affected tooth or teeth.

W. G. B., Montreal, Que.

2. I have been most successful in the use of poke root or *phytolaca decandra*. Dose from 5 to 10 minims every hour for three or four hours before retiring in the evening.

O. H. ZEIGLER, Toronto, Ont.

3. Odontalgia is a frequent and distressing accompaniment of pregnancy. The pain, however, is occasionally a symptom of a pure neuralgia or of some reflex or functional disturbance and in the management of the disorder this fact must not be lost sight of. Much more often, however, it is a symptom of actual caries. There is no doubt that pregnancy predisposes to caries, the cause for which may arise from the existence of acid dyspepsia, a frequent accompaniment of pregnancy. Apart from this there may be an alteration in the buccal secretion by which it is changed in its reaction, thus enabling it to attack the teeth. It may arise from a more remote cause, namely, a morbid determination of the ossific elements of the teeth of the mother to the bones of the growing foetus. The part which bacteria plays in producing caries must not, however, be lost sight of. The treatment must be, as far as possible, preventive, in the form of mild antacids administered internally and the frequent use of tooth brush or floss silk, supplemented by antacid and antiseptic mouth washes, such as soda biborate and thymol. Where actual caries exist there is much

unreasonable dread, not only among the laity, but among physicians as to interfering during any period of pregnancy, and some recommend that all operations—even slight fillings—should be postponed until delivery. It seems to me certain that the suffering from severe toothache is likely to give rise to far more severe irritation than any mild operation required for its relief; besides, the morbid condition is likely to unfavorably influence the development of the child. Any tedious operations, like the restoration of form in decayed teeth with gold, are inadmissible, and when interference is believed to be necessary it should be as free from pain and fatigue as possible. Whenever toothache exists I strongly advise to seek the advice of the dentist, have the teeth carefully examined, and if the condition will warrant it, have a temporary filling inserted with the hope of relieving the sufferer and saving the tooth. When the tooth is beyond repair I do not hesitate to advise extraction, giving chloroform or ether, if necessary, to avoid shock or alarm, and I have yet to see any but the most satisfactory results follow.

R. W. GARRETT, M.D., Kingston, Ont.
Prof. Obstet. Med. Dept. Queen's Univ.

QUESTIONS.

Q. 30.—What is the difference between adhesion and atmospheric pressure applied to the adaptation of sets of teeth?

Q. 31.—How do you calculate percentage solutions?

Medical Department.

Edited by A. H. BEERS, M.D., C.M., D.D.S., L.D.S., Cookshire, Que.

TOTAL NECROSIS OF THE LOWER JAW AFTER OSTEOMYELITIS.
 Oskar Faisst (*Beitr. z. klin. Chir.*).—A female child twelve years old was suddenly taken ill, with high temperature and pain around the lower jaw. Very marked swelling developed, interfering with speech and drinking. After three to four months an abscess developed on the right side. A fistula remained for three weeks. All teeth fell out. Gradually a bone appeared in the mouth which became more and more prominent. On examination the mouth could not be closed, and foul smelling pus and saliva were escaping. The entire inferior maxilla was palpable up to the joints and was comparatively loose. The urine contained a large quantity of pus. The entire jaw was removed in two halves. Unfortunately, however, this was too late, for the prolonged suppuration gave rise to amyloid degeneration of the kidneys. Cases of this kind are very rare.

DR. H. A. HARE reports a death following the administration of nitrous oxide (*Therapeutic Gazette*, December 15th, 1896), illustrating the influence which nitrous oxide gas may have when administered to persons suffering from atheromatous blood vessels. A man between fifty and sixty years of age, visited a dentist who makes a specialty of administering nitrous oxide gas, to have a couple of teeth extracted. He had taken the gas on previous occasions without any trouble. On this occasion he took the ordinary quantity, his teeth were extracted and he rapidly returned to consciousness. He left the chair and walked to a wash stand to rinse his mouth. He then complained of numbness in his right hand which extended up his arm and to his leg and side. He was put on a sofa, where he became unconscious; breathing was stertorous. In a few minutes he became absolutely insensible. Venesection and other measures were resorted to. He died twelve hours after taking the anæsthetic. The rise in the arterial pressure, produced by the gas, may cause rupture of a blood vessel in those having a tendency to apoplexy.

MOUTH PROTECTION AGAINST BACTERIAL INVASION.—H. Bourges, in the department of experimental pathology of the *Rev. des Sci. Méd.*, gives a brief review of A. Hugenschmidt's experimental studies of the different methods adopted by the cells for the protection of the buccal cavity, against the invasion of the pathogenic bacteria, as described in his "These de Paris" (1896). Dr. Hugenschmidt doubts the claim that the saliva possesses bacteria-killing properties, and also its role in weakening the virulence of pathogenic microbes. He thinks that the protection against bacterial invasion is due to the following conditions: (1) The chemical properties of the saliva and the soluble products of the microbes contained therein excite an intense diapedesis which is carried on in the mouth, and which attains its maximum at the surface of wounds, bathed by saliva. (2) The mucus of the buccal cavity, when there is a suspension of the secretion of saliva, possesses bactericidal properties. (3) Incessant epithelial desquamation. (4) Vital concurrence eliminating the bacteria, not acclimated. *Amer. Med. Surg. Bull.*, February 10th, 1897.

INDISCRIMINATE USE OF COCAINE.—The topical use of cocaine is attended with a degree of danger at all times. Serious consequences more frequently follow its use in the deep urethra, nares or the gums than when injected into the body, or at the extremities. At no time is a solution of high percentage necessary, and the percentage should always be known. Many dentists use cocaine in a very reckless manner, and take no consideration of dosage whatever. They, as a rule, take no account of its constitutional effect, only thinking of its local action. Three cases of

cocaine poisoning having come under our observation within the past five months in the service of two prominent dentists, prompts the note of warning here given. In one case, on enquiry, the percentage was not known—possibly ten or twenty, he said. He just took some crystals and added some water, and injected a few drops into the upper gum over a canine tooth. Poisonous symptoms were noticeable in less than three minutes; the collapse was severe, and only by energetic measures freely used was the patient's life saved. In both the other cases a ten per cent. solution was used, but the degree of poisoning was not alarming in one instance, while in the other it was exceedingly so. A very prominent dentist in the city told us that he frequently applies the pure crystal to the exposed nerve. We feel justified in calling attention to the very dangerous method of using a powerful poison. None of the active alkaloids should be used except in a solution of known strength, and then not in any indefinite quantity.—*Selected.*

SUCCESS OF THE VIENNA TREATMENT IN EFFECTING THE PASSAGE OF A SET OF FALSE TEETH. Henry L. Williams, M.D. (*Therapeutic Gazette*, January 15th, 1897).—A man, aged forty-two, swallowed a set of teeth while taking a drink of ice water. He made every effort to dislodge it by coughing and retching, but without result. His wife pounded him vigorously between the shoulder blades. The plate passed down the œsophagus with a sensation of scraping, followed by a feeling of relief. He was given two large pieces of apple to swallow, which he did without difficulty. The plate contained two central incisors and the left first molar, and having at each end a clasp. Measurement of plate was: Greatest length from tip to tip, one and three-quarter inches; the greatest width was three-fourths of an inch. The clasp encircling the left second bicuspid was of gold and projected one-quarter of an inch from the plate. The clasp upon the right side clasped right cuspid, and projected one-eighth of an inch from plate. It was explained to the patient that it would not likely pass the pylorus, also the danger if it did pass of being caught at some portion of the intestinal tract, and cause obstruction or perforation with fatal consequences. He declined to remain in hospital and also to take an emetic. He was told to drink copiously of luke warm water and mustard, and to eat only mashed potatoes for the next forty-eight hours. The patient returned the next afternoon. On reaching home he had taken a pint and a half of warm water with a tablespoonful and a half of Coleman's mustard. This failed to nauseate him but put him to sleep. At 2 a.m. he awoke and ate a large plate of mashed potatoes. After sleeping he again ate heartily of mashed potatoes at 9 a.m. He slept for an hour, and soon after

10 o'clock dressed and lay quietly on a lounge. Shortly before noon he felt a "scratching sensation" in left iliac fossa over the line of the sigmoid flexion of the colon, attended with an impulse to evacuate the bowels. This he did, and obtained a normal stool. Again in ten minutes he had another motion, discharging a large mushy mass, in which the teeth were discovered. There were large pieces of shaved beef as well as the potatoes protecting and coating the plate in its passage through the intestines.

TWO CASES OF TRIGEMINAL NEURALGIA AND TRISMUS ASSOCIATED WITH LOSS OF TEETH.—J. Sefton Sewill, M.R.C.S., L.R.C.P., L.D.S., Dental Surgeon, and author of "Sewill's Dental Surgery," St. Marylebone General Dispensary, etc. (*British Medical Journal*), says: Two patients lately under my care have presented some points of interest which it may be worth while shortly to record. Both were suffering from severe facial neuralgia, starting from and radiating about the temporo-maxillary articulation. For the sake of clearness it will be well to consider the general characteristics of both cases.

1. *Deficiency in Number of Teeth.*—Both patients were entirely edentulous as regards the upper jaw, and had but three or four teeth in the incisor region of the lower jaw; of the latter, in one case, one, and in the other, two, were carious, and were extracted by me. I would point out, as an important factor in causation, the absence of grinding teeth in both cases.

2. *The Nature of the Attacks of Pain.*—The pain in both cases was paroxysmal, the patients keeping the mouth closed in order to avoid excitation of pain and spasm. In the patient whose case is first described removal of her artificial teeth had this effect. Attempts at mastication had a like result in case two, but after wide separation of the jaws, while the patient was anæsthetized for the purpose of examination, as recorded later, the symptoms were materially reduced in intensity, for some days, occurring only under greatly increased stimulation.

3. *The area of the distribution of the pain* in each case presented marked features of similarity. It was partly local, but radiated over the area supplied by the auriculo-temporal nerve, that is to say, over a skin area including the front of the ear and temple, the point of maximum intensity lying in front of the ear along the upper border of the zygomatic process. In one case the pain appeared to be more extensive, though in a minor degree of severity, as it was clearly described as passing down the alveolar margins of both jaws unilaterally. Attention is called to the fact that branches of the auriculo-temporal nerve supply sensory filaments to the temporo-maxillary articulation.

4. *The Condition of Facial Spasm and Trismus.*—This facial

spasm was probably of a reflex irritative character, comparable to that seen in other conditions, as, for instance, in tic douloureux, where twitching of the eyelids becomes a marked symptom. It may be noted that the fifth and seventh cranial nerves are intimately associated; their cerebral origins are in close proximity, and communicating branches pass between the nerves themselves and between their exit from the skull and their termination, where the inter-communication is extensive. The jaw muscles were thrown into tetanic spasm during the attacks of pain, producing a temporary trismus.

5. *The atrophic condition of the masseters and temporal muscles* was due to disuse in both cases, and was so marked as to produce sinking in of the temporal region. This is no uncommon senile condition.

6. *Injection of the conjunctiva and increase of lachrymation* was noted in both cases on the affected side, and is also properly a reflex condition, due to the same causes as that already described above when referring to facial spasm.

7. *Absence of disease of the temporo-maxillary joint* was ascertained under an anæsthetic.

8. *No obvious disease of the teeth, gums or alveoli* was detected sufficient to account for the symptoms.

Case I.—A lady of about sixty years of age, looking older, owing probably to her extremely neurotic temperament, was sent to me by Dr. Ferrier. She had suffered for some considerable time—it was impossible to ascertain quite how long—from neuralgia referred generally to the alveolar borders of the jaws, and particularly to the left side of the face and head. On inspection of the mouth it was found that the patient was almost edentulous, having but four remaining teeth, all in the lower jaw (first premolars and the canines of either side). She was wearing dentures which fitted badly. Further investigation elicited the fact that she never voluntarily withdrew more than one of the plates from the mouth, as shortly after removal of both plates spasm of the facial muscles ensued, and violent neuralgic pains, radiating from the temporo-maxillary joint as a focus, occurred. The upper plate was a complete denture bearing incisor, canine, premolar, and molar teeth; the lower similar in character, but having spaces in lieu of teeth where her own remained. It may be mentioned that the necks—the junction of tooth and gum—of these remaining teeth were highly sensitive to mechanical irritation or changes of temperature; the premolars were extensively diseased and required removal. The canines were repeatedly dressed with the solid nitrate of silver, this salt having the property of obtruding sensitive dentine. The result was satisfactory. There was no disease of the articulation or jaw other than that confined

to the teeth and already described. The treatment to be immediately described in detail was carried out, the result being eminently satisfactory, the troublesome symptoms being relieved for about the space of two years. A few months ago the patient again came under my observation suffering from a slight relapse. On inquiry and examination it was found that one of her plates had been altered by another practitioner, and this alteration had allowed the jaws to relapse into a condition approximating that in which they were when I first saw her.

Case II.—The second case was that of an elderly lady sent to me by Dr. Abbott Anderson. She sought his advice some months ago complaining of intense neuralgia, originating in and radiating from the right temporo-maxillary articulation. She was practically edentulous and unable to separate the jaws more than a quarter of an inch without causing severe attacks of neuralgic pain, darting over the whole of the right side of the face and temple, accompanied by spasmodic trismus of the masticatory muscles, injection of the conjunctiva and lachrymation of and from the eye of that side. Various local applications had been tried without more than temporary success, and I saw her in consultation with Dr. Abbott Anderson in order that a thorough examination of the mouth might be made and the existence of dental disease, if any, discovered. There was no obvious physical sign of disease in the joint. Nothing likely to cause neuralgia was found within the mouth, but the patient having for the purpose of examination been anaesthetized and the jaws somewhat forcibly separated, it was found that for some days subsequently her pain was sensibly relieved. I suggested that the case presented so many points of similarity to that I have already described that we could not do better than treat it similarly. The patient had, when I saw her, in her possession two small plates, one for each jaw, but had not lately worn them as they were not comfortable. They were small partial dentures, filling gaps in the front part of the mouth only. In this they contrasted strongly with the dentures in the former case. As in the first case, treatment gave immediate relief to the more urgent symptoms. Practically the neuralgia was cured and the patient enabled to perform the movements of mastication without discomfort or fear of sudden spasmodic pain.

Treatment.—The principle in treating these and similar cases is the adaptation of well-fitting dentures so adjusted as to keep at all times the jaws as far as possible in their normal relative position by restoring the normal opposition of molar and bicuspid teeth. The chief difficulty, and one met with at the outset of the treatment, lies in obtaining accurate impressions of the jaws, for in the first case removal of the plates from the mouth set up pain

and tonic contractions of the maxillary masticatory muscles; and in the second, the patient, in dread of causing onset of pain, would separate the jaws but to a very small extent, while any attempt to take models of the mouth resulted in causing muscular spasm.

Pathology.—Loss of grinding teeth, molars and bicuspids, lies at the root of the mischief. Directly consequent upon this loss occur degenerative changes in the masticatory muscles due to inaction; then follows relaxation of ligaments about the joint: the condyle of the jaw, and perhaps the interarticular fibro-cartilage, slips when attempts are made to open the jaws, in this way pressing upon some of the nerve filaments derived from the auriculo-temporal and from the masseteric branch of the inferior maxillary nerves supplying the joint. Indirectly, these nerve filaments are connected with the seventh or facial nerve, the motor nerve of all the muscles of expression to the face. Branches from the auriculo-temporal nerve form one of the principal chains of communication between the fifth and seventh nerves. From the main trunk of the inferior division of the fifth nerve are given off branches to the masticatory muscles and from the ophthalmic division of the same nerve, those supplying the conjunctiva and lachrymal gland. After having been for some time in a state of chronic irritation, the sensory traces become traversed by exciting stimuli with extreme ease, and consequent discharges of neuralgic pain over the areas supplied by these nerves are frequent and violent. From the facts which have been mentioned, namely, the conditions which were observed before and after treatment, it may be deduced that the loss of normal relationship existing between the articular surfaces of the temporo-maxillary joint causes in a reflex manner both the paroxysmal pain in the sensory divisions of the fifth nerve and spasm of the muscles of the jaw. Two points favor this hypothesis: first, that the removal of the plates worn by my first patient caused immediate pain, replacement being followed by cessation of symptoms. Secondly, as already detailed, the relief gained by artificial restoration of the grinding teeth in the second case. I feel more than ever inclined to believe this to be the true explanation, for recently my first case came again under my observation complaining of slight recurrence of all symptoms described. Upon questioning her carefully, I found that her dentist in the country had for some reason altered one of her plates, reducing the molar and bicuspid opposition, and allowing the jaws to relapse into a condition approximating to that in which they were when I first saw her. I have only to add that six months have elapsed since treatment of the second case without the return of any untoward symptoms.

Dominion Dental Journal

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"NOT WANTED."

With every first annual issue of the JOURNAL, we receive several compliments, and always from the same class. The publisher sends the January number free to every dentist in the Dominion and elsewhere, whose address he can obtain. It is quite amusing, yet in one sense a pitiable puerility, that the very same dentists, year after year, return the number, with the laconic inscription over their names, "Not wanted." Among our collection of curiosities of dental journalism, there is none which speaks more eloquently as to our ethical consistency, and the petty spirit of the class who do not want to have their professional meanness exposed. The many kind words from those who are not so thin-skinned and thick-skulled, is surely more than compensation. The few men who "do not want" the JOURNAL are the very men who most of all need it. We take their persistent insult to their own intelligence as a journalistic compliment. Yet we should gladly forgive their past, even if it could not be forgotten, if they realized that what they think they do not want, is exactly what they need in the worst way. They may yet be influenced by reason to admit, that doing our duty as journalists, in trying to keep them from making asses or rascals of themselves, we are doing them a fraternal, even a filial, kindness. But they are not willing to subscribe for their own reformation. And the publisher has no faith that they would reform if he even sent them the JOURNAL free.

TOO MUCH CROWNING.

An all-gold crown which is conspicuous is not only vulgar in appearance, but is one of the humiliating disfigurements of modern dentistry. It is a public exhibition of a dental reproach. It is not constructed upon the *ars celare artem* principle. If there were no other objections to the use of all-gold crowns, this would in itself be sufficient. There is no possible case in which this disfigurement cannot be avoided. The conspicuous gold crown should be relegated as the exclusive distinction of people of vain and vulgar taste, and dentists who run fads on the basis of pure finance. It is, moreover, the duty of the dentist to educate vulgar people in this direction; yet the operator who would be ashamed of his work if he put a white porcelain lateral beside a brown cuspid, does not seem to realize his inconsistency in making an all-gold crown neighbor to human enamel. In another way, there is too much crowning. Scores of fairly good molars are ground down, which should be filled. It is possible, with proper treatment and skill to restore such teeth to usefulness and natural occlusion by good amalgam, if not by gold, and in many cases amalgam is better than gold. The day is not far distant, we trust, when these gaudy and glittering defects of dentistry—fillings as well as crowns, and indeed the insertion of any metal in human teeth, will be looked upon with the same curiosity, as to-day we regard the use of human teeth and the ivory of the tusk of the elephant and hippopotamus for artificial substitutes.

OUR SOCIAL AND PROFESSIONAL CONDITION.

“What would our social and professional condition be to-day in Canada, had we not had the leavening influence and fearless criticisms of our only dental journal?” This is the question that comes to us on a post-card from one of the oldest and wisest of our Ontario practitioners. We do not wish to answer the question further than to say, that the social and professional condition of the profession in Canada to-day is not likely to be all that we desire if the gutter-dentists have their way. This journal hates the quack and the quack imitator as it hates the devil; and whenever one of them dies, it believes that birds of a feather are likely to flock together in the next world as well as in this. Looking back at the record of dental journalism since June, 1868, the editor feels that no one can accuse him of once wavering from the ethical principles announced at starting. The critics, who can easily find faults, should use a little introspection. Perhaps some of the

reasons for fault-finding lie at their own doors. The social and professional condition of a profession is not shaped to order by editors alone. Every member has a personal share, and merits either credit or discredit. Upon which horn of the dilemma do you sit?

EXAMINATIONS IN BRIDGE WORK.

A very unfair prominence and pre-eminence is given to practical crown and bridge work in examinations. The impostors who are prepared to crown and bridge roots and gaps of all sorts and conditions of disease and diagnostic uncertainty, are simply thieves. If the public choose to be swindled by such practice, it is no reason why honest men should lose their wits and get excited. A few failures will do a man irreparable harm. Our object, however, at present, is not to discuss the subject, but mainly to suggest, that too much time and practice on this branch is exacted from students going forward for their license. It would be wiser to emphasize the limitations of this department, and to discover by examination whether or not the candidate is a mere mechanic, who is prepared to tinker every root, however diseased beyond repair it may be, or whether he is intelligent and honest enough to know irreparable pathological conditions, which should lead him to avoid such practice. To know where and when not to use crown or bridge work, is as essential as to know how to do it.

Post-Card Dots.

8. Can you tell me anything about a custom in Japan of blackening the teeth? Is it a sign of mourning?

Quite the reverse. It is a sign of matrimony. By means of a corrosive preparation the teeth of the betrothed damsel are made as black as ink, and they retain their dark color during the whole lifetime of their owner, who, whenever she smiles, betrays to observers that she is married. Even when she is a widow no attempt is made to remove the matrimonial brand. I have just been informed by a Japanese friend that the custom is becoming obsolete.

9. What can I do with a lot of the old porcelain pivot teeth I have on hand? Wooden pivots were used for them.

You can roughen metal posts and vulcanize them into the holes or fuse them in with porcelain. The metal of an ordinary "safety-pin" is just as good for the purpose of a post as gold platina.

10. Why is the French language made compulsory in the matriculation examination in Quebec?

Because it is a living language of the Province, and as such entitled to just as much consideration as English. While by no means reflecting in the slightest on the necessity of a good knowledge of Latin and Greek, which, in a sense, are dead languages, the importance of knowing this one of the two living and official languages of the country cannot be gainsaid.

11. Is it true that there was a college in Wisconsin which granted the degree of D. D. S. to any applicant without attendance or examination, on the payment of \$12.00?

Yes. The Wisconsin Dental College, organized under the laws of the State in 1880. The Wisconsin Eclectic Medical College is still offering diplomas to physicians at "much reduced rates, \$35.00, all inclusive."

12. What became of Wells, the discoverer of ether as an anæsthetic? Also of Simpson?

After giving up dentistry on account of ill-health he dealt in pictures, and after many disappointments, committed suicide. Simpson was made a baronet; his bust was placed in Westminster Abbey, and a statue in Edinburgh. On this continent we prefer to honor our discoverers when they are dead. It costs more, but posthumous honor does not hurt human vanity.

A dental student wishes to correspond with a lady, with a view to matrimony when he gets his license. A lady who would consent to assist him through his career in the meantime preferred. Age or appearance no difficulty.

We would enjoy the fun of enabling this enterprising youth to attain his objects. Any woman, however, who would accommodate him would be so much like him that the law would probably prohibit the marriage on the grounds of joint idiocy.