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The Bearings of Bacteriology upon Dentistry.*

By J. J. MACKENZIE, B.A.

It is a truth of wide-spread significance, yet one which we do not fully appreciate, that all branches of knowledge are so closely connected that no one of them may be studied apart from the others. This fact, which is true of all, may be considered particularly true of bacteriology. Born into the world at a comparatively late era in the development of human knowledge, it has had to hew out for itself, as it were, a place among the sciences, and in so doing it has not only received aid from, but has cast light upon its surroundings. It is only necessary to mention the leaders of bacteriology at the present day to realize the many-sided character of the science. Pasteur was first a chemist; Ferdinand Cohn, one of the founders of the study in Germany, was and is still a botanist, and Koch was first a practising physician. Thus it has drawn its workers from all departments, and it is natural that these workers should bring with them the bias of their early training. In so doing they have given it its varied character which alone can explain its wonderful development in the last ten years. Biology and chemistry, practical medicine and agriculture, all owe much to this growth, and it would be strange indeed if dentistry had not gained much from it also.

I have often heard it said that to be a good dentist one must have not only the training of a medical man, but also that of a mechanic and metal worker, and to be first and last and always an artist. It

* Inaugural Lecture of the Royal College of Dental Surgeons, Oct. 3rd, 1893.

is not our intention, therefore, in the course of lectures of which this is the first, to add to the already heavy burdens of the hard-working dental student by making a bacteriologist of him, but simply to draw from bacteriology the facts which have a special bearing on dentistry, and from which he may derive benefit in his dental work.

Before considering in detail the bearings of this science upon dentistry, it would be well briefly to sketch its history so as to obtain a better grasp of the subject, and appreciate better its wonderful development.

Curiously enough, when we look back into the early history of bacteriology, we find that the first observations were made upon the bacteria of the teeth. Leeuwenhoek, the father of microscopy, in 1683, examining in his enthusiasm everything which might contain his newly discovered "animalculæ," says that although he did his utmost to keep his teeth white and clean, he still found in the white substances between them five different kinds which he figured and which we have to-day no difficulty in recognizing as bacteria. One especially is so characteristically drawn that no one who had ever seen it under the microscope would fail to recognize the form which we now call *Spirillum sputignum*—the spirillum of saliva.

From these discoveries to the present day is a long distance in time, yet for years, nay, for a century and a half, observers contented themselves with simply repeating and confirming Leeuwenhoek's observations, and falling into his error of looking upon bacteria, whenever found, as animalculæ.

Not until 1833 was there even a hint as to their true nature, and it was only in 1859 that Davaine, a French physician, showed conclusively that they were vegetable organisms. Since Davaine, the science has grown apace, but yet it would never have been more than a sub-department of biology if it had not been for two circumstances in its development.

The first of these was the battle which engaged the scientific mind during the first half of this century as to the spontaneous origin of life.

It had been observed when organic infusions, animal or vegetable, were placed in sealed flasks, and then boiled, that occasionally after a certain length of time they began to undergo putrefaction, or to ferment, and that when examined under the microscope, they were seen to be swarming with bacterial life. As it was generally conceded that the temperature of boiling water would destroy all life, it was thought that this reappearance of life in the boiled infusions was due to spontaneous generation; that is, that new life had been spontaneously produced in these infusions by chemical methods. It is easy to understand what a storm such an idea would arouse in the scientific world, and it is one of the most interesting subjects in the warfare of science to trace it to its final settlement. We have

not time to do so here ; suffice it to say that it was finally settled by Pasteur in 1860, by showing that the temperature of boiling water was not sufficient to destroy all life, but that at a few degrees above that point (above 20°) all life was destroyed, and infusions treated in this manner no longer fermented, but remained unchanged indefinitely. It was afterwards shown that this was due to the fact that bacteria existed in two forms, one in which they were less resistant and could be killed by boiling water, and one in which they were more resistant (the so-called spore form) in which a higher temperature was required to kill them.

Throughout the struggle, however, our knowledge of bacteriology was continually widening, and in it the foundation was laid for all the brilliant results of later years.

The other circumstance which lifted bacteriology into a science by itself, was the discovery, in 1849-50, that cattle dying from a disease called anthrax, were found to have in their blood multitudes of little rods which the observers believed to be bacteria, and which they afterwards showed to be the cause of the disease. These first observations were treated with scant courtesy, and all sorts of suggestions were made to explain them, from the mild one that the observers were mistaken, to the more aggressive one that they had used their imaginations better than their microscopes—to put it baldly, that they had simply lied. This work was repeated, however, proof added to proof until the evidence was conclusive. The connection between bacteriology and practical medicine being thus established, its study was taken up eagerly by medical men, and the purely medical side rapidly developed.

In 1881, Robert Koch published first the description of his methods of work which has lightened tremendously the labor of separating bacteria from one another, and there was another impetus given to the science. In 1880, the cause of typhoid fever was discovered ; in 1882, the cause of consumption ; in 1884, the cause of cholera and of diphtheria, and so on from year to year there has been ever-increasing additions to our knowledge, so that to-day it would be hard indeed for the most sanguine to predict what the next two or three years will bring forth. One thing is certain, that in bacteriology practical results follow with wonderful rapidity upon the work of the laboratory. Pasteur's work upon the silk worm disease saved France millions of dollars. Koch's work on cholera since 1884 is the only explanation of the marvellous manner in which cholera has been prevented from spreading during the past summer in Europe.

Although Leeuwenhoek's observations upon the bacteria of the teeth were repeated time and again by subsequent microscopists, it remained for Miller, an American dentist living in Berlin, to first do systematic work upon them, and study their relationship to the etiology of dental caries.

Miller brought to the subject a careful training in Koch's methods of bacteriological research, and by so doing was able to elucidate many interesting points. His work has been followed up by Vignal, Black, and others, and he himself continues to give to the world from time to time the results of his indefatigable labors. It is not my purpose in this lecture to give a detailed account of the results so far attained, but to point out rather the broad lines along which a knowledge of bacteria may be advantageous to dentistry.

We know now that bacteria require for their development plenty of food and moisture, usually a free supply of oxygen, and always a warm temperature; all these conditions are found in the mouth, and consequently they develop freely. The saliva in itself does not contain sufficient organic matter to serve as food for bacteria, but loaded with the food which is taken into the mouth it is a substance peculiarly fitting. In them grow not only many forms whose presence is quite harmless, but also many other forms which are exceedingly dangerous. Sternberg and others have shown that the organism which causes pneumonia is present in the mouth of almost fifteen per cent. of all human beings in a normal state of health. Loeffler found the bacillus of diphtheria in the mouth of a healthy child, and there is altogether recorded the occurrence of twenty-five different kinds of bacteria in the mouth, capable of setting up disease when inoculated into animals.

From these observations it is easy to see that the first lessons which we must draw from bacteriology, are those relating to the hygiene of the oral cavity. These lessons would bear not only on dentistry, but upon the whole science of preventive medicine. The lining membrane of the mouth seems to be capable of resisting infection almost as strongly as the external surface of the body itself, but an unhealthy, badly kept mouth is a continual menace to the health of the whole body—a nest of disease whence may set out organisms which may carry destruction throughout the system.

Bacteria, when they grow under favoring conditions, excrete certain substances which are extremely poisonous. In fact, we know now that diseases caused by them are due solely to the poisons which they excrete. That the poisons excreted by bacteria in an unclean mouth are injurious to the system would seem a very natural conclusion, although the fact has never been absolutely proven, but one observer (Odenthal) has noted, however, that glandular swellings in the lower jaw are especially apt to occur with bad cases of dental caries, and we must admit from what we know of these organisms that a large quantity of bacteria growing in the mouth cannot result otherwise than injuriously upon the general health.

The study of dental caries has gone on in medicine since the days of Hippocrates himself, and many indeed have been the theories

promulgated to explain it. You doubtless are all well aware of the principal of these, and have attached yourself to one or the other as the case may be, but it seems to me, looking at it from the standpoint of a bacteriologist, that the parasitic theory, as first suggested by Ficus and elucidated by Miller and others, is the only one tenable.

You all know that fermentable sugar produced by the action of the saliva upon starch, is the commonest material found in the mouth; now, many bacteria are able to cause fermentation of this sugar, and in the process of fermentation there is produced a certain quality of free organic acids, usually lactic acid. That this commonly occurs in the mouth, Miller has conclusively shown. At one time he isolated twenty-two different mouth bacteria, sixteen of which fermented sugar and produced acid; at another time sixteen out of twenty-five produced acid. We have, then, in the production of free acid in the mouth by bacteria, the first step in the process of dental caries. Given a collection of sugared food between the teeth there takes place a local formation of acid which will naturally begin the decalcification of the dentine. But the decalcification itself would not necessarily mean the decay of the tooth; it would only mean a destruction of the mineral substance. A further step is in the penetration of other bacteria into the softened dentine, producing destruction of the organic matter.

The process thus begun appears to be continuous, as Miller has shown in some of his preparations, the bacteria penetrating the tooth by following the line of the dentinal tubules, whilst on each side there is an area of softening due to the acids secreted.

Thus these minute organisms, by developing under favorable conditions, may produce destruction which, if we consider only their minute size, would seem impossible, but by continuous secretion of acids destroying the mineral matter, followed by a secretion of ferments dissolving the organic matter, the whole tooth is slowly destroyed.

But if bacteriology only taught us that such things could be, that bacteria under such and such conditions produced such and such changes, it would be of little assistance to us. It has done more; it has shown us not only under what conditions bacteria thrive best, but it has also shown us what conditions are fatal to their growth, how we may destroy those existing and prevent others from developing. It is owing to this knowledge that the surgeons of today perform operations which a few years ago were considered absolutely impossible. They accept the results of bacteriology and realize that virulent bacteria are present everywhere, only waiting to gain an entrance into the human body; they act accordingly, and by the use of antiseptic solutions on their instrument, on their hands and everywhere, prevent their entrance.

In dentistry, also, antiseptic methods have been introduced which have rendered possible many operations which were formerly impossible, but it is only by a certain familiarity with the bacteria themselves we can appreciate the value of these methods so that they seem natural and not arbitrary. And it is especially necessary to realize that even in the simplest operations the more antiseptic and anti-bacterial the methods, the more certain are they to succeed without evil results following.

The whole literature of medicine and dentistry abounds in recorded cases of such things as blood-poisoning resulting from so simple an operation as the extraction of a tooth, and the danger from working in a filthy mouth without antiseptic precautions is not alone to the patient, but also to the operator. Miller quotes two very pertinent cases of blood-poisoning resulting from a slight injury to the finger of the operator; in one case from an instrument used in excavating a diseased tooth, and in the other from the sharp point of a diseased root.

That cases of infection do not oftener occur in dental operations performed without due regard to antiseptic precautions, does not prove that danger does not exist, but simply shows how wonderfully adapted the mouth cavity is to throw off infection.

It would be possible to add indefinitely to the list of dangers from dental operations resulting from the insufficient appreciation of the powers of these minute organisms, dangers of failure through the recrudescence of decay under an improperly placed filling, or the formation of a pulp abscess, and dangers of transferring disease from one mouth to another by the use of unclean instruments, as has occasionally occurred in the case of syphilis.

A knowledge of bacteriology is, consequently, of value to dental students, because it gives them a rational explanation of the antiseptic methods which they use in their work. They do it no longer as a "rule of thumb," but because they know why they are doing it. It enables them to feel in relation to bacteria that familiarity which breeds contempt—contempt not because of their minute size, but rather because of the ease with which they can destroy them.

They must realize that the mouth is a situation peculiarly fitted for the development of bacteria, and consequently swarming with them. Then when they try to inculcate hygienic care of the mouth into the minds of their patients, they are dealing with something definite and tangible. And when they perform their operations they must feel that they know where the bacteria are and how they are going to destroy them. It is this knowledge which is the basis of all antiseptic surgery, it is this knowledge which is at the bottom of all our bacteriological technique. On account of it we are able to work in the laboratory with such forms as cholera, typhoid fever or diphtheria without danger, because we know

absolutely where they are and where they are not. As soon as there is any doubt about it the danger begins, for then our germs begin to be beyond our control.

Finally, I may sum up the whole bearing of bacteriology upon dentistry, as upon surgery, in the words absolute cleanliness; and when I say absolute cleanliness, I mean it. I mean that you should not only think that an instrument or a tooth cavity is clean and free from living bacteria, but that you should know it, and know it absolutely beyond a doubt.

Filling Roots.

By M. W. SPARROW, L.D.S., Toronto, Ont.

Successful root-filling may be considered the corner-stone in the foundation of a prosperous dental practice. I believe that the dentist who can fill a root without any disagreeable after effects has not only reached a point of perfection, but has established himself to the suffering public as a skilful practitioner. There are many opportunities for the exercise of such skill, and I am of the opinion that these opportunities should be increased by the devitalization of the larger number of *exposed* pulps that come to our hands for treatment. I have very little faith in the capping of exposed pulps, since they are nearly always more or less sensitive to the changes of temperature, and therefore uncomfortable to the patient. If a pulp causes any trouble after a tooth has been properly filled with a view of arresting the effects of thermal changes, it should be destroyed and removed. Sooner or later the majority of these capped nerves die under the fillings from the effects of thermal changes, and with such annoyance to the patient that a dentist's reputation is at once placed in jeopardy. The many fillings that have been removed at an early or late period after insertion, and the large number of teeth that have been extracted on account of capped nerves, is evidence enough that capping is not successful even in a small number of cases. Therefore, I believe that devitalizing the exposed pulp at once is the best and surest plan, after which its *complete* removal and a *thorough* filling of the canals with proper material are essentials that cannot be slighted with impunity. Hence arises the necessity of discrimination and skill, and a thorough knowledge of the anatomy of the teeth.

Had nature anticipated the tribulations of the dentist, it is probable that she might have proven herself considerate by being more careful in her handiwork; but since she has not, it is left to the dentist to correct some of her follies and combat with many of

her inconsistencies. Crooked and tortuous roots and nerve canals are not what the dentist would have suggested, but since they exist, it follows as a natural sequence that professional ingenuity must be brought into play in order to cope with nature's unreasonableness. Who has not been baffled in his repeated attempts to completely remove the nerve and fill to the apex of a tortuous pulp canal? There are those who vaunt their ability to accomplish such an undertaking every time, but I doubt if there is a dentist living who has not failed more than once in his efforts; and the extraction and examination of some of the teeth he has thought perfectly filled will prove my belief to be somewhere near the truth. It is within the ingenuity of the dentist, however, to overcome many of the difficulties arising from crooked roots, though he may not succeed in all cases. A thorough knowledge of the exact position of the nerve canals in the different teeth, a careful search for any unusually developed canal, a proper access to the canals, followed by a free opening and preparation by the proper instruments, are the essentials for a generally successful performance of these operations. Then follows the complete removal of the contents of the canals, the disinfection of the canals and the dentine, and the establishment of permanent aseptic conditions by mummification of the contents of the tubuli, and the hermetical closure of the apical foramen. There are also certain other conditions that must be borne in mind. We must remember that the pulp chamber and canals are much larger in children than in adults, and much smaller in advanced life than in middle age; that as we advance in years the pulp chamber grows smaller, on account of the formation of secondary dentine, until in well-advanced life the pulp chamber has been nearly, if not quite, filled up. Extreme caution must be exercised in the canals of the child—because of the large foramen—that the filling does not penetrate the apex. Care and patience must be exercised over the adult canals, that none of them have been overlooked or neglected, and good judgment must be used as to the proper time to insert permanent fillings.

Every dentist who hopes to be successful with root-filling should have at his command a full set, in assorted sizes, of the Gates-Glidden, or the Morey, nerve drills, the Evans root-drier, and an assortment of reliable nerve broaches. In addition to these he should make himself several reamers by grinding broken Gates-Glidden drills to three-sided tapering points for both right-angle and straight handpieces. Then make a few more pliable ones to fit a nerve-broach holder, out of piano wire, ground three-sided like the drill reamers. In the use of the Gates-Glidden drills, great caution must be exercised, as they are easily broken. When the drill has a tendency to spring or bow up, it is a danger signal, and should at once be removed from the canal. By working slowly,

and frequently removing the drill, the danger may be averted. But the springing of the drill indicates that a curve in the canal has been reached, and it is often advisable to desist in the use of the drill. Here is where the reamers come into use. They are smaller and more pliable, and will work around the curve if it is not too great. Be careful not to penetrate the root. The slightest evidence of a sensation of pain in a patient's face is another danger signal, and should at once be heeded. When the canals are too small to admit these drill reamers, the piano-wire reamers can be brought into service, and with them the extreme end of the root may be easily reached. For this purpose, I had a watchmaker attach a piece of piano wire (without drawing the temper) to the shank of a Gates Glidden drill, so that I could use it in the engine. I filed the wire down to a three-sided reamer, and as it is very tough and very pliable, by using it cautiously I can get around curves in very small canals without fear of breaking. I use this often and with splendid results. I believe in thoroughly opening up the canals wherever it is possible, and with such instruments at hand, there is no reason why any particle of nerve should be left. Now, having thoroughly excavated the canal and removed all *debris*, the Evans root-drier is introduced. This instrument is made after the principle of the hot-air syringe, with a point of soft platinum or silver attached to a copper bulb, and as it is inserted hot and pliable, it easily passes to the end of the canal. The use of the drier or hot instruments absorbs the moisture from the organic matter of the tubuli, and leaves the dentine in a better condition to take up the antiseptic, as well as the chlora-percha that may be used, and prevents discoloration. Rubber dam should always be adjusted at the beginning of the operation.

Having prepared the canal for the reception of the filling, the question arises as to whether we shall fill it immediately or treat the canal to an antiseptic and wait a day or so for further developments. Immediate root-filling is permissible *only* after a thorough removal of a recently devitalized pulp, and the tooth is free from moisture and soreness. If there is hæmorrhage upon the removal of the pulp, or if there is a bad odor from a canal that has contained a putrescent pulp, immediate root-filling is not advisable. Be sure that the root is in an aseptic condition, even if it necessitates the patient coming several times. In cases that will not permit of immediate filling, insert a pledget of cotton saturated with campho-phenique, oil of cloves or creasote, and leave for another sitting. As an antiseptic, I prefer campho-phenique to perchloride of mercury in the simpler cases. But in cases of putrescent pulp or abscess, I have not found anything to act better than creasote. In cases of abscess with fistulous opening, I have pumped creasote through with cotton on a nerve broach with the most satisfactory

results, as it immediately breaks up the pus sac and the walls of the fistula and promotes granulation.

For filling material, I use chlora-percha with gutta-percha perhaps oftener than anything else, though I do not confine myself to it exclusively. It is easily introduced, and with hot instruments as easily removed in cases of necessity. It is non-irritant, and is not so apt to cause trouble should it penetrate the foramen. I use it principally in the incisor roots and the bicuspid's. For molars I use either oxy-chloride of zinc or oxy-phosphate of zinc, introduced with cotton on a plain nerve broach. I have lost faith in cotton as a permanent canal filling. I do not believe it accomplishes the desired end. I have had occasion to remove it many times, and have nearly always found it charged with an unpleasant odor. I have found that waxed silk, dipped in chlora-percha, makes a much better filling than cotton, and it is as easily introduced or removed. The main point in canal filling is the hermetical closure of the apical foramen. This being accomplished with gutta-percha, it does not matter so much about the remainder of the filling. Still I prefer to fill the whole of the canal with gutta-percha and chlora-percha, as these materials are better suited to the organic matter of the tubuli than anything else. It is unnecessary to permanently seal up in a tooth an anti-septic. If the root is in a proper condition before filling, the introduction of the filling material is quite sufficient, provided it has been thoroughly adapted to the root-walls. This requires time, patience and skilful manipulation, but when satisfactorily accomplished there is no chance of failure.

In closing this article, let me add that I make no pretension to originality. I have gathered my information from different sources, and I have given only those principles which I have tried in my practice and found successful.

To Re-swage a Metal Plate Having Teeth On.

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

The adage, "Necessity is the mother of invention," proved itself true in my practice recently, and as some professional brother may find himself similarly situated, I give the JOURNAL the benefit of my experience.

I made a gold plate for a patient. It carried one central incisor and the bicuspid's and molars. It seemed to come out of the investment beautifully, but when I went to fit it in, I found it raised up from the palate badly. I determined to try an experiment. I placed the plate upon the die, removed it and marked the die

around, about where the palatal side of the artificial teeth would stand. I then cut away the metal where any of the teeth would be likely to touch the die. I then built up a ring of putty outside of where I had marked the die. I ran a lead counter in my putty ring. I replaced the plate upon the die and formed the counter to fit the palate without touching the teeth. A few blows with a hammer upon the lead, while an assistant held the plate firmly on the die, brought it into very good shape.

Another case:—A gentleman who wore, for some months, a well-fitting gold plate, carrying a lateral incisor and some teeth on each side, returned with it so flattened that the palate would not touch the roof of his mouth. I applied the same treatment which, he said, made it fit better than it ever did before.

Dental Dots.

By D. V. BEACOCK, Brockville, Ont.

Any dentist can gild and stain artificial teeth, by using the proper tube colors, such as are used by China decorators. A small furnace, or even a good blow-pipe, will be all that is needed.

Resin powdered fine and sprinkled on a fresh cut or wound, and wrapped in a clean rag, dipped in cold water, will prevent inflammation and cause it to heal kindly.

Powdered resin can be used for filling some roots of teeth, by working it well into the root, then moisten with alcohol, being antiseptic and insoluble in the mouth.

Resin is very useful in the dental office for many things, such as putting on teeth to keep the rubber-dam from slipping off the teeth, preventing the belts from slipping on both engine and lathe.

Pasteur asserts that no bacteria are to be found in the human blood when in a normal and healthy condition.

Bacteria act upon animals by means of the substances which they secrete. The intensity of the chemical action is proportioned to the quantity of chemical substances produced.

Cut off enough from the tube of your Shaw engine, to allow the shaft to run, say, three-quarters of an inch further through. This will enable you to put on a small square-edged stone to sharpen your drills, etc., also a wire brush to clean burs.

Take a common drop-tube, or pippet, run it through the cork into a suitable sized bottle. This makes a handy drop-bottle for using certain kinds of liquids.

Where there is any portion of a crown left, from the second bicuspid back, it is a good plan to use a platinum band and fill with amalgam, or a band of German-silver may be used in some cases when a patient is not able to pay, and anxious to save a tooth.

The Ideal Progressive Dental Association.

By A. E. VERRINDER, M.D., D.D.S., British Columbia.

The Conventions of Dental Associations are just what members make them, and all Dental Societies are not professionally what they should be—none reach the standard they aspire to.

Indifference and too much formality is the usual course of events. The Secretary, for instance, is at best a hard-worked individual, of whom entirely too much is expected, all committees calling upon him for the lion's share of the work, and, of course, trying to hold him responsible for all errors and mistakes contained therein; the certain formalities usually requiring a general search for all the technical terms contained in the leading Dental Lexicons, combined with all the great words contained in an unabridged dictionary—when all required is a few simple words to form a short, concise, and clearly defined sentence.

Our President is also expected to be more than the ordinary progressive personage. In fact, he is supposed by everybody to be the one exalted being to look up to and copy after, and is expected to have plainly written on his brow the whole category of our Code of Ethics—placing him in the embarrassing position a new pastor's wife is expected to fulfil in the reverend gentleman's congregation, setting an example to his flock and parish.

Too many cooks spoil the broth—in committee work, and I think it preferable every time to choose a committee of one, as the Chairman is surely the active member and attends to the major part of the work, showing us that, if the Chairman can accomplish the task assigned the committee, others are superfluous, and their time is unnecessarily consumed, usually to the annoyance of the active, handicapped one, especially when the other member or members are situated at a distance, as they usually are in district societies. Let the chosen one transact his part of the official business, the same as a private individual would do, with absolutely no formalities to hamper and retard the progress of the work assigned him, and in such transactions as require the necessity, let him be responsible and answerable for it, even to the extent of placing him under bonds.

What we want is an energetic, progressive, intelligent, and enthusiastic membership, in order to accomplish the desired end of an ideal association ; no waste of time through unnecessary formalities ; official business transacted rapidly and in simple and concise form, each member being prompt with his manuscript, which should be written in ink on legal cap, and on one side only ; each thesis should be in a plain, neat form, and in such condition as not to require correction and revision by the respective authors, each member recognizing the fact that he has not been assigned to a special dissertation merely to have his name placed on the programme for ornamentation.

Each one should seek the task assigned him in an assiduous, progressive, and liberal manner, remembering that, as soon as read, the disquisition becomes the property of the Association and is placed immediately in the Secretary's hands for safekeeping and future reference.

No dental association or convention will be successful with each member trying to shirk duty, or throwing the responsibility of the success of the undertaking too much upon the shoulders of others, and I cannot too strongly emphasize, in view of the ever-failing societies, that too much time has been consumed in quibbling over certain formalities, and not enough spent in attainments.

The proceedings of associations should be published annually in book-form, the maxim being, if the matter is valuable to the society, it is worth the expense of publication. The spirit of the age being progressive, associations should keep pace with the times.

Members listening to an address do not get the full meaning, therefore cannot digest properly a paper at one reading, and each member being furnished with a copy of the entire proceedings would derive the benefit of future readings and a better understanding of the contents at their leisure ; and those unavoidably absent would not lose entirely the benefits derived from the Convention.

Papers when first read may be ever so newsy, witty, wholesome, and instructive, but if stowed away or laid on the shelf, and brought to light a few years hence, in the majority of cases, "our calling advancing with the spirit of the times," they would become non-instructive—in fact they would read like stale old "puns," and we would not relish them the same as did the old darkey at the communion table. When the deacon handed him the cup, quoting, "Drink ye all of it," the old man drank every drop of it and handed the glass back saying, "Fill it up again, Massa Deacon, I love my Lord Jesus dearly!"

Those of our honorable body who have had the pleasure of

matriculation and attendance in other dental associations, will have noticed how slack and dilatory at some sessions is the attendance, some of the members who live near by officiating as usual during office hours and attending evening sessions only, while other members, who live at a distance, are perfectly willing and even anxious to leave their homes and business, paying fares and hotel expenses, to contribute their mite for the welfare of the Association.

This is not right. Each member of the Association, no matter how remote his home, or how pressing the demands of his office, should be ready and willing to close his office and attend regularly each session of the Convention, taking an active part in the duties assigned to him, entering into all official business and discussions with an ardor, contributing his full share of the talent and expense incidental to an ideal association. Each one should endeavor at these necessary, useful, and instructive assemblies, to lay all business matters aside, so that there will be a regular and full attendance, with no tardiness in paper preparations or readings, so as not to crowd them in at the last moment, allowing no time for discussion and digestion, combined with excellent management from the beginning of our first morning's session until the *grande finale*.

Do not interpret or understand this paper as a criticism on this association, as such was far from my intention. However, if any fact herein mentioned will apply to this gathering, let us acknowledge the corn, with the hope that benefit will be derived therefrom.

And in conclusion, I do sincerely hope the present and future objects of this association shall be the promotion of the highest excellence in the science and art of our noble calling of Dentistry and its collateral branches; the cultivating of a closer professional relationship, combined with supreme good fellowship amongst our members, and collectively to represent and have cognizance of the common interests and promulgation of the loftiest sphere of our unexcelled profession.

Antiseptics.

By A. J. HOLMES, D.D.S., New Westminster, B.C.

There is no one subject at issue in our dental profession to-day that should receive more thought and consideration than the subject of dental or oral antiseptics. Dental caries has been the subject of much careful thought and investigation for many years past.

Our knowledge of dental caries has been greatly enlarged by the associate sciences of microscopy and chemistry. It was by the aid

of the sciences that we learned that micro-organisms were always present in and around a carious tooth, and that it was acid ; and yet we could not declare that these organisms were the true cause, for they were present under all circumstances, and it is equally as fair to assume that the acidity might be the effect rather than the cause of the diseased state.

Chemists, long before microscopists, proved the presence of micro-organisms ; discovered that in the process of decay a class of substances, having distinct chemical and physiological properties, were formed.

Later, this class of bodies were found to be analogous with the so-called alkaloids and called ptomaines, but their mode of formation and their true chemical composition was not discovered to any certainty.

It is still a matter of much consideration as to how the ptomaines are formed, some claiming that it is the excreta of the microbes ; others that it is the result of the breaking up of more complex substances, or the union of simpler bodies as the result of the disturbance of the molecular stage of the compound caused by the presence and growth of the micro-organisms.

The almost indefinite number of forms and wide distribution of microscopic life are known to all. We can find them in the earth, in the air, and in the water.

We know that certain families of microscopic life produce during their development, bodies or substances which, according to our modern chemistry, are classed among acids ; and acids are hydrogen compounds in which hydrogen has a weak affinity, and is more easily liberated than the other elements of its group.

We know that all forms of life, however small or however great, are produced and reproduced either for better or for worse when existing under the proper circumstances and conditions. Therefore, with these facts, let us turn our thoughts to the oral cavity. There we will find a culture medium which is kept at the necessary temperature for the growth and development of micro-organisms. The microscope reveals to us the presence of many species, and when our modern chemistry is more precise we will no doubt discover a more complex mixture of ptomaines as the result of their presence. If these complex bodies were the only result of these organic results, our oral pathology would be more simple, but such is not the case.

Acids or hydrogen compounds are largely produced as well, and it is these, owing to their energetic effect, that makes for us a much more complicated subject with which to deal.

We are all painfully conscious that the tooth substance is susceptible to the actions of acids.

Hence, if these facts be admitted, and the organic growth produces by their excreta a sufficient quantity of acid, which disintegrates tooth substance, it brings to us the practical question of how to arrest and discontinue its action.

To treat a disease does not necessarily require that we must know the cause; yet, knowing the cause, we can the more scientifically treat the disease.

Therefore, with the subject humbly presented, it is clear that we need a *germicide*, an *antiseptic* and a disinfectant. And it is upon this most important subject that I most earnestly ask your discussion.

We know that all forms of life are the result of the process of nutrition. Take away the food material and the proper culture medium, as stated, and we destroy the organic growth. Death of the microbes means one step towards antiseptis.

In the mouth we will find species of microbes that will live and flourish in the recesses of tooth structure without access to oxygen. Hence, simply closing them in with some sort of filling will not stop their development, but they will thrive and produce their acid products to react upon the tooth structure. To say that microorganisms are the sole cause of dental caries is wrong.

They play no part whatever, unless there is a fracture or a fissure in a tooth or badly crowded teeth, or some fit place for them to make their home.

We can have dental caries as the result of constitutional derangement or some diseased condition of the mucous membrane of the oral cavity and its associate parts.

We can have dental caries as the result of the lodgment and decomposition of food material between and around our teeth.

Misfitting plates and clasps, rough and unfinished fillings, will produce local inflammations, which, with their acid products, will cause dental caries.

Therefore, with these facts before us, our mode of treatment will naturally suggest itself—an antiseptic or something that will arrest decomposition; we will look for a germicide or some agent that will kill microscopic life; but, knowing that some of these lower forms are very tenacious of life, and that our germicide will kill the adult but will not destroy the spore or egg, if you may so call it, we seek a sporicide or something that will neutralize the spore or egg, and this we have very effectually in the bichloride of mercury, one to two thousand parts, and in this we also find the germicide and the antiseptic, so far as microscopic life is concerned.

If constitutional derangement is the cause, we must direct ourselves to the building up of the patient's general health.

When the mucous membrane of the oral cavity is diseased in part or whole, we must apply local treatment.

When the plate, or the clasps, or the unfinished filling is the fault, smooth off the corners and cauterize the unhealthy granulations.

If decomposed food material, packed between and around the teeth, is the cause, we must instruct our patients in the most forcible terms that absolute cleanliness is necessary if they wish to further the use of their dental organs.

Give them directions as to when and how to clean their teeth.

See that they are supplied with silk floss and that they have properly adapted tooth brushes, mouth-wash and tooth powder.

See that all deposits upon and around the teeth are thoroughly removed and enamel polished. In fact, thoroughly impress upon their minds that the mouth must be kept in a hygienic condition at all times, if they wish to lessen the frequency of decay.

Now, more as a point of discussion, I will mention in connection the subject of mouth-wash and powders.

What compounds or mixtures or solutions shall be prescribed for our patients in order that they may apply oral antiseptics by their own hands?

The answer to this question, in order that it may cover all cases, is not easy, but the greatest majority of cases can be covered by prescribing some pleasant and harmless solution (my favorite is Lesterina), a little quantity of which is to be put into a large quantity of water, with the direction that the mouth and teeth should be thoroughly washed once or twice daily, or more often if our judgment so dictates.

If we have any special case to meet, we can use absolute alcohol, water and glycerine as a vehicle, and then add any germicide or antiseptic, any tonic, or any astringent in any quantity or strength as deemed advisable.

As to tooth powder the more simple the better.

Prepared chalk or carbonate of magnesium answers the requirement of the greater number of cases.

This base will remove the mucus and small particles that may be clinging to the surface of the teeth.

To this base, carbonate of magnesium, for special cases we may add any medical property we may think best.

These, gentlemen, are my humble views with regard to the subject of oral-antiseptics.

I sincerely hope it is such that it may bring forward discussion of great value to all present.

The World's Dental Congress.

(Continued from page 255.)

Oxyphosphates.

By DR. W. B. AMES, Chicago, Ill.

It is from a physical rather than a chemical standpoint that we can look into the subject of oxyphosphate cements most profitably, for the reason that there is less difference chemically than in their physical characteristics.

The combination of the elements hydrogen, phosphorus, and oxygen, can exist under such an infinite variety of conditions, and be properly termed phosphoric acid, that much might be written of these conditions physical and chemical, ranging from pure ortho-phosphoric to pyro-phosphoric and on to meta-phosphoric, without deriving much more profit than to simply state that in all cements known to me at present, with two exceptions, the acid is intended to be either pure ortho-phosphoric or an ortho-phosphoric acid solution of alkaline phosphates. The two exceptions known to me on the market are Poulson's mineral plombe, and the variety of Harvard cement which is furnished with crystallized acid. In these cements the acids are of the pyro-phosphoric variety. Of these I will have little to say, as trial of these, and extensive endeavors on my own part to utilize pyro-phosphoric acid for the purpose, had led me to consider it impractical and unreliable. An occasional specimen will be all that could be desired, but the impossibility of duplicating it with any degree of exactness precludes any reliance on this variety of acid. I think that the experience of those who are familiar with these cements will bear me out in this assertion. The conditions under which pyro-phosphoric acid is produced render the obtaining of a definite article extremely difficult, and if this were not the case I am of the opinion that there is no advantage in the use of pyro-phosphoric over the ortho-phosphoric acid.

Meta-phosphoric acid can only be utilized by converting it into ortho-phosphoric by boiling it with an excess of water. Of this large majority of oxyphosphate cement liquids of which I have spoken, viz: those consisting of ortho-phosphoric acid, pure or adulterated, a very few only are unadulterated. In a very large majority of these the working properties of the cement have been modified by making an acid solution of an alkaline phosphate, or by using the glacial meta-phosphoric acid from which to make the ortho-phosphoric. This glacial acid is usually made from sodium phosphate, and retains a considerable quantity of this compound on

which depends its glassy nature, pure meta-phosphoric acid being of a softer nature. In either case the result is the same. I propose to claim that any oxyphosphate cement, in which such an adulterated acid is used, is inferior to one in which pure ortho-phosphoric acid is used under proper conditions. My reasons for claiming this are that the adulteration, while it gives some desirable working qualities, detracts from the definite crystallization, and also that it remains in the hardened mass as a soluble material, and by its solution in the fluids of the mouth necessarily renders the cement less permanent. The alkaline phosphates are all soluble in water, and these are the only phosphates which will remain in solution in phosphoric acid for any considerable time. All metallic phosphates in such solution will in time recrystallize partly or wholly, which precludes their use for the purpose of modifying the working properties of cements. The object accomplished by the addition of phosphates to phosphoric acid is in cement to retard the setting and render it less caustic.

A reliable oxyphosphate cement is, I consider, necessarily one that is irritating to pulp or rather vital tissue. The cements in which I believe ortho-phosphoric acid unadulterated by alkaline phosphates is used, are Justi's insoluble, Justi's lapidescent, Ames's crystalline, and the Harvard of Richter, of Berlin. I suspect that there are others of the German cements that would come under this class, but I have only been able to test these. I will not enumerate those in which I have found the alkaline adulteration of the acid, but will say that I have gone to some trouble to secure all on the market.

Among cement powders, there is less difference chemically than among the liquids, but physically they differ very radically. The basis of all light-colored cement powders is oxid of zinc. This material can exist under many physical conditions, and yet be simply ZnO. There is the ordinary zinc white, which is amorphous, and does not answer any useful purpose as a cement ingredient until it has been vitrified. After thorough vitrification and subsequent pulverizing, the specific gravity and characteristics have been radically changed. There are various forms of crystalline oxid of zinc produced chemically, but having invariably the same composition. It is my belief that a thoroughly crystalline zinc oxid is much better adapted to the requirements of an ideal oxyphosphate cement than the vitrified amorphous oxid. The crystalline oxid is pleasanter to manipulate, giving freedom from that curdy, clotty condition so objectionable during mixing, and giving a harder, more stable mass after setting. The crystalline oxid is also better adapted to use in connection with straight ortho-phosphoric acid than is the vitrified. So it is in the cements in which this acid is used that we naturally find the best samples of crystalline oxid.

The difficulty is apt to be that this crystalline oxid is not in a sufficiently fine state of division, and a cement that is very practical as a filling or pulp-capping material is not at all adapted for crown-setting. It is for this reason that I will tell of my practice of using the liquids and powders of various cements conjointly.

I have found that I can get better results by using a crystalline oxid with many of the adulterated liquids than by using the oxid that is furnished with them. Then with the group of cements in which unadulterated ortho-phosphoric acid is furnished I find that I can use the powders and liquids of all conjointly, getting almost any working quality desired. For instance, the powder of the Harvard is thoroughly crystalline, and of a very fine state of division. With this powder and the liquid of Justi's lapidescent, I have a better cement for crown or inlay setting than by using either of these cements as furnished. This combination can be worked quite stiff, and yet have a smooth plasticity that facilitates the operation, with satisfactory setting qualities. The powder of the lapidescent is less crystalline than that of the Harvard, and the liquid of the Harvard does not give as satisfactory hardening as some of the others of its type. The combination of Harvard liquid and Ames powder gives more satisfactory crystallization than Harvard entire. The Ames liquid and Harvard powder works nicely, does not set as quickly as Ames, but much quicker than Harvard.

The lapidescent liquid and Ames powder makes a good mixture, setting a little quicker than lapidescent liquid and Harvard powder. For fillings, where great resistance against wear is required, I have nothing at my command in which I have more faith than the Ames crystalline, having a quick and medium slow variety at my command. A more definite crystallization takes place in its hardening than with most other cements. The surface will take on a glassy appearance in the mouth that gives promise of great wearing qualities. It also comes nearer being a submarine or hydraulic cement than those which are termed "hydraulic," and yet are furnished with the caution to have the cavity perfectly dry and keep on the rubber until thoroughly hard. A practical test of the value of cement with me, is to place a bit of partly hardened combination of liquid and powder in my mouth and allow the hardening to proceed while immersed in saliva, using my organs of taste to test it for alkaline adulteration, and my teeth to judge of its hardness. I seldom use cement at my chair without taking notice of its action in this manner. A cement in which the acid contains an alkaline-phosphate will have an alkaline taste that will continue to an extent for all time.

Any of these herein mentioned as having ortho-phosphoric acid unadulterated with alkaline phosphate will have a decidedly acid taste for a moment, and then give no sign of solution.

There are other oxyphosphate cements which on account of color cannot be made use of extensively, and need not be mentioned with these zinc oxid cements, on which we will probably continue to place our main reliance.

DISCUSSION.

DR. DARBY.—I am surprised that Dr. Ames said so little about the value of Poulson's cement. I have never found anything equal to it. He spoke in the highest terms of Eifelster's cement, but it is not fit for crown or bridge-setting, it sets too quickly, it cannot be squeezed through a small aperture. Neither of these cements are suitable for crown or bridge-setting, but the Ash & Sons' cement is best for that purpose. I would like to ask why Dr. Ames said so little about Eifelster's and Poulson's cements.

DR. AMES.—I said very little for the reason that in my experience Poulson's acid has not been uniform, on account of a crystalline formation. I have always believed that this acid is pyro-phosphoric acid, and it is very difficult to produce that of a uniform character. Poulson puts numbers on his packages, so if there is a complaint of a certain package he can find the package and learn what the complaint is. The reason I did not speak so highly of Poulson's mineral plombe, it is a highly crystalline powder, and after the powder is pretty thoroughly crystallized it will become sticky and will drag somewhat under the instrument. You can use the powder of the Harvard cements and get more satisfaction than with the other.

DR. BARRIE.—I want to know if you use Poulson's cement after it is liquefied or before?

DR. AMES.—I did not know of any preparation by Poulson in which the acid is in a liquid form.

DR. MCKELLOPS.—I am a little astonished that the gentleman who read the paper did not allude to oxyphosphate as a filling-material. I look upon oxyphosphate as a great thing in filling children's teeth or teeth of persons where gold work will not stand. Take a young child, and you can nurse its teeth with oxyphosphates until a time when you can fill with gold, and you will not find any decay where oxyphosphate fillings are put in properly.

I can save more teeth in children by the use of oxyphosphates where everything else fails. The fillings wear out, some in one year, some in three or four or five, but they can be replaced. I believe I have one in my mouth that has been there twenty years.

DR. ROLLO KNAPP.—In the setting of crowns or bridges, we desire a cement that will set rather slowly and will not be hard when crystallized. There are directions accompanying the packages of cement giving a process by which the setting is accomplished slowly; it does not set quite so rapidly when instructions are followed: One instruction is to place ice-water inside of a bottle

and then mix the cement on the bottle. I have tried that, and it works satisfactorily.

DR. SMITH (Cincinnati).—Dr. Ames refers to the Harvard cement and says it is the best of all. My experience, however, is that it does not quite justify that statement. One quality it has, it sets rather slowly, and when crystallized it presents an ivory-looking surface. Ash & Sons' cement is a good all-round cement for filling and setting crowns. Dr. Flagg's statement that oxphosphates are wretchedly poor filling-materials is probably true in a great many instances; my advice to new practitioners is not to believe that they will last.

DR. J. TAFT (Cincinnati, O.).—In using oxyphosphates three or four things must be taken into account. The quality of the material itself is important; another is the manner in which it is manipulated; because in many instances a very good material proves totally insufficient by reason of the defective method of using it.

Another point that must be taken into account is the position where it is to be placed. It is subject to disintegration where it is exposed to two destroying influences; one, mechanical force, another, the solvent power of the fluids of the mouth. The manipulation of the material on a cold slab is an important point. If the temperature is right, there is no occasion for cooling the slab, but the material should be manipulated correctly. In some cases it should be of greater consistency than others. In crown-work you cannot use the same consistency as in an exposed cavity.

I have sometimes used a little slab of porcelain and cemented it in a cavity of children's and adults' teeth, and it has worn for years. It prevents the wearing of the masticating surfaces of the molars, and the cement below will be protected from the solvent fluids of the mouth. I regard it as almost criminal to take a child of ten, twelve, or fourteen years of age, when the teeth are decaying rapidly, and make long, tedious operations in gold when the work will be of a mere temporary character.

DR. AMES.—I refrained from speaking about a great number of cements because I couldn't say anything good of them. I would not use Ash & Sons' excelsior, neither would I use the phosphate that is made by Ash & Sons. If I want a quick-setting one, I use one combination; where I want a slow-setting for crown and bridge work, I use another combination. I think you get a better result from Justi's acid than you do in the Harvard; the Harvard powder is the finest that I have used; a powder that is satisfactory for crown or bridge setting is often just as desirable for a filling. I believe if a cavity is properly prepared and dried, there will not be a wasting upon the cervical border.

If you use a bottle of ice-water, be careful not to place your cement ingredients upon it until you are ready to use it; I mix

about two-thirds of the cement on a bottle of water which I draw from my hydrant. I would not put my liquid on the mixing-bottle ten or fifteen minutes before I want to use it, for I would expect a condensation of atmospheric moisture that would materially affect the cement. It strikes me as peculiar that in the better cements we find no one manufacturer who has produced an ideal compound. I can get almost an ideal compound by taking the liquid of one cement and the powder of another, and mixing them.

DR. BEACH (Clarksville, Tenn.).—I want to state one fact in reference to the mixing of oxyphosphates that has not been referred to. When the weather is warm the powder and the liquid should be of the same temperature, to overcome rapid crystallization of the cement; you can reduce both the liquid and the powder to the temperature of ice-water and then mix it as rapidly, or it can be mixed and adjusted for a filling before it gets too hard without any reference to the cooling of the glass slab; by cooling the substance itself with crushed ice or ice-water until it gets thoroughly cold.

DR. J. WARD HALL (Shanghai, China).—I should like from the far East to sound a warning note, that the verdict should not be altogether arbitrary. The part of the world in which they are used, the temperature and humidity of the atmosphere, should be taken into consideration. It is impossible for a man who lives in the United States to state facts with respect to the various kinds of cements which may be used on the other side of the world, where the wet and dry bulb of the barometer, unlike silver and gold, are not maintained at a parity.

Let us not commit ourselves to the folly of indorsing any one or any number of cements; let us rather recognize the conditions under which they are used; the distinct finalities on which we should settle in respect to cements. I should be very sorry to see the dentists of the world, in convention assembled as we are to-day, pass a general resolution implying any absolute conclusions as to the qualities of cements in general.

Proceedings of Dental Societies.

Third Annual Meeting British Columbia Dental Association.

The third annual meeting of the British Columbia Dental Association was held in New Westminster on Sept. 28th and 29th, 1893.

Delegations from Victoria, Vancouver and Nanaimo were present, which, together with the members of the profession in the Royal City, made the convention in many respects a grand success.

Very interesting and able papers were read by the following:

Annual Address—T. J. Jones, L.D.S., President.

"Clinic," by A. E. Verrinder, M.D., D.D.S., with specimens showing different stages of malformation by supernumerary teeth.

"Arsenic," by H. E. Hall, D.D.S.

"Antiseptics," by A. J. Holmes, D.D.S.

"Lancing the Gums during First Dentition," by G. A. B. Hall, D.D.S.

"Our Responsibilities," by C. H. Gatewood, D.D.S.

"Bridgework" (clinic), by W. R. Spencer, D.D.S.

"The Ideal Progressive Dental Association," by A. E. Verrinder, M.D., D.D.S.

"Professional Fees," A. R. Baker, D.D.S.

The above subjects bring thoroughly discussed and other business transacted, the Association elected the following officers for the ensuing year: T. J. Jones, L.D.S., President (re-elected), Victoria; C. H. Gatewood, D.D.S., 1st Vice-President, Vancouver; H. E. Hall, D.D.S., 2nd Vice-President, New Westminster; A. C. West, L.D.S., Sec.-Treas. (re-elected), Victoria; Executive Committee: W. R. Spencer, D.D.S., A. R. Baker, D.D.S., and A. J. Holmes, D.D.S.

The next annual meeting of the Association will be held at Harrison, Hot Springs, on August 15th, 1894.

PRESIDENT'S ADDRESS.

To the Members of the British Columbia Dental Association:

GENTLEMEN,—We meet here to-day, on the banks of the mighty Fraser, to celebrate this, our third anniversary. The first thought which arises in regard to the formation of our little band, is the mutual acquaintances which we have made, and the pleasure and profit which we have derived from the interchange of ideas. We feel that we are the better prepared to discharge our duties to our patients.

I hope we find confidence and friendship taking the place of that distrust and alienation which might have existed, and which would have prevented the highest usefulness of our profession.

Our first obligation as dentists is to our patients; we are in honor bound to seek their interests before our own. The customs of trade may have sanctioned sale and purchase where only one party could be benefited, but no one regards it honorable in a dentist to extract a tooth without first assuring himself that the comfort and welfare of the patient require its removal. If he persuades a patient to have good and useful teeth extracted to make way for artificial ones; or if he allows his patients to persuade him to remove living teeth, that more comely ones may be introduced, he dishonors his calling and deserves the reprobation of both the profession and the public.

Our charter, which has been granted us, gives us a legal existence as a profession for raising the standard of professional education,

and enables us to cultivate harmony and good fellowship amongst ourselves, and, if we are faithful to our trust, will secure to us a position among the educational institutions of our country. Our Association should recognise the mutual obligations of the members of the profession. All must admit that a profession as a whole should be supported, or it cannot be respected. It would not be right for a dentist who is rich to give his services gratuitously to all who might call upon him. It would be far better that he should charge a fair fee as compensation. No member of the profession should feel injured if someone who has obtained the confidence of the community by years of toil, which may have well-nigh destroyed his health, can and does command large fees which are beyond his own reach. Let it be remembered that the number of those that can give large fees is relatively small, even in cities, and that their confidence has not been secured without heavy cost.

Neither is it right for one dentist to put a price upon another's work. The habit which has existed in some places of enticing a professional brother's patients away under the pretence that they can be served for less money, is very pernicious to the profession and the community at large. Does not every dentist feel that he has a property in the good-will of the patients whom he has watched over for years. Does not every young member of our Association hope to see the day when his labor shall also be rewarded by such patients? And is he willing now to sanction a course which must, at no distant day, militate directly against himself?

The man who contents himself with inferior operations because he can command only small fees, will probably find that his patients will come to the conclusion that they have paid for more than they have received. No man ought to complain or be dissatisfied that confidence commands a high fee. Our financial men and capitalists understand this. Undoubted securities always command much higher prices than the uncertain, though the latter may have intrinsic value.

How shall this confidence be secured by the young practitioner? It is only necessary for him to be diligent and faithful in his calling, correct in his deportment, and honorable in his transactions, and time will do the rest.

At our last meeting you saw fit to elect me as one of your delegates to attend the World's Dental Congress, held at Chicago, August 14 to 19. I may be permitted to say, in my own behalf, that I was amply repaid for the time and expense of attending, in the pleasure of listening to those more learned and experienced than myself. I have returned with a new lease of life and greater determination to be useful to the extent of my poor ability; that, when called hence, it may not be said of me: "He left no foot-prints to mark his going forth." To say that I was pleased with

the reception I received at the hands of the Chicago Dental Society, is putting it mildly, and it will always be fresh in my memory, the kind treatment I received at their hands. I make especial mention of Drs. Harlan, Johnston, Taggart, Markle, Wassall, Wooleys, Hewitt and Ottofy. Gentlemen, it was a grand sight to see close on two thousand of our noble profession assembled from all parts of the world, with all the very latest improvements in our art.

Gentlemen of the British Columbia Dental Association, I again thank you for electing me for the third time your president.

Selections.

Our English Brethren.

Some of our esteemed contemporaries take umbrage at the snub our English dental dignitaries have given the American dental profession in refusing to send delegates to our Dental Auxiliary of the World's Exposition. But to us the conduct of these dental noblemen of England is not strange. The idea of our expecting the learned aristocratic dental profession of England to associate with us! The idea of *we* mere blacksmiths and barber tooth pullers expecting "the teachers of nations" to recognize us as equals! The idea of *we* mere country lads inviting representatives of the great and learned dental fraternity of England to come out into the woods of the Western wilds to a little show we are having! Of course, they disdain such familiarity.

Their first snub ought to have been sufficient; for it is not a year since the same blue bloods of the dental profession of England reminded us that their dental colleges were a great deal better than ours (beg pardon, they have not one dental college in all England; the very best they can do is to boast of a little college in one of the villages of Canada. They have not even a dental hospital, independent of the M.Ds., or even a school room). Well, I suppose we must admit that their course of dental education is superior to ours. They distinctly say this. (They have no course of dental education, no professors to dictate a course, no dental faculty, not under the surveillance of the medical profession.) Well, well; they, the dental profession of England, certainly allow none to enter their ranks with so little professional knowledge as we do. (There is no distinct dental profession of England.) They are only a few men who are allowed by the doctors to pull teeth, or to "stuff" them, or make mechanical substitutes for them, if

they will show proper deference to the great M.Ds. They are not allowed to dictate what the qualifications of their own students shall be. It is dictated to them by their superiors—the men of pills. Well, really, what shall we say then? They must have some superiority over us, for they are Englishmen. No, they have none. They are not allowed even to have Dental Boards of Examination without an M.D. on it. They are obliged to take off their hat, and bowing with humble subserviency, say to the commonest doctor of England: "By your grace, sir, we live and move and have our being." These are the men who know too well our superior skill to allow us to practise on their little island.

O, no; this is only a little Yankee boasting: We like these English dentists. They are jolly, genial, generous gentlemen. And when they come among us they prove themselves to be intelligent and efficient practitioners. If they had come to our Fair we would have showed them royal hospitality. But they could hardly excuse the boastful spirit of our invitation. They are learning even to have dental colleges like ours now.—*Items of Interest.*

Let Proficiency be the Watchword.

The three-years' rule calls for a better class of students. The days of the "jack-knife" mechanical genius has passed. What dentistry needs and should have is a class of men with skilful brain as well as skilful hands. The fact that a man can insert a nice-looking gold filling or construct an artistic bridge or crown does not constitute him a dentist. See that a strict observance of preliminary examination for entrance to college is enforced, to the end that none but educated men, or at least those educated in the common English branches and capable of comprehending the studies required of them, are admitted.

Wanted More Air.

Not long ago I was asked by a lady to examine her son's teeth and inform her what they needed. I found some filled with gold and several with the fillings broken down and out. One upper central and lateral were devitalized and had been drilled into from the palatine surface to gain access to the canals. These seemed to have been standing in this condition quite a while, as considerable decay had taken place from the interior of the pulp chamber, and the canals were in a fearfully septic state.

I reported what I had found, and took the liberty to inform her that if these cavities were not filled he would soon have no teeth.

She then told me that Dr. ——— did the work, and he was going to fill them as soon as they were ready. I asked her if they were being treated. She said no, but Dr. ——— said they needed a little air, and would be ready as soon as they had aired thoroughly. He had filled them about six months before and they got very sore, and he took out the fillings for them to air. Her son had been back several times, but Dr. ——— always found on examination that they had not aired enough, and would advise him to wait a while longer.

This was one reason why she desired the examination made; she wanted to know about how long a tooth ought to air before it was ready to be filled. I could not make a ready response to this, but after catching my breath, I informed her that there were some cases which, from a peculiar idiosyncrasy of the patient, might complicate matters more by airing too much, and I should advise their being filled at once. And this doctor is a graduate of a dental college, practises his profession in a city and probably holds a State license.—*Items of Interest.*

Editorial.

A Personal Apology.

A hard hitter is always a sore hitter. In the October issue of the *Dental Practitioner*, the editor, criticizing some remarks of the editor of the DOMINION DENTAL JOURNAL, dropped the impersonality of journalists and "went for us" by name. We felt it unfair, especially as the context of an editorial quoted was omitted, and the inference was conveyed that we had revelled in an assault upon "American Dentistry." It seemed to us as if our contemporary had deliberately attempted to pillow us by name. In hitting back we made the statement that the editor of the *Practitioner* was hitting everybody in general because he was not chosen for the Presidency of the Congress.

Now, that was unfair. We are assured that the editor of the *Practitioner* refused several propositions to nominate him. We sincerely regret this "tit-for-tat." As one good turn deserves another, so one good blow seemed to deserve another. But we apologize to the editor of the *Practitioner* for the statement referred to. It is better on all sides that personalities should be kept out of journalism.

"Our English Brethren."

Under the above heading we print among our "Selections" an editorial from the *Items of Interest*. We ask for it careful reading and a comparison with the facts.

"They have not one dental college in all England; the very best they can do is to boast of a little college in one of the villages of Canada.

"They have not even a dental hospital independent of the M.D.'s, or even a dental school.

"They have no course of dental education, no professors to dictate a course, no dental faculty not under the surveillance of the medical profession.

"There is no distinct dental profession in England," etc.

It may surprise our good friend in Vineland to know that "*they*" have no more to do with "the little college in one of the villages of Canada" than he has with the Royal College of Surgeons; that the "village" referred to—Toronto—is a flourishing city of 200,000 inhabitants; and that Montreal has also a dental college. Canada has a population of only 6,000,000. When our neighbors had 25,000,000, there was neither a dental college nor a dental journal in the Republic.

It is certainly not easy in England, and allow us to say, or in Canada, for a few speculators to get a charter and organize a college. It is not as easy in the United States to secure affiliation with respectable universities as to organize independent schools. Our neighbors do not think it beneath them to affiliate with such renowned universities as Harvard, Pennsylvania, Michigan, Lake Forest and others. The affiliation in England with the Royal College of Surgeons was a step upwards; "the College of Dentists of England," as an independent body, was merged in the R.C.D.S. The result has been to establish the education of dental students, as well as the preliminary or entrance examination, on a basis not yet attempted elsewhere. If the editor of the *Items* will calmly make fair comparisons, we venture to believe that he will discover a good deal in British dental education worthy of imitation in the United States. As journalists, we are all interested in raising the standard of education. Let us take good hints wherever we find them. The dentists in Britain are nothing the worse because they prefer "Mr." to "Dr." What they seek is not titles or parchments, but education. It was a mistake ever to apply the "Dr." to the dentist. Now it is too late to undo it.

Of educational bodies in London, we have "the Dental Hospital of London and London School of Dental Surgery," in Leicester Square, with a staff of eminent consulting physicians and surgeons,

like Sir Richard Quain and Mr. Christopher Heath, with Sir John Tomes and Mr. T. A. Rogers as consulting dental surgeons, and with seventeen first-class dentists, six special administrators of anæsthetics, and as complete an equipment as can be found in any American school. We have also "the National Dental Hospital and College" in Great Portland Street, equally well equipped and represented, and Guy's Hospital Dental School. In Birmingham we have a dental department connected with Mason College, and a distinct dental hospital. In Manchester we have a dental department in Owen's College, and the separate Victoria Dental Hospital; in Liverpool, the dental hospital at Mount Pleasant; in Plymouth, a dental hospital; in Exeter, the Devon and Exeter Dental Hospital. Scotland has the Edinburgh Dental Hospital and schools, and the dental hospital and school in Glasgow. Ireland has the dental hospital of Dublin. In every one of these institutions a thorough course of dental teaching and demonstrations is given by practising dentists, having the direct collateral advantages of connection with the very best universities in the three kingdoms. The general hospitals have also courses of lectures and demonstrations on dentistry by dentists, and dental assistants are appointed, wherein the fees are from £25 to £55. Among these we may mention Charing Cross Hospital, London Hospital, King's College, Middlesex Hospital, St. Bartholomew's, St. George's, St. Mary's, St. Thomas', University College, Westminster, etc. Of scientific associations we have the Odontological Society of Great Britain, publishing their own proceedings; the Odonto-Chirurgical Society of Scotland, also publishing their own proceedings; the British Dental Association, issuing a monthly journal, with a lot of branch societies. Even among the students there exists the same associative effort—the Students' Society of the Dental Hospital of London; also of the National Dental Hospital, the Victoria Dental Hospital of Manchester, and the Dental Hospital of Liverpool.

No accusation has ever been made that any one of these institutions have unworthily bestowed their honors. Their record is clean.

It will be seen that "Our English Brethren" are not quite as slow or stupid as the editorial of the *Items* would lead some readers to infer.

"Asleep on Duty!"

Dr. Jas. Truman, speaking of the profession in the United States, made the remark that "indifference" characterized the mass. It seems to us it is pretty much the same everywhere. It certainly is in Canada; and in addition in the Provinces of Ontario, and Quebec, we are never free from the professional tramp, who

regards all law as injustice, and who wants legislatures to over-ride Boards of Examiners, and make him by special law what he knows he is incapable of becoming by examination—a dentist. We are never free, too, from specimens of that class who want to wear their spurs before they win them, and who spend their thinking moments, devising plans to obstruct the educational and legislative labors which alone can save dentistry from degradation.

It is a question if the "indifferent" people are not as great sinners as the open obstructionist. If one sentry sleeps, an army may enter. In point of responsibility, he might just as well have sold his post, or shirked it, as slept over his duty. Boards of Examiners do not monopolize responsibility. They are but the official stewards of the members who elect them. The personal responsibility of the individuals does not cease because of the election. If the Board does right, it rarely gets any thanks. If it does what the electors think injustice, they have to swallow the leek until the next election. Now, if the electors would continue their interest, and feel a dutiful sympathy with the work of the Board, it would be a great help. It is the "indifferent" men in our ranks who indirectly do the most harm. We remember, in the pioneer days of the dental reform movement in Ontario, a number of able and active men from whose pens or tongues we have never heard a word for twenty years? They are not ill. They are not dead. But they might as well be for all the active interest they take in the profession. If we were sure it was not libellous, we would name them, and put a badge of mourning around their names.

Our Exchanges.

Most of our exchanges come with unfailing punctuality; some of them irregularly, and a few of them come not at all. Will our contemporaries kindly renew the notice to the publishers to address two copies of the DOMINION DENTAL JOURNAL, one to the editor at Montreal, Que., one to the co-editor at Guelph, Ont. They would arrive more surely if addressed to the editors by name.

Reviews.

Richardson's Mechanical Dentistry. Fifth edition. \$4.50. Philadelphia: P. Blakeston, Son & Co.

Just as we are closing this number we have received this valuable work. It has become the recognized text-book for dental students. In the next number we shall examine it more carefully. In the meantime we recommend it to all students preparing for college life, as well as those who are in it.

Chemistry and Physics. A manual for students and practitioners. By STRUTHERS, WARD & WILLWORTH; edited by BARN B. GALLANDET, M.D., Philadelphia. Lea Brothers & Co.

Another addition to the useful "Students' Quiz Series," making the twelfth to appear. Terse and pointed both as to questions and answers. Written by well-known teachers and specialists in New York. \$1.

Annotations.

The action of the English Medical Council in regard to American dental degrees is one they had a perfect right to make, and they stand upon more consistent ground now than they did when they discriminated in favor of two American colleges.—*Western Dental Journal.*

The difference between men who accomplish astonishing tasks and those who do nothing, is that one uses the time at his command, while the other wastes it; one husband his resources while the other dissipates them; one is aggressive, the other neutral.—*Items of Interest.*

The Foreign visitor at the Congress was not a public speaker, but we like him none the less for that. The conversational style in addressing an audience is better than the "ground and lofty tumbling," "Fourth of July" methods we sometimes see and hear.—*Western Dental Journal.*

Cheap tooth brushes are responsible for many obscure throat, stomach and intestinal ailments. The bristles are only glued on, and come off by the half dozen when wet and brought in contact with the teeth. But recently an operation for appendicitis revealed the fact that the trouble was due to the presence of tooth brush bristles.—*Ohio Dental Journal.*

Graduation after attending two terms at a dental college, and then attending one term at a medical college and receiving an M.D. degree does not entitle to registration for the practice of medicine in the State of Missouri. We think they are perfectly right in their decision. Any medical college graduate, after one term in such cases, can scarcely have a high standard.—*Western Dental Journal.*